1919.

NEW ZEALAND

INDUSTRIES COMMITTEE

(REPORT OF THE); TOGETHER WITH MINUTES OF EVIDENCE.

(Mr. WILKINSON, Chairman.)

Presented to the House of Representatives, and ordered to be printed.

ORDERS OF REFERENCE.

Extracts from the Journals of the House of Representatives.

Tuesday, the 26th Day of November, 1918.

Ordered, "That a Select Committee be appointed, consisting of ten members, to inquire into and report upon matters tending to benefit and encourage the industries of the Dominion; with power to call for persons and papers; three to be a quorum: the Committee to consist of Mr. Craigie, Mr. Forbes, Mr. Hudson, Dr. A. K. Newman, Mr. Pearce, Mr. Poland, Mr. Sidey, Mr. Veitch, Mr. Wilkinson, and the mover."—(Right Hon. Mr. Massey.)

Monday, the 9th Day of December, 1918.

Ordered, "That the names of Mr. Luke and Mr. Hornsby be added to the Industries Committee."—(Right Hon. Mr. Massey.)

Extract from Financial Statement, presented to the House of Representatives on the 26th November, 1918.

"Local Industries.

"Honourable members will recognize that in the interests of the country every means should be taken for obtaining information which will assist the Government in framing legislation for the purpose of promoting the local industries of the Dominion. With this object in view it is intended that the Industries and Commerce Committee should hold sittings during the recess in various parts of the country, with the object of making inquiries and taking evidence from persons who are well qualified to express an opinion as to the direction in which legislative action should be taken. The Government by this means hopes to obtain the very best advice possible before bringing in legislation in connection with this very important matter."

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REPORT.

Introduction.

The Committee's Investigations.

During last session of Parliament it was decided by the Government that the Industries Committee should travel during the recess throughout the Dominion, take evidence and investigate not only existing industries, but discover, if possible, how new or budding industries might be encouraged and assisted. This work was entirely new so far as Select Committees were concerned, and it will now be for the House to determine whether or not the Committee's work has justified such a departure from established custom.

The Committee has to express its regret that many invitations to visit other districts than those where evidence was taken had to be declined. But the Committee has endeavoured to remedy, in part, this defect by obtaining from such districts written evidence and other information of a valuable kind.

Dearth of Labour.

The Committee desires to draw special attention to the fact that in whatever direction its investigations led, proof was given of the general and genuine scarcity of labour. Many industries as a consequence are in a languishing state, and new enterprises are being delayed. In offering possible solutions of this problem the Committee would solicit the careful consideration of its proposals.

The Committee's Recommendations.

In submitting its report the Committee would point to the mass of information obtained; but in order that practical results may follow speedily upon its work it has not dealt in detail with other than the more prominent of existing enterprises and those awaiting development. It is no exaggeration to say that there are hundreds of small industries which ought in the near future to profitably engage the attention, consideration, or assistance of the State. Our Dominion may well be described as a richly endowed but undeveloped country. Our possessions, capable of producing great wealth, are many; knowledge of them is possessed by few.

The Financial Aspect.

In making its recommendations the Committee has taken into its careful consideration the question of the necessary and necessarily large additional expenditure that will be entailed. The Committee realizes that the ultimate sum total of new expenditure will be great; but it would at once point out and seek to emphasize the fact that the sum involved will be spread over a period of years. Further, let it be said that payment in many cases can be made in interest-bearing bonds, redeemable at stated periods; and that the great bulk of the activities proposed will, from the profits derived, provide the necessary funds for such redemption.

A Plea for Self-reliance.

It should be the aim of the Government to impress upon the people that in all future efforts at development of the country's resources the policy of self-reliance cannot be too strongly fostered. The demands made upon us by the Great War have surely taught us many useful lessons. Our people were self-reliant during the greatest crisis the world has ever passed through, and they have proved their ability to provide funds the magnitude of which would have staggered us in the years that are past. In asking that its proposals should be adopted, the Committee urges the people of the country to assume in peace the attitude they assumed in war.

Which shall it be?

The question to be decided is not one for to-day only, but for the future, and it resolves itself into this: Whether or not the Dominion should enter upon the course of action outlined in the recommendations which follow in this Committee's report; or whether we should refuse as a people to take advantage of our great opportunities, and merely continue to aimlessly muddle along in the old, old way, trusting to Providence to pull us through.

Increased Production and Cost of Living.

The Committee wishes to impress upon the public the necessity of increased production, and strongly dissents from the doctrine of those who insist that one way to cure the ills they find in life is by curtailing output. There is no greater fallacy, no more harmful practice. It is the very negation of all economic teaching; and, what is more, reduction in production ultimately casts its whole weight upon the shoulders of those least able to bear it—namely, the working class.

The question of the people's food and its cost has engaged the Committee's attention, and proposals are herein made which, if adopted, will tend in the direction of that goal so earnestly sought and yet so difficult to attain. It is quite vain to hope that the conditions of life and cost of living will ever again closely approximate to those of pre-war times. The world-wide tendency to-day is towards increased cost of production, even in countries where labour conditions have always been deplorable. Increased cost of production spells increased cost of living.

Hydro-electric Power.

The Committee has decided to place the Dominion scheme for the development of hydro-electric power in the forefront of its proposals, as it is more than convinced that the carrying-out of the scheme means increased production in both primary and secondary industries.

The Staff.

In closing this portion of its report the Committee desires to place on record its commendation of and thanks to the members of the staff, composed of Messrs. A. E. Briggs (secretary), D. H. Cameron and W. Berry (reporters). Absolute efficiency and devotion to duty characterized the members of the staff throughout.

Hydro-electric Power.

Of the many subjects that have come before your Committee that of the development of hydro-electric power must certainly be given the foremost place. The provision of adequate supplies of energy is the basis of all industrial progress; and if this country is in the near future to experience a period of great industrial expansion, then no more pressing duty devolves upon the State than the development of our magnificent resources of water-power.

An Emphatic Demand.

Wherever the Committee has been, whether in town or country, nothing has been more striking than the emphatic unanimity of the demand for electrical energy, and your Committee was much impressed with the results that have followed the introduction into Christchurch of this power from Lake Coleridge. Evidence was given in that city that even modern suction-gas plants had been discarded in favour of the electrical supply. Not only had existing industries been fostered and stimulated, but a number of new industries had already been started, while the establishment of further new undertakings was promised as soon as additional power could be obtained. It will be admitted that conditions of life and labour in the rural districts should be made easier and more attractive, and one of the surest ways to accomplish this end is to make electricity the ever-willing and reliable servant of the settler and farmer.

A National Duty.

The Committee is firmly of opinion that the harnessing of the great sources of water-power is a national duty, to be undertaken by the Government for the benefit of the whole community and carried out as a national enterprise. Local authorities are proposing to develop schemes of their own, doubtless due to the length of time they have been led to believe will elapse before power from the national undertaking will be available in their respective districts.

Mr. Parry's Scheme.

On the subject of the national scheme the Committee has had the benefit of the evidence of Mr. Evan Parry, the late Government Electrical Engineer, who outlined his scheme for the North Island and anticipated completing his investigations so as to enable him to formulate his South Island scheme before leaving New Zealand, and this has no doubt been done. Mr. Parry made it clear to the Committee that the estimated period for the carrying-out of the work could be greatly shortened, and that not only might various works in different portions of one Island be undertaken at the same time, but the work in both Islands could be simultaneously carried out. He declared that, given the money and the labour, he could within a period of three years install at each of the three main sources in the North Island sufficient plant to meet present requirements. It will be admitted that the State is in a better position to find both the money and the labour than are the local authorities.

Labour and Distribution.

Regarding the requisite labour, the Committee is convinced that much may be accomplished by earnestness and determination. A good deal of skilled labour is required in the shape of tunnel-workers, and it may be pointed out that many of those who did mining-work at the front may be contemplating emigration from Britain to the overseas dominions. No time should be lost in bringing under the notice of mining and other workers the advantages that this Dominion affords.

The Committee's Recommendation.

The Committee recommends that the Government should at once carry out a comprehensive scheme for the supply of electrical energy to the whole country, and simultaneously in both Islands. The Government should supply the current in bulk, leaving the distribution to the local authorities.

Board of Industries and Commerce.

Your Committee has met with an almost universal demand for the setting-up of a Board of Industries and Commerce, which shall provide the directive ability for the national organization of our industries in general.

Commercial and Industrial Development.

The conclusion of the war brings to the forefront the necessity for the immediate consideration of the most effective methods of dealing with the great questions of commercial and industrial development, for it is quite certain that New Zealand must make unprecedented efforts to deal with the whole question from the national standpoint; indeed, the State must in the future take a closer interest in the development of industry and be prepared to actively assist. In this connection the Committee desires to point out that up to the present little (if any) assistance has been given to secondary industries, while in the case of land-development generous encouragement has been afforded for many years past.

Setting up the Board.

At the present time and for some years several Ministers have been directing State activities in the commercial field. It is recommended that these duties should be concentrated in one Department and under the direction of one Minister.

The Departments of Agriculture and of Industries and Commerce are at present worked as one, and in the opinion of your Committee an alteration from this state of affairs is imperative. A separate Department of Industries and Commerce should be set up, having extensive powers, much on the lines of the inter-State Commission of Australia, excepting that the Board should be directly under the control of a Minister of the Crown. By this means it is believed the necessary stimulus can be given to existing and new industries which are so vital to our national development. The Board should consist of three members of wide business experience, who should devote the whole of their time to the performance of their duties, and the salaries should be such as would attract the best men in the Dominion. Extensive authority should be vested in the Board, one of its important duties being to act as a Tariff Board with power to make recommendations. The functions of the Board of Trade, which has little or no power, should be taken over by the Board of Industries and Commerce.

Powers to be exercised.

The Board should be empowered to—

(1.) Engage in trade:
(2.) Investigate and control prices:
(3.) Prevent exploitation of the public and suppress profiteering:
(4.) Make advances to industrial and commercial concerns:
(5.) Investigate trade conditions:
(6.) Prevent unfair methods of competition:
(7.) Report to the Minister direct on all matters inquired into.

The Board should be charged with the duty of investigating from time to time matters affecting the public interest, such as—

(1.) The encouragement, improvement, and extension of New Zealand industries and manufactures:
(2.) Markets outside New Zealand, and the opening-up of external trade generally:
(3.) Wages and social and industrial conditions:
(4.) Labour, employment, and unemployment:
(5.) Other matters referred to the Board by either House of Parliament, by resolution, for investigation.

The Customs Tariff.

Your Committee was favoured with voluminous evidence in connection with the secondary industries, and found that the welfare of almost the whole is threatened by competition from abroad, especially Eastern countries. In the case of machinery the threatened competition is mostly from the United States of America. In the opinion of the Committee the question of secondary industries is largely bound up with the Customs tariff; and notwithstanding that in many cases protection is now given, unless further assistance by duties or bonus is extended (always having in view the necessity of keeping down the cost of living), it is certain that some very desirable industries are in danger of languishing and possibly perishing. New Zealand has for years adopted the policy of protecting the welfare of its workers by insisting upon a good standard of living, and it naturally follows that if this policy is to be pursued (and the Committee agrees that it should continue) it is obvious that the community must be prepared to protect the product of the factory and workshop. It has further to be considered that in most competing countries labour conditions are more onerous and the standard of living is not so high as in this country.

Australia.

Australia, our near neighbour, has elected to treat New Zealand as a foreign country by placing this Dominion on exactly the same footing as Japan, America, and other foreign countries. New Zealand, on the other hand, has extended favoured treatment to Australia by treating her in the same way as the United

Kingdom and other British possessions. The general tariff imposed by Australia strongly protects Australian manufactures, and the Committee believes that policy is likely to be amplified and extended as time goes on. Further, it seems clear that Australia has developed many industries by the means adopted.

To show the duties imposed in each country more clearly, several items are set forth, and the Committee believes that unless the position is met it will operate to the disadvantage of this country.

	Australia.	New Zealand.
Mineral waters	35 per cent.	20 per cent.
Sugar	6s. per hundredweight	Free.
Hats—Wool felt	40 per cent. or 20s. per doz.	25 per cent.
Fur felt	40 per cent. or 30s. per doz.	25 ,,
Blankets and rugs	30 per cent.	20 ,,
Machinery, n.o.e.	30 ,,	20 ,,
Cement—Per barrel of 380 lb. (approximately 3½ cwt.)	5s. 3d.	2s.
Per hundredweight	1s. 6d.	7d.
Bacon and hams	4d. per pound	2d. per pound.
Twine, binder	7s. per hundredweight	Free.
Wheat	Free	9d. per cental.
Flour	Free	1s. ,,
Chaff-cutters, scarifiers	25 per cent.	Free.
Harrows and ploughs	25 ,,	,,
Drills and disc-cultivators	30 ,,	,,
Winnowers	30 ,,	,,
Roofing tiles and slates	30 ,,	,,
Doors—1½ in.	4s. 6d.	20 per cent.
1¾ in.	6s.	20 ,,
Over 1¾ in.	8s. 6d.	20 ,,
Wines—		
Still, special preference		5s. per gallon.
Still, ordinary rate	12s. 6d. per gallon	6s. ,,
Sparkling, ordinary rate	25s. per gallon	15s. ,,

Dumping.

It was further shown that Australia, in the case of roofing-tiles, has resorted to the practice of "dumping," which will of necessity result in the closing-up of similar industries in New Zealand. An extension of this policy can no doubt be looked for not only from Australia, but from other countries. The Committee therefore recommends the immediate adoption of an "anti-dumping" law similar to that in force in Canada, which is as follows:—

"In the case of articles exported to Canada of a class or kind made or produced in Canada, if the export or actual selling price to an importer in Canada is less than the fair market value of the same article when sold for home consumption in the usual and ordinary course in the country whence exported to Canada at the time of its exportation to Canada, there shall, in addition to the duty otherwise established, be levied, collected, and paid on such article, on its importation into Canada, a special duty (or dumping duty) equal to the difference between the said selling-price of the article for export and the said fair market value thereof for home consumption; and such special duty (or dumping duty) shall be levied, collected, and paid on such article although it is not otherwise dutiable: Provided that the said special duty shall not exceed 15 per cent. *ad valorem* in any case."

Tariff Revision.

The present New Zealand tariff has been in operation since 1907, a period of twelve years, during which time the conditions of trade and industry have materially altered. Many importations, such as labour-saving machinery, road-making machinery, &c., are being charged high duties under the "not otherwise enumerated" provision of the tariff, simply because such machinery was not known when the tariff was framed.

Special Machinery.

A particular hardship often brought prominently before the Committee was the fact that many industries requiring special machinery which cannot be made in the Dominion, or which may be protected by patent rights and exclusively manufactured abroad, are penalized by being called upon to pay high duties. Your Committee recommends that relief should be afforded.

Preference to United Kingdom.

The question of preference to Great Britain has had consideration, and it is agreed that the principle is a sound one, inasmuch as the United Kingdom is our best and most important customer; and, further, that we are dependent on the Mother-land for protection by sea and land—in short, our interests are identical and should be made completely mutual. The amount of preference should be substantial, so that the object of fostering trade between the United Kingdom and this Dominion may be secured. The Committee, on the other hand, recommends that in the case of British dominions not extending preference or favourable treatment to New Zealand the Dominion's ordinary tariff should apply.

Reciprocity.

The Committee believes that after the tariff is revised an attempt should be made to enter into a reciprocal agreement with Australia and other British dominions for the interchange of certain productions of each country.

South African Treaty.

The Committee recommends the immediate revision of the reciprocal treaty entered into with South Africa in 1907. An examination of the business done between the two countries shows that New Zealand's exports to South Africa are practically nil, and that South African exports to New Zealand on which preference is given, excepting wine, amount to very little. The duty on South African wines is as low as 2s. per gallon, and the preference in 1918 cost the revenue £5,000. It is more than doubtful if the public receive the advantage of the reduced duty.

Tariff Board.

The Committee recommends that the Board of Industries and Commerce be also a Tariff Board, to consider tariff questions and to make general recommendations from time to time in regard to these matters. It is further recommended that the Standing Orders of the House be amended to render it possible for any article or articles to be dealt with by way of amendment to the tariff without the tariff in general being open to amendment.

Surtax on Enemy Goods.

In 1915 legislation was passed empowering the Governor-General by Order in Council to impose a surtax of 50 per cent. on any goods specified in the Order that are imported into New Zealand from the countries recently at war with the British Empire, the evident intention being that the additional duty should be imposed on such goods when peaceful relations were resumed. Provided there is no international agreement to the contrary, the Committee recommends that the above provision should continue.

Control of Prices.

In almost every instance where further protection was asked for by way of assistance to local industries it was agreed by those seeking such assistance that should Parliament afford protection they would agree to price-control by the Board of Industries and Commerce. Your Committee agrees with this principle, and strongly urges that in the interests of the purchasing public price-control be a permanent policy in relation to the tariff.

Summary of Recommendations.

The Committee's recommendations regarding the tariff may be summarized as follow :—

(1.) The general tariff should be revised by Parliament without delay. The present tariff, which was framed in 1907, is unsuited to the needs of the country, and often unfair in its incidence.

(2.) Before increased protection on locally manufactured goods is given it should be the duty of the Board of Industries and Commerce to ascertain that such protection will not result in prices being unfairly raised against the general public.

(3.) A further measure of preference should be given on goods imported from the United Kingdom; but no preference should be granted unless at least 50 per cent. of the value of such goods is of British manufacture, production, or origin. The present regulations should be amended accordingly.

(4.) In the case of imported machinery which cannot be made in the Dominion, or in the case of new or patented machinery, such machinery should, for the encouragement of local industries, be admitted free.

(5.) An "anti-dumping" law should be passed, on similar lines to the Canadian Act.

(6.) The proposed Board of Industries and Commerce should be a Tariff Board, with advisory powers.

(7.) Steps should be taken to enter into reciprocal agreements with the several British dominions.

The Coal Industry.

After the most careful consideration of all the available facts, and assisted in some instances by personal observation, the Committee has come to the conclusion that it is vain to suggest half-measures in dealing with the question of coal-supply. The successful working of our coal-measures is vital to the whole people. The failure of supply has led to deprivation and discomfort in the home, the crippling of industry, and the paralysis of one of the greatest of our public services.

Report by the Board of Trade.

The Committee has had the opportunity of perusing the valuable report furnished by the Board of Trade, and is indebted to it for a great fund of information gathered by that body in its exhaustive research into every phase of the coal-mining industry. The Board, though satisfied that some form of nationalization is urgently needed, does not recommend the entire elimination of private ownership. While agreeing with many of the conclusions of the Board of Trade, your Committee's opinion is that the recommendations contained in the report do not go far enough. The general question of the production of coal, its distribution, and the providing of a better system for the actual working and management of the coal-mines is of too great moment to the whole Dominion to permit of the adoption of any course except one which offers the best prospect of placing this most essential industry on a satisfactory footing. The Committee is of opinion that to endeavour to work the mines as suggested by the Board of Trade, under the joint management of the present owners (whose interests are to be almost wholly absorbed) in conjunction with the workers and a representative of the Crown, will not adequately solve the problem. Representation on the Board as above provided would in all probability result in a clashing of the several interests.

Wasteful Methods.

It was stated by a reliable witness that over a big proportion of one important mine 75 per cent. of the available coal is wasted owing to its not being workable at a profit. It is therefore certain that large quantities of coal are

now lost, and that by central control much of this loss could be prevented; and this end, in the Committee's opinion, can only be attained by complete nationalization of the coal-measures.

The Miners' Homes.

It must be conceded at once that the conditions under which miners and their families live have contributed largely to general dissatisfaction and the fostering of the spirit of unrest, and it is hoped by the Committee that an end will speedily be made of this cause of dissatisfaction by providing reasonable housing-accommodation at or near the various mining centres.

Recommendations.

To remedy the evils and danger, to preserve the Dominion's industries, and to secure in the immediate future the means for developmental activities, it is recommended by the Committee –

(1.) That the coal-measures of the Dominion be nationalized, and that privately owned mines and measures be purchased by the State at valuation:

(2.) That a Board of Management and Distribution under ministerial authority be established, on which the workers engaged in the industry shall be represented:

(3.) That there be set on foot at once a scheme which shall result in the comfortable housing of the miners and other workers concerned:

(4.) That a superannuation scheme on similar lines to that in operation in the Railway service form part of the general scheme:

(5.) That the State own and control the necessary shipping for the carriage of coal.

Primary Industries.

Your Committee, whilst recognizing the important part the secondary industries play in the employment and welfare of a large portion of the population of this country, admits that it is to the primary industries and their development the country must look to provide the bulk of the added revenue required to meet the increased expenditure rendered necessary by the war. Therefore the Committee is of opinion that everything possible should be done to stimulate production, and to that end it urges that every effort be made to increase the number of those engaged in the agricultural and pastoral industries.

Land-settlement and Transport.

The fullest use will in the future require to be made of the lands of the Dominion, and in this respect closer settlement will necessarily play a great part. There must be very stringent legislation against land-aggregation, and the speculative gamble that is at present going on in rural lands should be discouraged and, if possible, prevented. As good facilities for the transport of produce to market are necessary for successful settlement and for assisting production, the Government should push on with an adequate roading policy in newly settled districts. A vigorous policy in railway-construction is also required.

Homes for Married Workers.

The farming industry will always require a large number of workers to carry on its operations, and so as to encourage the employment of married men the Government should advance money to farmers to enable them to provide the necessary housing-accommodation. (See "Housing" section.) Owing to this lack at present, employment is confined to a great extent to single men, and the settled populating of country districts is thereby retarded.

Seed-growing.

Agricultural-seed growing is a new and promising branch of agriculture which can be added with profit to the branches already in existence. The very high prices

of imported seeds during the war period have already turned the attention of a few farmers to this production. The soil and climate of New Zealand are, in the opinion of those who have had experience in this industry, very suitable for the production of seeds of high quality—quite equal to the best imported. The Committee is of opinion that to establish this industry on sound lines an expert should be engaged to instruct farmers who are desirous of carrying on this branch of production in the best methods to secure a first-grade product, true to type and of the highest possible germination. If this is done many thousands of pounds of money which at present goes out of the country for seeds will be spent amongst our own farmers. There is also a field for the establishment of a payable industry in the production of horticultural seeds, which is worthy of careful consideration.

Experimental Farms.

As the methods employed in agriculture are becoming more and more scientific it behoves the Dominion, if it wishes to keep in the forefront as a producing country, to see that its farmers are equipped with scientific knowledge. The value of experimental work in connection with agriculture and stock-raising is being recognized more and more by the farming community, and there is a strong demand in the country districts for the extension of this policy by the Department of Agriculture. The present experimental farms are giving satisfactory results in this respect, but they have their limitations and cannot possibly cover the whole field of work. In the opinion of the Committee these farms can be increased in number to the advantage of agricultural knowledge and education.

Owing to the great diversities of soil and climate in the different districts of New Zealand it is necessary to have an experimental farm situated, or experimental work carried on, in at least each provincial district. At present there is not an experimental farm in the South Island, but there is provision on the estimates for one in Westland. This, we believe, will be of great value to settlement in that district.

Utilization of Lincoln College.

In Canterbury the Lincoln College is doing good service in providing an agricultural education for youths, and as this portion of its work requires the whole of its revenue it is able to carry out experiments on a limited scale only; but if its revenue were strengthened the College staff would be enabled to carry out much experimental work in the way of plant-breeding, &c., which would be of the greatest assistance to the agricultural industry of Canterbury and Otago. The Committee is of opinion that a desirable arrangement could be made if the Department of Agriculture were to co-operate with the College in this work, and recommends that the Government liberally subsidize that institution to meet the added expense.

Dairy School.

Your Committee has carefully considered the question of the establishment of a dairy school or college, where the operatives and managers engaged in the factories should be trained on up-to-date scientific lines. The present method of obtaining knowledge of the work is altogether too crude, and cannot but be detrimental to this important branch of the country's business. The probable early development of the manufacture of rennet, casein, dried milk, condensed milk, and sugar of milk makes the immediate consideration of this question imperative, owing to the fact that few skilled operatives and managers are available in New Zealand.

The Training of Managers and Assistants.

We recommend that a dairy school be opened for the scientific training of factory-managers and assistants, who shall be granted certificates according to the standard of proficiency achieved. These certificates should not be the exclusive right of students attending the school, but should be available to all who can attain to the standard of knowledge and proficiency set for the school examinations. The site of the school is of no material consequence, and it is possible that it could be

situate near or on an experimental farm. The question of research-work is all-important, and the school should be provided with the necessary facilities, the apparatus, and the best available instructors.

A Mutual Scheme.

Your Committee feels assured of the active co-operation of those engaged in controlling the dairying business, and it is hoped that a mutual scheme may be evolved whereby those so engaged could co-operate with the Government in management and control, even to the extent of contributing towards the cost of establishment or equipment.

Butter-fat Price-equalization Fund.

Your Committee has taken evidence in connection with the present method of providing butter for local consumption below the market price for export, and is of opinion that the system of reducing the price locally, as at present in vogue, is not sound, inasmuch as it only applies to one industry, and that it will assuredly bring about a decreased output of butter owing to farmers taking up the more profitable production of cheese, dried milk, &c.

The present f.o.b. price for export is 181s. per hundredweight, or about 1s. $7\frac{3}{16}$d. per pound, and the local rate at the factory 1s. 5d. per pound, the difference being a charge on the butter-producer, amounting to nearly £300,000 per annum.

The allowance of 3d. per pound between the price paid to the producer and that charged to the consumer is too great, and a better system of distribution should be arranged. Some retailers are now selling butter at 1s. 7d. per pound, or 1d. below the scheduled rate.

Your Committee is of opinion that the Government is bound to see that the retail price of this important article of diet is kept within reasonable limits, but that any reduction in the price paid to the producer should be made a charge on the Consolidated Fund.

Noxious Weeds.

This subject was brought forcibly under the notice of your Committee, and it was shown that a serious and growing evil exists, menacing the future of the farming industry in many localities; and, further, that the present system of dealing with the trouble is largely ineffective. It may be said at once that blackberry is one of the most troublesome and formidable of all weeds. One witness declared that he considered there was no less than 300,000 acres of land, chiefly in North Taranaki, infested with this weed. "Out of that 300,000 acres," he said, "there is no less than 5 per cent. that has become totally unprofitable, covered by blackberry, and not a blade of grass growing underneath." On the west coast of the South Island your Committee had ocular demonstration of the immensity of this evil. Your Committee recognizes that harsh legislation would press very hardly upon many landholders, and that in some localities it is almost impossible to eradicate weed pests. Nevertheless, the demand is imperative for legislation which shall have for its object the prevention of the spread of the evil and the protection of those districts in which the spread has not been so great.

Recommendation.

The Committee recommends, in view of present-day conditions, that the Noxious Weeds Act be amended so as to cope with the pest and prevent the still further spread of weeds. Such legislation should include provision for any district to be declared a "weed district," in which it shall be an offence to permit the seeding of specified noxious weeds; settlers to have the right of appeal against inclusion in such district.

FRUIT-PRODUCTION.

Outside Markets.

Geographically, New Zealand is particularly well situated as a fruitgrowing country, in being approximately seven days' transit nearer to the great North and South American markets than the other large fruit-producing centres of Australasia. South America is a proved outlet, and considerable quantities of apples were exported to that country under favourable conditions and at good prices until shipments were cut off owing to the war. It is of the utmost importance that provision should be made for at least one steamer per month during the months of March, April, and May of next year to take the Cape Horn route to Europe, and call at South American ports with shipments of apples and other produce for which cool storage would not be a necessity. This market would probably supply sufficient outlet for the next few years, while developments in other directions are being fostered. Some years back a few shipments of apples were sent to London, but so long ago that a renewal of shipments to this market might be looked upon as practically a pioneer effort, and as such the Committee recommends that where shipping is available Government should offer a guarantee of 1d. per pound on fruit shipped, as was done in former years.

Local Transit.

The question of local transit calls for serious consideration, as the industry is heavily handicapped in this direction. Continued efforts on the part of fruitgrowers to secure a proper system of through booking have failed, there being no apparent co-ordination between the Railway Department and the different steamer services, except where the fruit is consigned from a railway-station. This considerably militates against trade where transhipment is necessary, and your Committee recommends that the Railway Department should come to an arrangement with the shipping companies to ensure the through booking and proper forwarding of fruit consigned from a shipping-port to a destination to reach which railage is necessary. Again, the time occupied in transit by rail from the fruitgrowing centres to large towns in the North Island is in some cases so great as to prohibit trade altogether. For instance, it was stated to the Committee that fruit by rail from Hastings takes from four to five days to reach the Auckland market, a period out of all proportion to the distance travelled. The railway-trucks are quite unsuitable, and the Committee recommends that specially designed trucks should as soon as possible be made available. Your Committee is of opinion that the lack of transport facilities is to a great extent responsible for the difference between the price at which the fruit can be grown and that at which it is available to the public.

Cheapening Fruit to the Consumer.

A suggestion was made to the Committee by fruitgrowers that the Government should commandeer all apples and pears at an average of about 1d. per pound at the orchard, retailing the fruit in case lots at about 2d. per pound. While this scheme would appear decidedly attractive, the Committee feels that there are considerable difficulties in the way of recommending its adoption. It is felt, however, that a revision of transport conditions would go a long way towards cheapening fruit. The freights on sea-borne fruit are now such that in many cases it does not pay to ship except at advanced prices. It is therefore recommended that Government pressure be brought to bear where it is apparent that freights are excessive, and that a complete system of co-ordinated transport be brought into operation at once.

An Experimental Station.

An appeal was made to your Committee for the establishment of an experimental station in the Nelson district, to be worked in conjunction with the Cawthron Trust. Such an institution would be of considerable value to a district so

dependent for its prosperity on the fruit industry, and the Committee urges that this proposal be given effect to.

Evaporated Fruits, Vinegar, &c.

Then there is the question of the encouragement of the manufacture of preserved and evaporated fruits, cider, vinegar, &c., and in this connection your Committee recommends that the terms of the Sale of Food and Drugs Act, 1908, as regards vinegar be rigidly carried out.

Fruit-cases, Sulphur, and Imported Machinery.

With the ever-increasing scarcity and the cost of suitable timber, and the impossibility of meeting the increased demand at reasonable prices, your Committee is of opinion that no bar should be put upon the importation of cases or case timber, either by Customs duties or otherwise; also that the planting of *Pinus insignis* and other suitable timber in fruitgrowing districts should be encouraged or carried out by the Government. Sulphur is so very largely used for spraying that the Committee recommends the consideration of its being produced locally instead of being imported at a very high price. Where it is necessary to import machinery for the successful carrying-on of the fruit and allied industries, such machinery, where it cannot be manufactured in New Zealand, should come in free of duty.

Orchards for Soldiers.

Where returned soldiers decide to take up land for fruitgrowing it is recommended that they should receive small acreages of high-class land, upon which they might cultivate vegetables, small fruits, &c., until their trees come into bearing.

Orchard-tax and Advances.

Owing to complaints regarding the administration of the proceeds of the orchard-tax your Committee recommends that a Government nominee should have a seat on the board of directors of the New Zealand Fruitgrowers' Federation.

Provision is now made under the Fruit-preserving Industry Act, 1913, for advances to the extent of £9,000 in any one case for the purpose of establishing cool stores for fruit, fruit-canning works, &c., and when a greater amount is required in any district the sum can be procured only by application through or by another applicant. Your Committee therefore recommends that the limit should be raised.

Increased Production of Butter-fat per Cow.

Your Committee has taken considerable evidence on the question of increasing the yield of butter-fat, and has found that the average is 161 lb. per cow, which is far too low in a country so favourably situated for dairying as New Zealand. When it is considered that there are 793,000 dairy cows in use, and that an increased yield to 200 lb. of butter-fat per cow would produce about £2,700,000 in extra money, the importance of the subject can be readily understood. This suggested increase of 39 lb. of butter-fat per cow is not unreasonable in view of the fact that the production per cow increased from 142 lb. in 1910–11 to 161 lb. in 1916–17, and that many herds are at present producing 200 lb.—indeed, some produce 250 lb. and 300 lb., and in exceptional cases 400 lb. An increase of fat per cow would result in a reduction in the cost of production, and in the opinion of the Committee the utmost endeavour should be made to bring about such increase. It was stated by a reliable witness that it costs £13 12s. 6d. per annum to run the average cow, including capital outlay and labour, which, if correct, on a production of 161 lb. of butter-fat per cow, makes the cost 1s. 8·3d. per pound, while on 180 lb. the cost is 1s. 6d., and on 220 lb. it is 1s. 2·8d., which illustrates the point.

Testing of Herds.

The question of testing is all-important, especially when it is considered that in 1918–19 only 17,000 cows were tested out of the large sum total in New Zealand.

As an instance of the efficacy of cow-testing it was stated that one farmer increased the production of his herd from an average of 258 lb. of butter-fat per cow to 309 lb. in four years; another raised his return of 215 lb. to 282 lb. in six years.

Your Committee recommends that the following steps be taken to bring about improvement: That the testing of dairy cows on association methods be extended as much as possible; that testing officers be appointed to each of the larger companies for this purpose if an association can be organized, the companies to pay at least a portion of their salaries. It is further recommended that the Department of Agriculture continue to inaugurate and develop associations among the smaller factories in districts visited by officers in connection with the testing of registered dairy cattle. In districts not so visited a group of smaller factories combining for the purposes of herd-testing should receive the same consideration as a larger company working independently.

Selection of Types.

Now that such a large proportion of the land suitable for dairying in New Zealand has been cleared and brought into grass, and since values are high in districts which have been most improved, it is necessary that dairy-farmers should keep that class of cow which will convert into milk the largest proportion of the feed grown on these dairy farms. Evidence placed before the Committee indicates that the "special purpose" dairy cow requires less feed for maintenance than does any other type of cow, thus leaving more feed for the production of milk. The heifers to be reared for maintaining the milking-herds on these dairy farms should, as far as possible, be sired by butter-fat-record bulls. The assistance being given to breeders in authenticating the records of their purebred cows will tend to increase the number of such bulls that will be available to the dairyman. Evidence was forthcoming to the effect that only 13 per cent. of the bulls used in New Zealand are purebred. It would appear, therefore, that a campaign which will bring the importance of better breeding of dairy stock under the serious consideration of the average dairyman should be carried on throughout the Dominion.

Tobacco.

Where soil and climate are suitable, tobacco-growing offers a most attractive occupation. Worked in conjunction with orcharding it supplies a long-felt want in providing a blight-resisting profitable crop, which could be cultivated between the fruit-trees up to the time of their coming into bearing—a time of considerable hardship to many a struggling orchardist. It may here be mentioned that the same land will grow apples and tobacco profitably which will not successfully produce other crops.

The Quality of New Zealand Leaf.

It has been stated that a first-class leaf can be produced in New Zealand, and one expert witness asserted that we "can grow a better tobacco than Australia, and as good as America." The Committee was afforded the opportunity of inspecting a growing crop, and had samples submitted of dried leaf which apparently bore out the above statement. Australia has appointed a special expert to visit and instruct growers in growing and slow curing. The Committee recommends a similar course in this country.

Bonus recommended.

Although the industry already has the advantage of a preference of 1s. per pound in excise duty, and undoubtedly offers prospects of a promising future, in view of its being still in the experimental stage it is recommended as a further inducement that a bonus of 3d. per pound for five years be granted to growers on dried leaf of approved quality; further, that advances be granted to growers on proper security for the erection of curing-barns. It is also recommended that every effort be made to procure the best seed for distribution at cost price.

Wheat-growing.

Your Committee took evidence in the wheat-growing districts in reference to this industry, and the dominant note was the necessity for encouragement by the Government, by way of guaranteeing a reasonably remunerative return to the growers, if the supply is to be maintained in sufficient volume to meet the requirements of our own people.

The past season's bountiful harvest, and the price of 6s. 6d. per bushel which was guaranteed by the Government, have for the first time for many years given the grower a fair return for his outlay. It was stated that owing to the increased cost of all factors entering into the production of wheat the price of 6s. 6d. per bushel was equal to only 4s. under pre-war conditions. The depreciated value of the sovereign from 20s. to 13s. 6d., as stated by the Government Statistician, had its effect in this industry as in all others; and it should be borne in mind that, as previously remarked, the remunerative return for the past season's crop was the result of the exceptionally good yield. An average yield even at the increased price would have left the wheat-grower with only bare expenses for his labour.

The People's Bread.

There should be no difference of opinion as to the wisdom of New Zealand growing sufficient wheat for its own requirements, or of the folly of depending on importations from other countries, with all the uncertainties of shipping, droughts, labour disputes, quarantine embargoes, &c. The question of the regular and certain supply of the people's daily bread is too serious a matter to permit of the entry of any element of doubt, and compels the adoption of a policy that will not admit of any risk of shortage.

The maintenance of the wheat-growing industry in this country, whilst all-important from a reliable and certain bread-supply standpoint, has another aspect—namely, the supply of bran and pollard. These by-products are a necessity for the raising of stock, and the bulky nature of the offal would make importation almost prohibitive.

Recommendation.

In view of these facts your Committee is of opinion that the present system of encouragement to the wheat-growing industry cannot be avoided, and must be maintained until normal conditions return. Arrangements should cover two years' operations ahead, and should be announced early in each season so as to allow wheat-growers to lay their plans accordingly.

Rennet.

The manufacture of rennet for cheesemaking is an industry that can be greatly assisted by scientific research, and the suggested dairy school could advantageously be engaged in this work. At the present time rennet-making is being taken up by several dairy companies, who are using the vells from calves and lambs, but the work is more or less experimental. This industry is surely an essential one, as New Zealand uses 30,000 gallons of rennet yearly. The cost per gallon before the war was 5s., which during the war period increased to £2 10s., and in the event of supplies not being readily available the manufacture of cheese would be brought to a standstill.

Your Committee urges, especially as the raw material is now mostly wasted, that nothing should be left undone in the way of research-work for the utilization of otherwise waste material, and that the services of an expert rennet-maker be secured from abroad.

Scientific and Industrial Research.

Of all the British dominions, New Zealand appears to be the only one that has not organized for research-work since the commencement of the war. Our University colleges, which might have been expected to have led the way as centres of research for the benefit of the people and their industries, have been so

starved from lack of funds that they have hardly been able to rise above the drudgery of teaching. Our most brilliant students have either had to abandon research-work or make some other country the field of their investigations. Among those who have come before the Committee are many University professors who have declared that they were most willing and eager to undertake various specific and highly important investigations, but that unless they were provided with qualified assistants the demands made upon them as teachers rendered the prosecution of such investigations well-nigh impossible.

An Illustration.

The subjects of their researches need not be here detailed, but to give one illustration: It will not be denied that any investigation which resulted in the production of industrial alcohol at a price which would enable it to be used as a cheap motor-spirit would be of enormous economic value to the industrial life of the community, and might in a comparatively short time save to the people of this country more than the whole sum which it is recommended should be expended under this head.

Problems awaiting Solution.

In few respects has the evidence impressed the Committee more forcibly than in this: that there are many pressing scientific problems awaiting solution in this country. These problems concern nearly every large industry, it may be even vitally—as, for example, in the case of the disease threatening the flax industry; while untold wealth awaits the result of scientific investigation into our coals, peats, oils, clays, timbers, and other natural resources, and in even greater degree the intensive application of science to the problems of agriculture.

The Committee, after careful consideration, has come to the conclusion that there will be a much greater prospect of such problems being promptly taken in hand if they can be referred to a body the almost sole duty of which it will be to deal with them, and which will not be subject to delays such as those due possibly to the exigencies of the political situation or the passing of a vote on the estimates, but have an assured finance. Such a body will also be able to organize and co-ordinate effort throughout the Dominion. It is suggested that its finance should be made secure for a period of five years. The Committee is fully convinced that within that time such an institution will have so justified its existence that future requisite grants will be forthcoming without question.

Board of Science and Industry.

The Committee therefore recommends—

(1.) That a Board of Science and Industry be established for the development of national resources:

(2.) That the Board be given an assured finance for five years; it is recommended that it should receive not less than £5,000 for the first year and £20,000 for each of the four following years:

(3.) That the Board shall be representative of the various sections of science and industry:

(4.) That the Board shall, as one of its chief functions, consider all proposals for specific scientific researches, and shall allot to the proper person or persons the duty of conducting such specific researches as it may approve:

(5.) That in order to avoid centralization, and in the interest of economy, the Board in the carrying-out of investigations shall wherever possible co-operate with the University-college authorities in the various centres with a view to making the fullest possible use of their staffs and laboratories; there shall also be set up local advisory boards to inquire into, advise, and report upon local problems:

(6.) That one of the duties of the Board shall be to advise primary producers and those engaged in industrial pursuits as to the results of scientific investigations affecting or calculated to benefit their industries, including processes for the utilization of waste products:

(7.) That the Board shall have power to establish scholarships and also to award bonuses and prizes, with the object of encouraging scientific and industrial research:

(8.) That the Board shall keep in touch with Government Departments and also with scientific and educational institutions, with a view to co-operation in scientific investigation as well as in furtherance of scientific education and of everything which will tend to foster a greater appreciation of the advantages of science not only by producers, but by the people at large.

A Reference Library.

The Committee further recommends that there shall be established a central reference library under the control of the Board, containing the most important works relating to trade, commerce, science, and industry, and containing also the trading and manufacturing journals; for without access to an efficient scientific and technological library an investigator must be greatly hampered in his work. The library should, under proper regulation, be available for persons in any part of the Dominion. In order to avoid duplication it is suggested that existing scientific libraries in Wellington should be, as far as possible, merged.

New Inventions and Bureau of Information.

From evidence submitted it would appear that there is some necessity for the existence of a body to which might be submitted the work of inventors who, through lack of means or opportunity, are unable to have their inventions tested or brought under public notice. It is therefore recommended that in addition to its other duties the Board of Science and Industry shall obtain reports from experts regarding any new inventions respecting which its advice may be sought. It is further suggested that the Board should also serve the purpose of a bureau of information, to which any investigator may apply for advice and direction in his work.

The Cawthron Institute.

The Committee has been informed that the trustees of the Cawthron Institute at Nelson, which is largely endowed for the carrying-on of similar work to that which will come under the control of the proposed Board, have applied to the Government for an annual subsidy of £2,000, being a sum equal to 5 per cent. on the amount of death duties paid by the trustees. The Committee recommends that any amount granted be subject to the enactment of legislation which will ensure that the Institute shall co-operate to the fullest extent with the Board in the carrying-out of researches affecting any portion of the Dominion.

Appointment of Assistants to University Professors.

Finally, the Committee recommends that the Government should grant to each of the University colleges sums of money specially earmarked to provide fully qualified assistants to the professors of scientific subjects, including the subjects of engineering, mining, and medicine. No apology is needed for the inclusion of medicine, for it will be agreed that there is nothing of greater importance for the national well-being than the health of the people. Investigations in this department may have far-reaching effects, not only on the present but on succeeding generations, and may have a very important bearing on physical fitness and industrial efficiency. The professors in all the subjects mentioned are experts, and they are at the present moment, so far as their professorial duties will permit, engaged in specific scientific investigations. To provide the professors with assistants, salaries of £500 per annum will be required. Direct grants from the Government for this purpose are urged, because it is eminently desirable that provision of this sort should be of a permanent character. One result of this course would be the training of a large number of expert investigators, and the University would be greatly assisted in fulfilling what should be one of its most important functions.

Apprenticeship.

The training of skilled artisans by apprenticeship is an important feature of our industrial development. There is a marked shortage of apprentices throughout the Dominion, and this difficulty is accentuated by the fact that many apprentices lost the last year of their training by enlisting at twenty years of age. Even before the declaration of war there was a shortage of apprentices and qualified artisans. Therefore, with the industrial development that we can reasonably expect in the future, there will be great demand for skilled artisans. It will thus be seen that the apprenticeship question is vital to our success in all industrial branches of our national activities. The quality of the products of our workshops and factories proves abundantly that on the whole our tradesmen are well qualified in the handicraft of their trades, but the conditions of the future will call for more scientific knowledge and technical education.

Status of Skilled Artisan.

The Committee finds that the status and remuneration of the skilled artisan is at present little, and in some cases not at all, higher than that of the unskilled labourer, and that until this anomaly is removed we cannot expect our youths to undergo a period of training as apprentices unless we make apprenticeship more attractive and materially improve the status and emoluments of skilled artisans.

Suggested Scheme of Apprenticeship.

The method of apprenticeship now in force in Pennsylvania, U.S.A., known as the " co-operative industrial course," is worthy of serious consideration. The course extends over a period of four years. The first year—when the boy is between fourteen and fifteen years of age—is spent entirely in the trade or continuation school, and during that time he specializes in those subjects which will best fit him for the trade he has decided to take up, or, where he has not already done so, is encouraged to come to a decision, and then receives that tuition which will assist in equipping him for his career. For the next three years—that is to say, when he is between fifteen and eighteen years of age—the lad divides his time between the school and the workshops. All the boys are " paired " in each trade, so that while one is in school the other is in the shop or factory, and *vice versa*. This plan has proved successful in Pennsylvania.

Strengthening Technical Schools.

Your Committee recognizes that the limited capacity of the technical schools does not at present permit of the Pennsylvania scheme being adopted forthwith, but legislation on the lines of that scheme should be enacted without delay and the schools strengthened as speedily as possible to enable this much sounder and more beneficial system to be brought into vogue.

Qualification of Apprentices.

No apprentice should be regarded as fully qualified until he has proved by examination that he has acquired a fair knowledge of the science and technique of his trade, in addition to having acquired the usual standard of practical knowledge and skill.

Shipping.

The question of shipping is all-important to an insular country such as New Zealand, and taking into account the vast amount of produce disposed of abroad, as well as the fact that we require a very large volume of imports, it becomes imperative to consider our present position. The total value of produce and merchandise annually transported by sea—to and from abroad—amounts to over £53,000,000.

The regular passenger-transportation traffic, especially that between the North and South Islands, is of necessity vital to many of our people. Further, the island trade in fruit, &c., is valuable and well worthy of close attention.

Our Overseas Trade.

Naturally, the overseas trade must be our first consideration; and when the tremendous increases in rates during the war are taken into account, together with the phenomenal profits made by shipping companies, and the probability that high freights will continue to be imposed upon shippers, your Committee feels that the position is one calling for immediate and effective action. Your Committee has come to the conclusion that the Government should at an early date convene a conference of producers and importers of the Dominion, with a view to, first of all, endeavouring to come to an amicable and fair business arrangement with the steamship companies, so that reasonable rates and passenger fares may be fixed for a period of years. If the companies refuse to enter into a satisfactory arrangement your Committee is of opinion that the Government should, in conjunction with our producers and importers, establish at the earliest possible moment a State line of steamers for the whole of our overseas trade.

Trade with the Islands.

With regard to the island trade, your Committee would recall to the memory of honourable members the fact that a strong recommendation was made to Parliament by this Committee in October, 1917, with a view to bringing about an improvement in the shipping-facilities and to securing an adequate supply of island fruit for our people, as well as developing generally the island trade; but so far no action has been taken. The Fijian, Samoan, and Cook Islands are "the hothouse of New Zealand," and from them there should be always a plentiful supply of tropical fruits coming to this country; but under the existing condition of affairs we are deprived of and almost cut off from this source of supply. This Committee showed, in its previous report in connection with the carrying-on of the fruit and copra industries, that though the trade was capable of almost unlimited development the shortage and irregularity of shipping, together with the high rate of freights ruling, had restricted trade and prevented a cheap supply of fruit. This Committee then recommended, and now reiterates its finding, that the Government should take steps to bring about an improved and regular steamer service between the islands named and the Dominion, and that an exhaustive inquiry be made by a competent business man, who should visit the islands and report generally upon the whole question of present and future trade with the islands, with a view to its expansion. Your Committee would add that an additional incentive now exists because of the mandatory given to New Zealand in the Samoan Group. In view of the expenditure by this country already, and of the demands that will be made upon it in the future, it is incumbent upon us to insist that the trade with Samoa should no longer be, as it now is, almost entirely in the hands of the United States and Australia.

The Ferry Service.

The condition of the ferry service between the North and South Islands has for a long time proved utterly unreliable and unsatisfactory—in short, the position has become intolerable. Your Committee therefore recommends the State ownership of the ferry service, and that the steamers to be employed be of the oil-burning type, and be worked in conjunction with the Railway Department.

Coal-ships.

The transport of coal has also been considered, and in order to complete the chain of coal-supply from mine to depot your Committee declares the State ownership of coal-carrying steamers to be necessary.

Coastwise Service.

In considering the question of coastwise shipping your Committee has become aware that settlers using the small ports are grievously hampered because of the infrequent and irregular steam services. This state of affairs should at once be remedied by the Government. At the present time the shipping companies are free to increase fares and freights and to decide upon the services to be run.

Your Committee suggests that, by arrangement with the existing companies, the Government should have a voice in the fixing of rates and fares charged and the services to be run.

Railway Freights and Sidings.

Freight Rates.

Your Committee has taken evidence regarding railway freights, and it was clearly shown that the tariff is badly in need of revision, especially in view of the altered values of many of the articles carried; further, the rate-classification list should also be altered and brought up to date. The present rates were mainly fixed over thirty years ago, and in some instances have existed without alteration from that time. In the Committee's opinion nothing should prevent immediate attention being given to this subject. The increases of 10 per cent. and 10 per cent. imposed during the war period cause confusion, and further emphasize the need for revision of the railway tariff. Your Committee strongly recommends abolishing this special loading and substituting a definite rate in all cases.

Railway Earnings.

The general question of railway policy regarding revenue is one your Committee is of opinion should be reviewed by Parliament, especially seeing that further increased charges in fares and freights are foreshadowed by the evidence given the Committee by the General Manager. Our railways have in the past been looked upon as an adjunct of land-settlement and an aid in the development of our natural resources rather than as an investment from which large profits should be gained. For many years a profit of 3 per cent. was regarded as sufficient, and any excess over this rate was followed by reductions in passenger charges and freights.

In 1915–16 the rate increased to $4\frac{3}{4}$ per cent., and in 1916–17 it reached its maximum—namely, $5\frac{1}{4}$ per cent. In the year following, however, the rate fell to a little over $4\frac{1}{2}$ per cent. These increases are largely due to the scale of rates now ruling. The question naturally arises: What rate of earning-power is expected by Parliament? That being decided, the charges should, in your Committee's opinion, be adjusted, as far as practicable, on the basis of reasonable maximum earnings.

Your Committee also considers that in framing the rates every encouragement should be given all our New Zealand industries, on the general principle that goods manufactured or produced in the Dominion should receive preferential rates as against imported articles of a similar class.

Your Committee also recommends that when the present railway tariff is being revised the Board of Industries and Commerce should be afforded an opportunity of expressing its opinion as to the effect of the alterations on the commerce and industries of the Dominion.

Freight Anomalies.

Freight anomalies such as exist on many sections of the railways should be eliminated. As an illustration, evidence was tendered which showed that on the same goods from Christchurch to Timaru the rate is 32s. 1d., whereas from Timaru to Christchurch it is 59s. 8d. On goods from Dunedin to Oamaru, a distance of seventy-eight miles, the rate is 12s. 6d., whereas from Timaru to Oamaru, fifty-three miles, it is 18s. 2d. per ton.

Private Sidings.

Private railway-sidings are not encouraged by the Department, and many complaints were made to the Committee in respect to this matter. Your Committee considers that adequate siding-facilities should be given to manufacturers, merchants, millers, and others on more reasonable terms than is the custom at present. The present conditions provide for the grantee paying the whole cost of the siding, including labour and material; in addition, an annual rent of £25 to £50; and when the siding is no longer required the material becomes the property of

the Department without compensation to the grantee. Obviously these stringent terms and the double charge constitute an imposition upon trade which operates against the development of many concerns. Under proper conditions and with due regard to traffic needs, the Department should be directed to afford every facility to trade and commerce in harmonizing the railway system with the Dominion's needs.

Main Traffic-roads.

The advent of the self-propelled vehicle has introduced new conditions into the roading problem. Not only does this vehicle add to the wear-and-tear of the ordinary roads, but it has had the effect of enormously increasing the distance from which through traffic comes, with a consequent large increase in the volume of such traffic and in the cost of maintenance. The old type of road is unequal to the strain, and with the number of motors ever increasing the problem has become acute, and a remedy is imperative. The Committee was impressed by what had been done in the formation of tar-sealed roads in the Provincial District of Taranaki, which has provided an object-lesson for the rest of New Zealand. It is clear that a new type of road, as distinct from the ordinary macadam road, is required. It is not equitable that the whole cost of either construction or maintenance of such roads should fall on the local authority through whose district they run.

The Committee recommends—

(1.) That the Government formulate a comprehensive scheme to deal with this question, and such scheme shall include (*a*) the classification of the main traffic-roads; (*b*) State assistance, the amount to depend on the classification; (*c*) provision to ensure that such assistance shall be used for the improvement of the main traffic-roads.

Subsidies.

(2.) That an alteration be made in the basis on which subsidies are paid to local authorities from the Consolidated Fund.

Under the present system a subsidy of 10s. in the pound is provided where the total sum raised in rates does not exceed £1,000, and a subsidy of 5s. in the pound where the rates exceed that sum but do not exceed £10,000. In counties where the rates exceed £10,000 no subsidy is payable in respect of rates raised over that sum. This is an inducement to cut large counties into small ones so as to obtain a subsidy on all the rates, and also to discourage a county from levying a rate which would produce more than £10,000.

A uniform subsidy should be paid on all rates raised, without any limitation as regards total amount or amount of rate, so that the larger the amount raised in rates the larger the subsidy received.

Toll-gates.

(3.) That on these proposals being given effect to it shall not be lawful for any local authority to establish any toll-gate, and all toll-gates then existing shall be abolished; and that section 5 of the Counties Amendment Act, 1915, and all by-laws made under that section, be repealed.

In urging the roads question upon the attention of the Government it may be pointed out that few things contribute more to the amenities of country life than good roads.

Fertilizers.

Phosphates.

Supplies of manures at cheap rates are absolutely essential to an increase in production, and the recent announcement of the acquisition by New Zealand of an interest in the ex-German, now British, island of Nauru will be received with satisfaction by the farming community, as this island has large deposits of phosphatic

manure, which is in great demand in New Zealand. So as to ensure that it will be supplied at first-hand cost your Committee would urge that the handling of the output be undertaken by the Government, and that they also, if necessary, provide the requisite shipping.

Nitrates.

The shortage of the world's supply of nitrates, and the fact that New Zealand has an abundant supply of water-power and unlimited deposits of lime, place it in a good position to produce its own supplies at a reasonable price, and at the same time it is possible that an export trade might be developed. Evidence was submitted to the Committee that the Bowen Falls is an ideal source of water-power for this purpose, and that a syndicate was prepared, if it could get the rights for this power from the Government, to undertake the manufacture of nitrates. The Committee would urge that the Government undertake the manufacture; or, failing that, that private enterprise be encouraged to do so, and that the requisite water-rights be granted, with certain safeguards as to the price of the product and the right of resumption; but the Committee must emphasize that there should be no further delay in dealing with this question.

Potash.

During the war there have been no importations of this valuable fertilizer, and in consequence much of our land is suffering more or less impoverishment. The available source of supply was in German territory, but we understand that it is now under the control of the French Government, and no doubt France would grant an application from this country for a sufficient supply for its requirements. In view of this it is recommended that the Government communicate with the French Government without delay, and, if the price be not prohibitive, arrange for a supply of this fertilizer.

Wool-scouring.

Evidence was submitted to the Committee by those interested in the wool-scouring business as to the desirability of having the wool-clip, or a proportion of it, scoured in New Zealand. It was claimed that besides providing additional employment for a large number of people a considerable saving in freight would be effected by the removal of the impurities, and that several valuable by-products would be secured if the scouring-operations were conducted on scientific lines. At present these by-products are lost to the Dominion by the export of greasy wool and the existing methods of scouring.

Valuable By-products.

It was stated that in wool-fat in the 1916 wool-clip the Dominion lost £279,750, and in potash 4,650 tons, valued at £69,750 at pre-war prices, and this loss is and has been an annual one. In addition to this the saving in freight by shipping scoured wool would run into many thousands of pounds.

Conference recommended.

The Committee feels that these figures and statements are too important to pass by without directing the attention of the Government to them. It recommends that a conference of the representatives of the wool-growers, exporters, and wool-scourers be called, and that they be asked to ascertain if a scheme cannot be prepared whereby this serious national loss may be prevented. The question of the treatment of seedy wool in this country could also be considered by this conference.

Fostering Local Industries.

One of the outstanding, and certainly regrettable, facts disclosed to your Committee was the prejudice existing against many of the articles manufactured in our own country. Take, for example, boots. Even though quite as good an article can be produced in New Zealand as may be imported from Britain or America, the

local buyer will too often demand the imported article, though the price is much higher. And, as with boots, so with many other articles. Your Committee would therefore suggest that an effort be made to induce our people to patronise their own industries, and it recommends that manufacturers be encouraged and assisted in prompting a publicity campaign in order to bring before the people the quality and value of every class of New-Zealand-made goods. The campaign should include exhibitions, displays at local shows, wall-sheets in schools and at railway-stations, leaflets for distribution to school-children, and specially written and illustrated articles in the upper-standard copies of the *School Journal*.

Your Committee has also had evidence of the apparent disinclination of public Departments to encourage local manufactures. During the prevalence of the recent epidemic this country would have been almost destitute of disinfectants but for the supplies forthcoming from the New Zealand manufacturing firms. Yet some of the largest consumers of disinfectants in ordinary times had never thought it worth while to patronise the local makers. There are a number of other productions the manufacturers of which get no orders from our State Departments, and your Committee recommends that such a questionable state of things should be remedied at once.

Iron and Steel.

Ore and Sand Deposits.

The Dominion's geographical isolation and remoteness from overseas supplies of iron and steel should impel us as far as possible to adopt a policy that will enable us to rely on our native resources. Pioneers engaged in the production of iron and steel from the ores and sands of New Zealand have met with varying success, but up to the present there is no well-established concern engaged in the manufacture of this most important essential. The Committee is convinced that there are considerable quantities of the raw material, both ore and sand, in the Dominion. The evidence submitted as to whether the manufacture of iron could be profitably undertaken in the near future was somewhat contradictory; although many witnesses agreed that iron of good quality has been produced. There was a marked disagreement among witnesses as to the presence of suitable coal in sufficient quantities in the vicinity of the ore deposits. It was confidently asserted by some witnesses that so far as the working of the Parapara iron deposits is concerned, coal of good quality and in sufficient quantity exists in the Collingwood County. Other witnesses doubted the accuracy of this statement. In view of the potential value of these coal-measures, if they do exist, and also in view of the contradictory evidence on the point, your Committee recommends that as soon as practicable the district be systematically prospected for coal deposits.

Rails, Pig and Bar Iron.

The output of the Lithgow works in Australia is about 40,000 tons per annum, whereas New Zealand's present demand for iron and steel is about 100,000 tons. The Committee believes therefore that, provided the minerals are of the necessary quality and quantity, the manufacture of pig iron, railway-rails, and bar iron can be carried on successfully in New Zealand. It is disappointing to have to note that though the Government in 1914 offered a bonus for the production of a marketable iron, no claim has yet been made for payment of any part of such bonus.

Services of Metallurgist.

In view of the word's shortage of iron and steel, and of the increasing demand for these commodities within the Dominion both by the State and by private enterprise, your Committee is of opinion that the value of our iron deposits, both ore and sand, should be thoroughly examined into by an expert metallurgist, who should have a thorough knowledge of the manufacture of iron and steel by modern methods, and whose services should be secured for the special purpose of advising as to whether the quality of the deposits and the conditions obtaining with respect to them, and in the country generally, are such as warrant the establishment of the industry in New Zealand. It is recommended that the expert should be obtained

either from Great Britain, Canada, or the United States. Further, in view of the great national importance of this question, your Committee urges that no time should be lost in giving effect to this recommendation.

Scrap Iron.

The manufacture of steel castings and bar iron from scrap iron available in the Dominion has become a very important adjunct to the iron industry. In order that this enterprise may be successfully continued the Committee recommends that the export of scrap iron and steel be prohibited.

Manufacture of Agricultural Implements.

Prior to the war the iron and steel industry was in a languishing condition—a marked contrast to the pre-war progress of our primary industries. It is a reasonable supposition that there should have been a proportionate expansion of the agricultural-implement industry during the same period, seeing that from 1891 to 1911 some 12,000,000 acres of land had been brought into profitable use; but the reverse was the case, for during the years mentioned only sixty-five employees were added to the number of operatives engaged in the manufacturing industry.

The history of the agricultural-implement manufacture in this Dominion is one of which we have every reason to be proud. Our manufacturers have followed closely and intelligently the needs of the farming community, and many useful and practical aids to tillage are now available to the agriculturist. So successful have these efforts of the manufacturers been that implement-makers in other countries have found it profitable to copy many of the New Zealand productions; and to-day the local industry has to face competition from these copied articles, backed up by the huge financial strength of the outside manufacturing concerns, with the result that the major portion of the Dominion's agricultural-machinery requirements are imported from abroad—mainly from a foreign country. During the war period this outside competition was checked, owing to shortage of shipping and consequent high freight rates, and the local manufacturer was able to compete on favourable terms. The war being ended, the conditions referred to cannot be expected to last much longer, and the question is whether or not the stability and success of our own industries can be secured. Your Committee would recommend, conditionally on our local manufacturers producing implements equal in quality and workmanship to the imported article at a price to be approved by the Board of Industries and Commerce, that there should be imposed a tariff duty sufficient to secure to the local manufacturer a fair and reasonable profit.

The Engineering Trade.

Your Committee inquired as to the conditions in the engineering trade before and during the war, and is of opinion that it is useless to gauge the prosperity or otherwise of the industry by war-time conditions. The high freights and the difficulty of obtaining machinery from overseas compelled the placing of orders with Dominion manufacturers, and in spite of great disabilities those engaged in the industry performed a worthy part in providing for the Dominion's requirements.

The Committee places on record its conviction that without the capable engineer at the head and the skilful artisan engaged in suitably equipped works, New Zealand could not have carried out the necessary fitting and refitting of transports, the manufacture of and repairs to freezing machinery and shipping, and other essential works. To make New Zealand as self-reliant as possible in war and peace, to develop her latent resources, and to build up a strong and healthy industry providing constant employment for a large number of the people, the Committee recommends that a substantial tariff be placed on imported machinery that can be commercially and successfully produced in the Dominion.

NEW ZEALAND WINES.

A considerable amount of capital has been invested in the establishment of vineyards as well as in the requisite and costly plant for the manufacture and

storage of wines. Your Committee has taken evidence from vignerons and others, with the result that it has come to the conclusion that legislation should be provided to remove this industry from the present uncertainty and possible danger of being destroyed by the votes cast on the question of prohibition of the liquor trade. In a portion of Canada which is now under prohibition this principle has been adopted, and in Australia it is proposed to make a similar provision. Without in any way desiring to raise the debatable question of liquor or no liquor, your Committee is of opinion that the manufacture of wines of good quality and unfortified should not be interfered with.

Woollen Industries.

Evidence given before your Committee goes to prove that there is much dissatisfaction because of the high price charged for all lines of woollen goods, and it therefore recommends that an inquiry be made as to whether or not there is exploitation or profiteering on the part of manufacturers or merchants. The woollen companies have the benefits of a protective Customs tariff and the supply to them of the raw material at the commandeered price, which is about one-half the amount paid in the open market. Evidence has been submitted to your Committee that there are too many intermediate profits between the producer and the consumer. Your Committee is of opinion that this cause of complaint might be removed if the retailer were enabled to deal direct with the mills, and not be compelled, as at present, to purchase from certain wholesale merchants.

Flour-milling.

In order to regulate the price and to lead to the more equable distribution of flour, with the view of controlling the price of bread, the Committee strongly recommends that the Government shall establish at least one flour-mill in the North Island and not less than two in the South Island, and that such mills shall be run on commercial lines, including the payment of all rates, taxes, and other outgoings for which private firms are liable.

Pollard-adulteration.

It was shown in evidence that whereas the price of pollard is regulated, nothing is done to provide for a standard of quality, and much pollard is lowered in quality owing to the addition of bran. The Committee recommends that, in addition to fixing the price, a standard of quality be determined.

Fishing Industry.

In a survey of the sources of food-supply it has to be admitted that the providing of fish for our people has been largely neglected. With its great extent of coast-line in proportion to its area, and with its waters teeming with edible fish, it might have been expected that New Zealand would have been a country of fish-eating people; but such is not the case. Before the advent of the European the Maori could well have been placed in that category. In Canada the annual consumption of fish for every man, woman, and child is at the rate of 25 lb. per head; in New Zealand it is 5 lb., and is mostly confined to the people in the cities and coastal towns. Valuable recommendations have been made from time to time by the Chief Inspector of Fisheries, but successive Governments have failed to give such recommendations serious consideration.

How to develop the Industry.

How, then, is the development of this industry to be brought about? The answer may be given in a single word—organization: organization for catching,

distributing, and, where necessary, preserving the fish. To-day the fisheries are administered as part of the Marine Department (which is largely concerned with shipping and lighthouses), while both the Tourist and the Internal Affairs Departments are concerned with fresh-water fishing. The Committee is of opinion that the fisheries should be a distinct and separate branch of the Marine Department, with a staff of its own composed of men who have a special knowledge of the work.

Catching.

The Committee, after much consideration, has come to the conclusion that the only way to provide a regular and adequate supply of fish for the needs of our people at prices within the reach of all is by trawling. The trawlers should be of the most modern and approved type, both in size and equipment, able to travel considerable distances and to be largely independent of weather conditions. The Government of New South Wales has for some years been engaged both in catching and distributing fish. Queensland is following on similar lines. Municipal enterprise in the Auckland District has done something in the same direction, and has been fairly successful—at any rate, fish is sold in the Auckland market at a much cheaper rate than in any of the other large centres; but little has been accomplished elsewhere in New Zealand. The Committee is of opinion that private enterprise alone cannot be depended upon to undertake fishing-operations on an adequate scale, and recommends that the State engage in the business. Those who are privately engaged in the industry should receive assistance from the State by way of loan to encourage them to purchase larger and more powerful boats. The State should also offer to purchase the whole of their catches.

The work of thoroughly prospecting the fishing-grounds section by section in a vessel specially adapted for this purpose should be undertaken at the earliest moment.

Preservation for Market.

All the witnesses agreed that one of the causes of the high price of fish was that all the catches did not reach the market, and that if the fishermen could rely on every fish caught being purchased from them they could afford to sell at a much lower price. This object can be attained by the establishment of cool-storage and icemaking plants near the fishing-grounds. Such plants will enable surplus catches to be dealt with, and will ensure all fish reaching the market in good condition. It will be necessary for the State to take in hand this work wherever it is engaged in trawling. In other cases it should either establish or assist in the establishment of such plants.

Export.

It is a remarkable fact that in 1912 our importation of dried, salted, and canned fish amounted to no less than £108,185, and last year, notwithstanding war conditions, the amount was over £104,000. With the superabundance of fish in our waters, instead of importing we should have a large export trade. The Government should encourage the tinning, curing, and commercial preparation of fish food. The canning of crayfish is specially mentioned, as there is a large supply all around the New Zealand coast; and the market has already been opened up for us by the Government of Cape Colony, where they have the same process. The Committee is assured that this has the prospect of becoming a large industry.

Prevention of Waste.

Fish-chilling and icemaking plants, while preventing loss of fish in warm weather, will go a long way towards preventing the great waste of fish that takes place throughout the Dominion owing to fish becoming stale by the time it reaches the market. Apart from this phase of the question there is a very serious loss through the non-utilization of waste products, from which fish-oil and fish manure might be manufactured. Any scheme, therefore, for the development of our fisheries should

include the establishment of factories for the utilization of fish-offal and fish-waste from the cleaning-sheds; also the utilization of the vast quantities of coarse fish which are thrown back into the sea.

Distribution.

The Committee is of opinion that a reduction in price would certainly result from improved methods of transportation. Rapid transit from port to market and for distribution inland is essential if fish are to be distributed in good condition. It is also most important that improved and up-to-date fish-vans should be provided on our railways. Such vans attached to our fast trains, wherever practicable, would largely assist the development of the fishing industry, and provide supplies to inland towns. The Committee recommends that the retailing of fish be left to private enterprise under regulations governing the price. In this, however, as in other branches of the industry, the pioneer work of New South Wales and Queensland will doubtless have many valuable lessons for this country, and it is recommended that an exhaustive report be obtained as to what is being done by these States.

Whaling.

The most pressing demand in this branch of the industry is that no persons should be permitted to kill or molest whales unless such persons are able to properly deal with and utilize the whole of the carcase. It was urged by some witnesses that if licenses to engage in whaling are only to be issued subject to the licensee putting up an extensive plant to deal with the whole carcase the license should confer the sole right to whale within a limited area. The Committee endorses this view.

Summary of Recommendations.

The Committee's recommendations may therefore be summarized as follows:—

(1.) That the Fisheries Department be administered as a separate division of the Marine Department, with a Director and staff.

(2.) That the Government should acquire and work steam-trawlers, and should also establish fish-chilling and icemaking plants in proximity to the fishing-grounds, and engage generally in the business.

(3.) That Government advances be made to fishermen on the security of their boats and fishing-outfit.

(4.) That the fishermen's boats be insured by the State Office at a low rate.

(5.) That a systematic, scientific, and practical survey of fishing-grounds be undertaken without delay, and that the Government purchase a properly constructed and equipped vessel for this work.

(6.) That Government assistance be given to encourage the canning, curing, and commercial preparation of fish food, special attention being given to the canning of crayfish.

(7.) That encouragement be given for the manufacture of fish manure and the production of fish-oil (other than whale-oil).

(8.) (*a.*) That a special license shall be issued to any person desiring to engage in whaling.

(*b.*) Such license shall confer the right to whale in a certain defined portion of the coast, extending for a distance of not more than sixty miles and thus permitting whaling within a radius of thirty miles.

(*c.*) The license shall provide for a site for a shore factory, and shall only be issued on condition that the applicant furnishes a guarantee and undertaking that he will forthwith establish an up-to-date plant capable of dealing with a certain number of whales and of utilizing every portion of the carcase.

(*d.*) Licenses granted for one portion of the coast shall not be available to permit of whaling in any other portion in respect of which a license has been issued.

(*e.*) That no unlicensed person shall be permitted to chase, kill, or attempt to kill a whale.

(9.) That properly constructed and up-to-date railway-vans be attached to the trains carrying fish.

Oil-production.

Motor-spirits and mineral and other oils for the purposes of motive power are coming into almost general use in connection with our industries, over 16½ million gallons, valued at £1,200,000, having been imported in 1918. The unsatisfactory position in regard to the whole question of oils is that the sources of supply are in far-distant countries, and the companies controlling the oil are in the position of unassailable dictators as to the price to be charged. Many countries similarly circumstanced to New Zealand are endeavouring to secure supplies from local sources, so as to render them independent in this respect; and to that end are thoroughly testing their mineral-oil possibilities, and various methods for the extraction of oil from what are at present waste products.

New Zealand has several promising sources from which oil can be obtained, the principal ones being petroleum-wells, shale deposits, and kauri-swamp peat; and very valuable evidence was tendered to your Committee on those subjects. First, in respect to—

Mineral Oil.

Boring has been going on for many years in several parts of the Dominion, with, up to the present, disappointing results; yet the indications disclosed by the bores, and the actual oil secured—some millions of gallons—afford sufficient encouragement for further investigation of the fields. Private enterprise, which in the past has carried out this work, has just about reached the end of its resources; and in the case of one company in Taranaki the Government is subsidizing it to the extent of paying the cost of wages, coal, &c., while it is engaged in putting down one of the deepest bores yet undertaken in the Dominion. The results from this bore are awaited with interest. Your Committee wishes to express its commendation of the Government's action in this matter, and would urge that encouragement by way of financial assistance be given for the thorough testing of the Dominion's oil possibilities.

Offer of Anglo-Persian Oil Company.

It was stated to your Committee that the Anglo-Persian Oil Company had offered to form a syndicate, having a capital of, say, £100,000 (the New Zealand Government to take one-half interest) if satisfactory arrangements could be made for controlling likely oilfields, to geologically examine and test these areas; and if the test operations afforded satisfactory results the Anglo-Persian Oil Company would form another syndicate or company, having a capital of, say, £500,000 (the New Zealand Government to take one-half interest), to produce, refine, and market oil and oil-products on a large scale. This British company has its works in Persia, where it operates, in conjunction with the British Government, the oil-wells in that country. It was pointed out that the company has in its employ expert oil geologists, whose knowledge and experience would be available for testing the Dominion's oil prospects if this syndicate were formed. In view of this evidence your Committee would urge that the Government seriously consider entering into an arrangement with this company on the lines suggested.

Shale-oil.

The production of oil from the shale deposits in the Dominion has for several years been suspended, but with the increase in prices attention is being again

turned to its production. Evidence was submitted to your Committee that the shale industry is capable of being established as a considerable one if the companies contemplating recommencing operations are given assistance, first, by the Government undertaking the thorough testing of the extent of the deposits, and then by giving a bonus on the production of a specified number of gallons of oil and quantities of other marketable commodities. Your Committee would recommend that encouragement on the lines suggested be given to this industry.

Kauri-swamp-peat Oil.

Evidence was tendered to your Committee that the kauri swamps of the North Auckland district contain peat which is rich in kauri-gum oil, and that a company had taken up a tract of this land and erected a small plant for the extraction of the oil. The company had commenced operations, and proved that the oil could be extracted in sufficient quantities to make it a payable industry; and they urged that they, having proved the oil-value of this peat, should have money advanced to them by the Government to enable the erection of an adequate plant to deal with the extracting in a wholesale way, and also that a bonus per gallon be given on the oil produced, to enable them to meet their initial expenses. It may be pointed out that the success of the company would materially enhance the value of the large area of similar Crown lands in the North Auckland district.

Dr. J. S. Maclaurin, Director of the Dominion Laboratory, in his evidence on this subject expressed the opinion that should the Government decide to assist the kauri-peat-oil industry, a preliminary survey of the more important swamps should be made and a comprehensive series of samples taken for analysis. Your Committee concurs in this view, and, taking into consideration the importance of the matter, would urge that no time be lost in carrying out this work, when, if the result confirms the company's statement, the assistance asked for be granted.

The Flax Industry.

There have been many fluctuations in this industry, not only because of the varying of prices in the world's markets and the increased cost of production, but owing also to the heavy increases in outward freights. Take, for example, the fact that in 1913 there were exported from this country 34,391 tons of fibre and tow, valued at £797,062, while in 1918 the value of the fibre and tow exported was £1,408,147. Notwithstanding this increase in value, the millers find themselves in a position little short of parlous owing to the huge advance in freights, and they are of opinion that unless some more reasonable arrangement be come to in this respect the industry will be so seriously hampered that a collapse may occur at any time. The industry affords employment to a large number of men, and this aspect must therefore be taken into serious consideration.

It must be borne in mind that the same archaic and wasteful methods are now employed in production of fibre as were in existence forty years ago. Practically there has been no improvement in quality, while no less than 30 per cent. of the fibre is lost in the processes employed. This being so, efforts must be made not only to improve the quality of the fibre, but to eliminate waste. In the past bonuses were offered for improvements in milling-machinery, but with little or no success. The offer was withdrawn some years since, and the Committee recommends, in the first place, that a substantial bonus be again offered to inventors of improved machinery.

Information is needed as to the uses to which the fibre is put in the countries to which it is exported. The possession of such knowledge would doubtless lead to the working-up of the material in this country in such manner as to encourage the establishment of quite new and more profitable industries. In order that these possibilities may be put to the test, the Committee recommends that an expert be appointed whose duty it would be to inquire into improved methods of production; the careful selection of flax-plants; cross-fertilization; hybridization; planting and growth; and, further, to advise and assist the flax-millers in all such directions as will make for the improvement and sustenance of the industry.

The treatment of flax-refuse from the mills must also be taken in hand; for here, as in the conservation of the fibre, waste must be prevented, and what is now thrown away may be turned into profitable products. There are no less than 8 tons of refuse from every 9 tons of green flax. In one mill there are 50 tons of refuse per day, the whole of which is at present valueless; and in some cases this refuse is a source of trouble and annoyance. Scientists have informed the Committee that the whole of this waste contains valuable constituents—such, for example, as commercial alcohol and potash—and it is recommended that a bonus be offered, payable on the production of a marketable commodity.

Gold-mining.

Unfortunately, time did not permit an examination into the gold-mining industry on the Hauraki Peninsula; but from the evidence tendered in other districts your Committee has arrived at certain conclusions. It is clear that this industry has been permitted to drift for many years without any sustained effort being made by the Government to revive and foster it. It should be remembered that no less a sum than £88,000,000 has been produced from our goldfields during the past sixty or seventy years, and your Committee is of opinion that the questions of the maintenance of the industry and its future development are of national importance. The Waihi Mine itself has given, up to the close of the year 1918, returns to the value of over £11,000,000, and it is surely reasonable to hope and expect that other mines of great, if not equal, wealth may yet be discovered in this country.

Encouragement of Prospecting.

The provision of cheap water-power would undoubtedly materially assist not only gold but other mining industries. The development of the water-power of Tasmania has resulted in the establishment in that country of great metallurgical works, and there is no good reason why the same result should not be expected in our own country when cheap electrical power is provided on a national scale. Prospecting as carried on for some years has proved a failure, and your Committee is of opinion that the Government should equip and send out prospecting-parties under the control, where possible, of a man with local knowledge, the whole work to be carried out under the direction of the Geological Survey Department. This Department has been doing valuable work since 1905, but in order that the best practical results may be obtained, prospecting-parties under Government control should be associated with the Department's work. Under the present system large sums of public money are expended on geological surveys of which little or no use is ever made.

Other Minerals and their Treatment.

In order to deal successfully with the many reefs which contain a percentage of lead, zinc, copper, galena, &c., it is imperative that smelting-facilities should be provided by the State. At present only the gold or silver is extracted, and the base metals are lost, because the expense of sending the concentrates to Cockle Creek or other smelting-works in Australia is prohibitive. If a smelting-furnace were established in New Zealand in a central position the cost of treating the concentrates would be reduced probably by £4 per ton, and many properties now lying idle might be profitably developed, and in addition miners would be encouraged to prospect for, and produce, other minerals than gold.

State Stamper Batteries.

As a matter of fact, the present mining legislation, with its accompanying regulations, is sadly out of date, and requires a thorough overhaul by a body of mining experts. A further and necessary adjunct of the industry would be the setting-up of Government stamper batteries for the treatment of parcels of ore at bare cost, or even less.

The Health of the Miner.

Your Committee is further of opinion that if the gold-mining industry is to be encouraged in this country one of the first duties of the State must be the making of the fullest provision for ensuring the health of the miner and removing the curse of the industry—miners' phthisis. No industry is worth encouragement if the health of the men engaged in it cannot be secured.

Asbestos.

The production of this mineral in such quantities as will enable certain industries to obtain supplies at a reasonable price is most desirable. Your Committee has been assured that in one district—Takaka, Nelson Province—there are large deposits of asbestos and of French chalk. A company whose deposits are about thirty miles from Motueka claims that the proved extent of its available marketable material would provide a sufficient quantity of asbestos for those industries whose products are dependent upon this material. The company referred to states that all that is required for the successful development of its deposits is the provision of reasonable road access.

Your Committee recommends that an exhaustive examination and report be made by the Mines Department, in order that the question as to whether or not there exists a supply of a marketable article may be set at rest. If it be found, after due examination and inquiry, that asbestos exists in sufficient quantity the Committee recommends that the Government render reasonable assistance for the successful development of the industry.

Housing.

The unprecedented shortage of suitable houses throughout the Dominion is a pressing difficulty in town and country alike. The evidence given before the Committee proves that the evil is greater and more serious than is generally supposed, and that it is likely to become more acute in the near future. The reasons for urgency in proceeding with a comprehensive building scheme are—

(*a.*) Stoppage of building during the war:
(*b.*) A laudable determination on the part of our people to have better homes:
(*c.*) Urgent necessity for abolition of slums in the interests of public health:
(*d.*) The advisability of increasing the rural population by providing comfortable workers' homes in country districts:
(*e.*) Rapid return of soldiers, many of whom have recently married or desire to marry:
(*f.*) Necessity for allaying unrest by providing a sufficient number of reasonably good homes at a moderate cost of rental; this applies especially to miners, railway men, waterside workers, city labourers, and artisans:
(*g.*) Probability of immigration into New Zealand.

Although a modicum of effort has been made by the State to give facilities to people of moderate means to purchase homes of their own, the quantity of work actually done has not been sufficient to materially improve the position. For some time to come the industrial life of New Zealand will be unsettled, and, while the Committee does not anticipate any shortage of employment, a considerable number of wage-earners will, as heretofore, find it necessary to move from place to place following up their usual avocation. Hence, in considering a practical housing scheme for all our people, it will be necessary to make provision for good sanitary houses for letting, in addition to giving the best possible opportunities to people desiring to make their houses their own.

Hitherto the supply of houses has been left almost entirely to private enterprise, but we have reached a stage at which the housing problem is much too acute to be longer left entirely to that uncertain source of supply.

Construction.

The almost universal practice of building in wood—which in many cases consists of a large proportion of inferior timber—should be improved upon as far as practicable. The life of a wooden building is estimated at forty years, which means the complete rebuilding of all such houses every forty years. Encouragement should therefore be given to build in brick, concrete, or other durable material.

The Committee therefore recommends that a comprehensive scheme of housing construction be undertaken on the following lines :—

Brick, concrete, or other durable material to be used wherever possible, except in cases where it is probable that the sites will be required for other purposes within a period of thirty-five or forty years, or in industries such as coal-mines that may be worked out within a limited time. Considerations of economy should not be permitted to bring the dwellings below a reasonable minimum standard of accommodation, attractiveness of design, sanitation, and convenience.

National Housing Department.

The Committee recommends that a national Housing Department be set up, to be under the control of a Minister of the Crown and administered by a Commissioner, and two Associate Commissioners who should be men of business experience with a knowledge of the building trade. Power should be given to acquire land and buildings compulsorily, to purchase land, make roads, acquire and carry on sawmills and joinery-works; to purchase and import supplies, purchase plant, manufacture articles required for the dwellings, &c.; in short, the Commissioners should have wide powers to push on vigorously and in a businesslike way the work of providing the much-needed houses. This would involve vesting in the Housing Department under the Commissioners the powers at present exercised by the Workers' Dwellings Branch of the Labour Department. The necessity for a progressive housing scheme on national lines is so pronounced and calls for such vigorous execution that the machinery of any existing Department could not reasonably be expected to cope with it.

Ways and Means.

Ample funds must be provided. The Committee recommends that an amount up to £2,000,000 be made available, to be drawn on by the Commissioners as required, and to be supplied to them at 4 per cent. interest, the difference between this rate and the rate which the Government pays for the money, together with the cost of administration of the Department, to be borne by the State. The sum indicated will provide about three thousand additional houses, accommodating perhaps fifteen thousand people, which will to some extent remove the crushing disabilities at present existing.

National Housing Scheme.

The houses provided under the national scheme should be available for preference to men having incomes below £300, with an additional allowance of £25 per child over three in number. Where the houses are let, the rental basis should be 5 per cent. plus rates. In the cases of houses sold, the selling-price should be the actual cost plus overhead charges. Liberal terms should be given, on a 5-per-cent. interest basis. Where possible the houses should be erected in numbers of ten or more; sufficient land should be provided, where possible, for a garden; and trams, railways, or other quick means of transit should be an important factor.

Local Bodies' Building Schemes.

The Committee further recommends that local bodies, including Harbour Boards, be empowered, in conjunction with the State, to initiate and carry into effect local housing schemes. Where building schemes are considered desirable or necessary within the jurisdiction of any local body, such local body shall be

empowered to frame such scheme in consultation with the Commissioners, and if approved by them the necessary capital shall be advanced at 4 per cent. interest.

The Commissioners should be vested with power to investigate and approve, modify, alter, or reject all building schemes submitted by local bodies. Such investigation should include the following points :—

(*a.*) Whether the demand is sufficient to ensure that the houses will be permanently occupied.

(*b.*) Whether the land is being purchased at a fair price.

(*c.*) Whether the site is suitable from the point of view of healthfulness of locality and reasonable proximity to employment.

(*d.*) What material is most suitable and economically available in each locality.

The Committee recommends the following financial provisions shall apply :—

Loss of interest as between 4 per cent. and the actual cost of loans to be met by the State.

Rented houses to be the property of the local body, who shall pay, in addition to this 4-per-cent. interest, a sinking fund of 1 per cent.

Weekly rent to be at the rate of 5 per cent. on cost of land and building plus weekly proportion of the annual rates.

Cost of maintenance, insurance, administration, and loss by bad debts and non-letting of houses to be borne by local body.

Every occupier shall have the option of purchasing the property occupied by him, at no greater price than will secure the local body against loss.

A local building scheme might originate in any one of three ways—

(1.) By the initiative of the local body, without a poll.

(2.) By a petition of residents to the Commissioners.

(3.) By direction of the Commissioners after public inquiry.

Advances to Industrial Concerns and Farmers.

For providing homes for employees the Government should lend money to approved companies, employers, and farmers on the following conditions :—

Such advances shall be made only when the building scheme has been approved by the Commissioners.

Advances to be for the purpose of providing houses for workers, with preference to those having incomes below £300, with the addition of £25 for each child over three in number.

The rate of interest charged shall be 5 per cent. and the sinking fund 2 per cent.

The borrower shall be wholly responsible for repayment of the loan.

The rent shall be based on 5 per cent. on the cost of the building only.

The borrower shall bear the cost of maintenance, rates, insurance, and provide the necessary land.

When the loan is repaid the houses shall become the sole property of the borrower, but the rent shall not exceed the rates previously stated, except by consent of the Commissioners.

As the above scheme is intended to overcome the financial difficulties which in the past have often rendered the farmer helpless to improve the housing-accommodation of his employees, the State must insist that a decent standard of housing should be available to all rural workers.

Advances to Workers.

The Committee is of opinion that the legislation governing advances to workers requires considerable widening, and recommends—

(*a.*) That the maximum amount of loan that may be advanced be raised to £750 for the purpose of erecting a new building and to £600 for the purchase of an existing building :

(*b.*) That these advances be made to workers whose incomes are not more than £300 per annum, with an addition of £25 for each child over three in number.

Trafficking.

The Committee recommends that stringent regulations be drafted to prevent, as far as possible, profit-making by the sale of houses erected under this scheme, and also to provide that in the event of any sale the purchaser must be a worker whose income is within the limitation set out above.

Necessity for Action.

In making these recommendations, involving as they do considerable capital cost to the State, the Committee has in mind the fact that much of the present distressing industrial unrest is due to the shortage of houses. It feels confident that the proper housing of our people will do much to produce contentment, and consequently more settled industrial conditions, which will more than warrant the cost. As the increased cost of building under present conditions is directly attributable to the war, the amount involved should be regarded as part of the cost of the war.

Your Committee earnestly desires to emphasize the national necessity of this matter being promptly dealt with. The present high cost of building-material, and other difficulties connected with building, are grounds not for delay, but for prompt action on the part of the Government.

Immigration.

The fact that the virile manhood of this country has been sadly depleted as a result of the part this Dominion played in the great war is sufficient warrant for giving consideration to the question whether or not the Government should reinstate the policy of assisted immigration.

More Labour required.

If post-war problems are to be satisfactorily solved there must be a vigorous policy of development, and sufficient labour will not be available even after all the soldiers return. Large numbers of able-bodied workers are required for the expeditious prosecution of hydro-electric, railway, roading, irrigation, and other schemes. If labour for this purpose is to be supplemented from abroad it must be from the United Kingdom. The post-war social and economic conditions abroad are likely to be greatly improved as compared with pre-war days, and this may operate against emigration, while with millions killed and maimed there will be a great demand for labour to repair the ravages of war in Europe. It is, however, likely that the migratory spirit will be strong among the soldiers, many of whom are known to be contemplating emigrating to the overseas dominions. The men referred to would constitute the most virile of the population, and would be of special value for developmental works. The Committee does not recommend a policy of indiscriminate assisted immigration, or the adoption of any course calculated to produce a surplus of any class of labour leading to unemployment or reduction of wages. What, however, is specially wanted at this juncture is sufficient labour to carry out the developmental work above referred to. There need be no apprehension as to disorganization of the labour-market on the completion of such undertakings, for those cannot in any case be all completed at the same time; and if a forward policy such as is outlined in this report is put into operation the work upon which labour will be employed will itself open up many new avenues of employment. New railways will mean additional land-settlement. Hydro-electric schemes will develop our industries and bring new ones into existence. Our tariff adjustments should materially assist in the same direction. These things mean increased production, with increased prosperity and opportunity for employment.

The Committee therefore recommends that, having ascertained as far as can be done what is the probable shortage of labour for carrying on our developmental operations, every effort be made to attract and assist to come to this country a sufficient number of suitable persons who will be available for work upon these operations. To achieve this end it is necessary to send two competent men to select and arrange for such suitable immigrants as may be determined upon.

Domestic Help.

The Committee also recommends, in view of the undoubted difficulty in securing domestic help, that a similar course be adopted in connection with the immigration of a suitable class of women, under the superintendence of two or more capable women.

Exclusion of Undesirables.

It will hardly be necessary to add that the recommendations made on this question are subject to the strictest test which will ensure that persons assisted are physically, mentally, and morally desirable. The Committee strongly supports any course that may be necessary (1) to exclude undesirables, whatever their country of origin, and (2) to preserve the purity of the race.

Forestry.

New Zealand is so highly favoured by nature for the growth of forest-trees that our aim should be not only that we should be entirely independent of any other country in providing a sustained supply of timber for our own requirements, but that we should ultimately develop a large export trade; yet we are faced with the probability of a serious shortage in the not-far-distant future. In the disposal of much of our forest land, settlement has preceded the railway; and the settlers, with no means of getting the timber to market, have had no option but to destroy it. From evidence submitted it would appear that such conditions still obtain.

If the time comes when we are dependent on importations this may only be at a price which may materially add to the cost of production. It is therefore urgent that the promptest measures be taken so as to shorten the period during which we shall be dependent on foreign supplies. In passing, it may be stated that a vigorous forestry policy would provide employment for a large number of persons.

The Committee makes the following recommendations:—

(1.) That there shall be established a Department of Forestry, which shall be separate from and not subsidiary to any other Department of State, and that it shall be the duty of that Department to determine what lands shall be permanently set aside as forest reserves; also, that provision be made ensuring continuity and permanency of policy for definite periods of years, as has been done in New South Wales.

(2.) That at the earliest moment a scientifically trained expert shall be appointed as Chief Forester; that one of his first duties shall be to determine for the whole of New Zealand what Crown lands, whether bush or open land, shall be set apart for forest reserves; and, further, where necessary and in districts where insufficient Crown lands are available, he shall recommend the resumption of areas of private land for the above purpose. Land once reserved for forest purposes shall be inalienable for any other purpose, except by Act of Parliament. The Committee recognizes that once the Forester is appointed other reforms will follow, including the organization of the Department.

(3.) That immediate steps be taken to bring about a great speeding-up in the planting of quick-growing exotic trees, especially those suitable for butter-boxes, cheese-crates, and fruit and other packing-cases. Wherever practicable these trees should be planted near consuming centres.

(4.) Owing to the diversity of opinion that exists as to the rate of growth of our native trees, it is important that immediate steps be taken to settle beyond dispute what is the increment volume per acre per annum of timber produced by the timber-trees in our native forests growing under forest conditions.

(5.) Referring to the export of timber, and having regard to the conditions already referred to under which this country may before many years be dependent on foreign supplies, the placing of restrictions upon export is regarded as an imperative necessity.

(6.) While the making of adequate provision for our future timber-supplies is of the utmost importance, other aspects of forestry should not be overlooked. One of these aspects is water and stream-flow conservation. It is therefore recommended that lands at the head of and forming the catchment areas of rivers should be permanently reserved as forest areas in order to assist in preventing erosion and flooding, and at the same time conserving the flow of water for all purposes. It is also recommended that our forest policy of the future should include planting for climatic reasons, more particularly in the larger valleys or gullies which penetrate our mountain-ranges in the driest areas of the Dominion.

(7.) That as soon as practicable a Chair of Forestry be established in one of the University colleges. In this connection the Committee is pleased to note that the late Mr. T. W. Adams, of Greendale, Canterbury, has left a handsome bequest to the Board of Governors of Canterbury College towards the establishment of a school of forestry in connection with that institution.

(8.) That in order to encourage local bodies particularly to afforest catchment areas in connection with their water-supplies, and provide at the same time timber suitable for general requirements, financial assistance by way of subsidy, based on the acreage planted, should be given to local authorities for the planting of trees approved by the Forestry Department.

(9.) That a seed-store for the supply of forest seeds true to name and of the most approved varieties, as promised by the Government more than a year ago, be established without further delay.

(10.) That efforts should be made to educate public opinion as to the value of forests and the necessity of preserving them from destruction by fire; and with that object the Forestry Department should undertake propaganda work by means of notices in public places, bulletins, and illustrated lectures, while educative work should be done in the public schools.

Manufacture of Paper from Wood-pulp.

Our annual importations of paper amount to more than half a million sterling, and the volume is certain to increase as time goes on. The establishment of this industry would provide considerable employment, and it is very desirable that we should be independent of foreign supplies. Further, the matter is one of urgency, as there is a serious shortage in the world's supply, and little prospect of paper coming down in price. Experiments have been made by private individuals, and timbers have been sent abroad to be tested, with, it is claimed, satisfactory results. The Committee has been informed of the existence of a company that has been promoted to undertake this business, and that it has done some preparatory work. It is recommended that assistance by way of bonus, at so-much per ton on, say, the first 5,000 tons manufactured, be given to any company, provided it furnishes to the Government satisfactory evidence that sufficient supplies of suitable timber are available to ensure the permanency of its operations.

The Committee also recommends that for future requirements extensive planting of trees suitable for pulp-manufacture should be immediately undertaken. It is suggested that the poorer lands of the West Coast and Southland, with their abundant rainfall and ample water-supply, afford the most promising location for this industry.

Harbours and Coast Protection.

The configuration of New Zealand, with its extensive seaboard, intensifies the importance of harbour accommodation to the prosperity of the country, and the peculiar characteristics of many of our harbours call for unremitting attention in order to meet adverse conditions arising from shifting sands, flood-silt, and other causes. Very large sums of money have already been spent in this direction, as well as in original formation, and it must be admitted that far too large a proportion of this expenditure has been ineffectual. In order to, as far as possible, guard against this waste in the future, this Committee recommends the appointment of a fully qualified engineer with a special knowledge in this direction, whose duties may be confined to this particular purpose as well as the also-important matter of river and sea erosion.

For the relief of small harbours whose usefulness or very existence is jeopardized by silting or shifting sands, and whose circumstances or finances render the purchase of a dredge out of the question, the Committee recommends that a suitable dredge be purchased by the Government for hire at reasonable rates where required. This dredge should also be found useful in connection with damage now being caused by silt and shingle blocking mouths of rivers.

Monopolies, Combines, and Trade Associations.

Legislation.

It is quite apparent that there is a growing tendency to merge business interests with a view to establishing control of prices, and also for separate interests to informally combine in fixing prices, and thus eliminate healthy competition. The Committee therefore recommends that the proposed Department of Industries and Commerce be specially empowered to exercise a measure of control over all such combinations; to report annually to Parliament upon the nature and extent of such organizations; and to make inquiry into any complaint which may be made in regard thereto.

Meat Trust.

The belief is general that the American Meat Trust is already operating in the Dominion, and that it will not be long before it spreads out its tentacles to seize upon our frozen-meat industry. There is no difference of opinion as to the necessity for preventing the establishment of this monopoly, and all who are interested in the freezing industry look to the Government to save them from what they consider would be a calamity.

The Committee would urge that the utmost vigilance be exercised by the Government as to the operations of meat-buying firms in this country, so that the American Meat Trust may be prevented from getting a strangle-hold on one of our main industries.

Preserved Milk and Tobacco Industries.

Evidence was tendered by those representing the above industries to the effect that large outside corporations with unlimited resources would be strong competitors with local firms employing purely local capital, and that there is a grave danger to the local industries. The Committee emphasizes the importance of the Board of Industries and Commerce being authorized to keep a watchful eye upon those concerns from which danger is to be apprehended, and especially those employing other than purely British capital.

Banks and Banking.

Evidence given before the Committee has led to the conclusion that it is necessary in the interests of the country to take into consideration the questions of currency and banking. The large number of subjects dealt with by your Committee and the demands made upon its time precluded the possibility of fully and properly considering this most important matter; but your Committee is of opinion that an exhaustive report should be called for. It is therefore recommended that the Government cause to be set up a Select Committee of the House to investigate and report to Parliament upon the whole of the banking business of the Dominion.

Miscellaneous.

When it is stated that the number of subjects dealt with by your Committee in the course of its inquiries runs into between one and two hundred, it will be apparent that anything in the shape of a detailed report on all of these at this stage is quite impossible. It has therefore been decided that a summarized statement be made of a number of matters brought under the Committee's notice; and your Committee would add that in many cases which it has been impossible for it to even summarize, work is ready to the hand of the Board of Industries and Commerce and of the Board of Scientific Research should these bodies be set up.

Districts not visited.

There are certain districts in which special conditions obtain, but which the Committee did not have the opportunity of visiting. These districts include the North of Auckland; the central portion of the North Island, with its pumice areas; the east-coast portion of the North Island, embracing the districts of Whakatane and Tauranga; and Central Otago. It is recommended that special inquiry be made into the requirements of these districts. In the development of Central Otago irrigation must take a very important place, and in order that the most up-to-date methods may be employed in our undertakings in this connection the Committee recommends that an officer be sent abroad to study the latest achievements of other countries in the utilization of water for irrigation purposes.

Acetic Acid, &c.

At Palmerston North evidence was tendered showing that a company had been formed there for extracting acetic acid, pitch, charcoal, oil, tar, and potash from what may be considered waste timber, and even from sawdust. In order to encourage this industry it is recommended that the required machinery, which is dutiable, be admitted free.

Alcohol and Oil.

Mr. F. Reed (Inspecting Engineer of Mines), Professor Easterfield, and others submitted to the Committee proposals for the distillation of oil and alcohol from brown coal and flax-refuse respectively. There is every reason for an expression of a favourable opinion as to the probable outcome of investigation and experiments in these directions, and your Committee would emphasize the fact that profitable results would accrue from the work of the Scientific Research Board which your Committee has asked should be set up.

Tar Products.

Factories are now working at Wanganui and Auckland manufacturing from ordinary coal-tar a roadmaking preparation known as "Restar," as well as a number of subsidiary chemical products. The expansion of the industry is being hampered, however, and its sphere of usefulness limited by high railway freights. In order to assist local bodies to improve their roads the Committee recommends that prepared tar for roadmaking purposes be carried at the same rate as ordinary tar for roadmaking purposes, and that when the Customs tariff is being revised

provision be made to prevent undue competition from imported chemicals manufactured from tar.

Asbestos Slates and other Building-material.

Your Committee would commend to the favourable consideration of the Government the claims made for more generous treatment of the young and growing industry in the production of roofing and other building-material, into the manufacture of which cement and asbestos enter. It is claimed that railway freights are a drawback, and your Committee is of opinion that this matter, with others, should at once engage the attention of the Departments concerned.

Binder-twine.

A serious anomaly was pointed out in connection with the twine industry, so far as the Customs tariff affects the business. There appears to be no reason why the repeated requests made to the authorities should not receive attention. The existing conditions are altogether in favour of Australia, and your Committee is of opinion that, while no help is being given to the local producers, the revenue suffers because of the anomaly here referred to. (See p. 96, minutes of evidence.)

Calcium Carbide.

The Committee recommends that an effort should be made as early as possible to give practical effect to a proposal made for the manufacture of calcium carbide. On a comparatively small capital outlay the whole of the needs of the Dominion could be met, and a considerable quantity be available for export. (See p. 153, minutes of evidence.)

Casein, Dried Milk, &c.

Your Committee has with satisfaction learned that the Government, as well as combined dairy-factory owners, have sent investigators to the United States and Canada with a view of eliciting information that will eventually enable New Zealand to firmly establish the dried-milk, sugar-of-milk, and casein industries. Evidence was given to the effect that private ownership of certain patent rights was unduly hampering the manufacture of casein. Your Committee therefore recommends the purchase of these rights by the Government, so that the manufacture of casein may be open to all on equal terms.

Iron-oxide Paints.

Notwithstanding the fact, which was firmly established by evidence given before your Committee, that at Parapara there exist large deposits of hæmatite, but little has been done to develop this necessary and valuable product. It is discouraging to find, further, that nearly the whole of this material used by some of our largest public services continues to be imported into New Zealand. Your Committee recommends that the Government should at once order that encouragement be given by State Departments to the producers in our own country, other things being equal.

Marble and Granite.

Sufficient attention, your Committee thinks, has not been devoted to the possible further development of these products. Sound work has been done through the enterprise of individuals, and there exist to-day works which can and do furnish some of the best building and monumental material to be found in any country. Your Committee urges that greater encouragement be given these industries by including our marbles and our granites in the building programmes of the public Departments.

Sulphuric Acid.

It has never yet been satisfactorily settled whether or not there exist in New Zealand workable sulphur deposits of sufficient magnitude to warrant their exploitation. As pointed out by more than one witness, it is encumbent upon the Government to put the matter to the test, and your Committee recommends accordingly.

Representations to Government.

During the Committee's sittings it made representations to the Government in connection with the following matters:—

Allegations of unfair treatment by the Requisitions Committee, made by the chairman of directors of the Woolston Tanneries (Limited).
Prohibition by the Australian Government of the export of broom-millet from that country.
Water-power scheme for Westport.
Increased charge made by the Mines Department to the Seddonville co-operative party of miners for the use of iron rails.
Customs duty on oxygen-producing plant imported by Mr. John Waddell, of Christchurch.
Space for fruit on oversea steamers.
Purchase by the New Zealand Government of narrow-gauge railway material used at the front.
Continuation of Government grant to the Blenheim Oil Company (Limited).
Carriage of lime on the railways.
Application of combined Reefton coal companies for a Government loan to make a railway.
Reported cutting of *Pinus insignis* timber in the Waikato for export.
Import and export of scrap iron and steel.
Services of Mr. C. E. Lowe, of Harakeke, Nelson, *in re* tobacco-growing.

C. A. WILKINSON (Chairman).

JAMES CRAIGIE.	ALFRED K. NEWMAN.
GEO. W. FORBES.	G. V. PEARCE.
J. T. M. HORNSBY.	H. POLAND.
R. P. HUDSON.	T. K. SIDEY.
JOHN P. LUKE.	W. A. VEITCH.

Wellington, 27th August, 1919.

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MINUTES OF EVIDENCE.

WELLINGTON.

THURSDAY, 6TH FEBRUARY, 1919.

F. C. HARTSHORN, Commission Agent, examined. (No. 1.)

MR. FALLOVER and I come from the New Zealand Tobacco Company (Limited), of Napier, the directors of which have deputed us to appear before the Committee to state the position of the industry as far as we have gone into it. The position is as follows: We started growing tobacco on a farm at Clive Grange on about 110 acres of land in 1914. The industry being a new one, a lot of time and money was expended in experimenting before we could make an absolute start in growing commercially. For the season 1914–15 we grew and cured 42,000 lb. weight of tobacco, which averaged out at 800 lb. per acre. Since then we have grown for another two seasons, and have grown and cured in all about 181,640 lb. of leaf. Commercially, the tobacco if properly grown and cured is worth from 1s. to 2s. per pound. At 1s. this gives the grower a return of £40 per acre. The work of growing the tobacco does not require any special knowledge or expense, and once a farmer is shown how to do it and is instructed in the curing it requires less labour than fruitgrowing. This crop, compared with any other commercial crop, gives a far better return per acre. It can be grown on poor land, and any orchardist on starting his orchard could grow tobacco between his trees and secure a return from tobacco while his trees are coming to maturity. Tobacco is a blight-resisting plant, and there is no known blight for it in New Zealand. Our company will be prepared to instruct farmers in growing and curing, and we will also be prepared to supply seed. We started manufacturing at our factory at Port Ahuriri in July, 1916. Here, again, we had considerable expense in experimenting, and training our hands. We have manufactured and sold to date 106,640 lb. weight, leaving 75,000 lb. of raw leaf still to be manufactured. During the time we have been manufacturing we have paid to the Government £5,300 in excise duty. The directors of the company look on this industry as a national one, and one that should be encouraged and fostered by the Government. We have proved beyond doubt that a first-class leaf can be grown in New Zealand. There are about 3,000,000 lb. weight of tobacco consumed annually by the New Zealand public. From this the Committee can readily see that there is unlimited scope for the industry. We have done the pioneering work, and spent about £18,000 in trying out the industry without assistance. Most of our money has been spent in wages, experimenting, growing, and manufacturing. The larger part has been spent in wages. For the continuation of our activities it is necessary that we should receive financial assistance. We are also of opinion that some concession should be given to any New Zealand company operating with New Zealand capital and manufacturing New Zealand leaf as against any other company operating with New Zealand leaf but with outside capital. Any other New Zealand company starting should have the same concession.

1. *To Mr. Luke.*] Tobacco naturally wants a dry season and hot weather. In Hawke's Bay the season is suitable. We have been carrying out the toasting of the tobacco: it was reckoned it would improve it. We pay an excise duty of 1s. per pound as against a duty of 3s. 6d. on the manufactured article. We have a preference of 2s. 6d., but if the raw leaf is brought into the country and manufactured 2s. per pound is paid on it. We are putting up the tobacco in little bags. Tin was unprocurable when we started. We intend to use the tins when it is possible to purchase them.

2. *To Mr. Hudson.*] The fruitgrower has to wait four or five years for a good return from his trees. If he could put tobacco in between the trees it would give him a surer return than tomatoes. He would grow the tobacco and cure it, but we would instruct him how to proceed. We have not had results from farmers' growing. Some of the farmers in Nelson have grown it, but we cannot say anything about it: we have not seen the tobacco yet. There is nothing the fruitgrower need be afraid of in the growing of tobacco.

3. *To Mr. Poland.*] We have not grown tobacco in connection with fruit-culture. Nelson is a suitable district for the growing of tobacco. The sea-coast is suitable if not too near the coast. If too near the coast you get the frost. The poorer the land the better for the tobacco. Much of the pumice land on the plains round Rotorua would be suitable. We grew some at Pakipaki, where the ground was all pumice on top, and grew it successfully. I do not know much about the North of Auckland land. I think Auckland would be suitable, because the climate is warm.

4. *To Dr. A. K. Newman.*] Frost is fatal to tobacco-growing, though a slight attack would not hurt it. The plant is similar to a cabbage-plant. You need not plant out till November, and it takes four or five months more to come to maturity. You can practically dodge the frost with it.

5. *To Mr. Veitch.*] The company started out with a certain amount of money. We leased the land, and grew the plant. It has been an expensive thing, and we have had to pay high prices all the time. Most of the money has gone in wages. In one year the wages on the farm ran into £6,000. If we can get sufficient capital to enable us to become thoroughly established the industry would be a profitable one, and would stand on its own feet without assistance. We have done the pioneer work, and can see that the thing is all right, but it wants a chance. All we ask is this: We have paid £5,300 by way of duty, and we say, "Let us have it back, and we will go on with it again." We have had a certain amount of difficulty in getting our stuff on to the

market. We have put our tobacco which has gone wrong, and we have had it returned to us. We have had the experience, however, and have reached the stage when we know what to do.

6. *To Mr. Craigie.*] If manufactured tobacco is brought in, we have a preference of 2s. 6d. per pound, but if the raw leaf is imported we have a preference of 1s. Labour is the biggest item in our expenses. In Australia Chinaman labour is largely used, and in other countries they have coloured labour. Our output is quite good enough to say that we will continue. Different countries will grow different qualities of tobacco. The strength of the tobacco is done in the manufacture: it is not in the growing. It depends on the ingredients. We have never pushed the farmers to take up the growing. Some people in Hawke's Bay have experimented, but we have not encouraged them to go into it. We have invested our money and pioneered the whole thing, but if our opponents operate against us we shall have to close up in the finish. If the £5,300 was refunded to us that is all we require to go ahead.

7. *To Mr. Sidey.*] Twenty-five years ago some people in Auckland manufactured tobacco, and some eight or nine years ago people at Hamilton manufactured it, but they were manufacturing the imported leaf. We are the first people to try it from the growing and manufacturing point of view. The Hamilton people imported the leaf from America and Australia, cut it up, and put it on the market. They were paying practically full price for everything, and had not a chance under those conditions. We have a nominal capital of £25,000, and £14,197 is the paid-up capital. We have spent £18,000. We have an overdraft. We have a new expert starting with us in a fortnight, and we anticipate that the quality of the output will be improved by 50 per cent. That man has had experience in America, Australia, and England. The £40 per acre is the gross return.

8. *To the Chairman.*] We can let you have our balance-sheets. I suggest two things to the Committee, viz.: (1) That the Government should refund the whole of the duty we have paid—£5,300; and (2) that the Government should grant us a loan. If we get the £5,300 it would be sufficient, and we would not want the loan on top of it. A loan would enable us to carry on, but we prefer the grant.

A. B. Fallover, Manager of the New Zealand Tobacco Company (Limited), examined. (No. 2.)

The company has spent a considerable amount of money. It has paid to the Government £5,300. Without assistance it will be necessary, under existing conditions, to give up business, and that is the point I wish to stress to the Committee. In other words, we must give in to the Trust. We consider that, with a return of the amount of the duty we have paid during our operations—£5,300 approximately—we will be able to continue manufacturing and growing, also to continue instructing farmers in the growing, curing, and marketing of their tobacco-products. We consider that the country should give us assistance to the extent of approximately the amount we have paid in duty to enable us to purchase land and buildings, and to go on with the growing of tobacco, covering an area of 76 acres.

1. *To Mr. Sidey.*] During the height of the season our company employed about thirty hands. At the farm, for five or six months, we had up to fifty hands.

2. *To Mr. Craigie.*] We have sold 106,640 lb. weight of tobacco, of a value of about £26,000. In one year we paid out £6,000 in wages. With the exception of Australia we have the dearest labour to contend with. Australia has protection right through, but in recent years the Trust has absorbed five companies there. We are afraid that the Trust will try to get us out of the business.

3. *To Mr. Veitch.*] Tobacco-manufacture has no detrimental effect on the health of the people employed. It is one of the healthiest of occupations. During the influenza epidemic lately not one of our employees was attacked. We would be agreeable to have our affairs investigated by the Government at any time, so that the concession or grant might be removed if considered necessary.

4. *To Dr. A. K. Newman.*] We feel that we are struggling against a giant—the Trust—not at the moment perhaps, but we shall be in a short time. In specified districts tobacco can be grown in New Zealand, not in all parts of it. The Maori tobacco is too strong for the public, but that is the fault of the cultivation.

5. *To Mr. Hornsby.*] At the present time there are three machines manufactured by separate firms in America. From information we have gathered the American Trust has purchased the sole rights in those machines, and from them the Trust has made another machine, which it also controls. It is therefore impossible for us to get the most up-to-date machines, but we can get other machines from England.

6. *To Mr. Luke.*] The aroma in our tobacco is natural, but it can be overcome by the mixing-in of certain ingredients.

7. *To Mr. Sidey.*] If the Trust undertook the successful manufacture of tobacco here the effect on the price would be that it would go as far as you would let it go; it would increase the price until you stepped in and controlled it.

8. *To Mr. Hornsby.*] We will be able to place on the market plugs, plaits, and mixtures, and later on cigarettes if we are successful.

9. *To Mr. Hudson.*] The waste tobacco is sold to the fruitgrowing people to make insecticide and other sprays.

10. *To the Chairman.*] We have no arrangement with the British Empire Trading Company with regard to prices. If we are protected by a duty there need be no fear of our being absorbed by the Trust. I believe there is only one Trust in tobacco in the world.

11. *To Dr. A. K. Newman.*] At one time we got a whisper of a shop being closed against us through the operations of the Trust. We heard it was so, but never found any definite evidence of it.

J. W. G. BRODIE, General Manager, British Trading Company (Limited), examined. (No. 3.)

I would like to divide my remarks under two headings—viz.: (1) Tobacco-growing and the encouragement of tobacco-growing, and (2) the encouragement of manufacture. With regard to tobacco-growing, the experience in Australia has been that it offers possibilities for the employment of returned soldiers. It is a very lucrative occupation. The point I desire to make, however, is that in tobacco-growing there is an excellent opportunity for the Nelson people who are orchardists, for while their orchards are maturing they might be growing tobacco. Tobacco-growing requires certain plant, mainly curing-barns, and it would be possible, with combination, for one barn to be used by the people of a district. The only experience in New Zealand of tobacco-growing on a large scale has been in Hawke's Bay, where the people have been working on wrong lines. They have been growing tobacco in unsuitable country; it is too close to the sea, and their curing methods have not been satisfactory; consequently, they have had a large amount of trouble with mould getting into the stem and causing trouble at a later date. There are about one million pounds weight of tobacco grown in Australia every year. There is an expert there who is at the service of the growers, and the grade of the leaf has been improved enormously. It is almost as fine now as fine Virginia, except that it has a local flavour which will probably never be eliminated. I suggest to the Committee that the Government should consider the question of fostering the industry by making grants to districts for the establishment of curing-barns, and, if possible, obtaining an expert. It is useless to grow tobacco on good land. It does not want good land. The land they are using in Hawke's Bay is worth £35 or £40 an acre, and the tobacco is rank. Tobacco wants a light, sandy soil. The soil about Motueka is suitable, and the growth of tobacco there is likely to be successful. You must not have frost when the plants are showing above the ground. An average return is 1,000 lb. off an acre. The leaf in Hawke's Bay is so inferior it is not worth 2s. per pound. In Australia they get as high as 3s. per pound for some of the leaf. In Australia the Agricultural Department provides the growers with seed, and keeps an expert, who is continually going round the country during the season advising growers and assisting them in every way. Their main object all the time is to better the quality of the article. The fault with the Hawke's Bay article is that it is grown too close to the sea. It is grown in a too-saline atmosphere and burns badly. Then as to my No. 2 heading: We have established a factory here, and the Government attitude towards local factories seems to be hardly what it should be. For instance, they have a tariff of 1s. 6d. per pound on machine-made cigarettes, which tariff has yielded no revenue since the date it was inaugurated in or about 1908. If you want to encourage local manufacture that duty should be eliminated, because hand-made cigarettes are not a commercial proposition. They cannot be made in millions by hand. If the duty was eliminated the benefit would go to the public, not to the manufacturer. It would only benefit the manufacturer in the greater sale he would have. I suggest that the question of eliminating the duty should be pressed on the Government. It has yielded no revenue, and if we are going to employ labour and give preference to returned soldiers a move should be made to remove that duty. The Australian Government has made a point of encouraging local tobacco and cigarette manufacture.

1. *To Mr. Luke.*] The Nelson tobacco land is not so near the sea as the Hawke's Bay land is. The Nelson people grow the tobacco behind the first range of hills. The mould I referred to is due to bad curing; they cured the leaf, but not the stem. Different grades of tobacco are handled in different ways. Sometimes the tobacco is sun-dried, and sometimes it is dried in barns. In Virginia the heat is nearly all artificial. If the Government here took up the industry to give employment to returned soldiers, and adopted the methods that have been adopted in Australia, it would be a payable proposition. In tobacco-growing there are certain periods in its development when it must have labour. Women and children can do the work, as it is principally a question of topping and hoeing round to keep the weeds down. The work must be done, and done in a limited time. The machine-made cigarette is preferable on hygienic grounds, and it is absolutely essential as a commercial proposition. A machine will turn out about four millions in a month. Labour is also required in the way of packing, sorting, and so on.

2. *To Mr. Hudson.*] The growing might be carried on half a mile from the sea, and in other places it might be necessary to go inland for ten miles. Experiments in different parts would determine a matter of that kind. A scheme might be evolved whereby experimental plots could be planted round about New Zealand, and in a year or two some very valuable data would be available to work on. In that way it would be possible to ascertain which districts would produce the best leaf. It is no use supplying low-grade leaf. The company I represent could not guarantee a farmer so-much for leaf for a number of years, though it would take a fair quantity at a fair market price. The experience of Australia has been that if you guarantee the farmer 2s. per pound you find yourself compelled to take over a lot of leaf that is not worth 2d. per pound. The only thing that could be done would be to lower our standard in view of the fact that the industry is in its infancy. We have imported machinery for the manufacture of tobacco. I think we paid duty of 25 per cent. and 10 per cent., or 20 per cent. and 10 per cent.—about 30 per cent. in all. The tobacco-seed is sown in November; it is transplanted by hand into the field six weeks later, and two months afterwards the plants are ready for topping. The season is principally about April or May, but it depends on the district.

3. *To Mr. Poland.*] The amount of tobacco consumed in New Zealand annually is about 4 lb. per annum per male head between the ages of seventeen years and forty years. Australia does not export leaf tobacco. I have not known of experiments on pumice lands of tobacco-growing. A man grew some tobacco on light pumic soil at Pakipaki and got excellent results, but, unfortunately, a heavy frost came and the crop was ruined. If you can get a sheltered valley inland

where there are no frosts and where there is a light soil the probability is that you will get an excellent crop. I imagine that the gum lands north of Auckland would be too heavy. The Nelson land is worth about £10 or £12 per acre. The lightest soil you can get is the soil that is required.

4. *To Dr. A. K. Newman.*] The land between Paekakariki and New Plymouth would be suitable for tobacco-growing, assuming that there are no frosts and that labour is available. That, at any rate, is the type of land, I believe. The area under cultivation in Victoria is increasing; in other parts of Australia they are experimenting. If a returned soldier cultivated tobacco here he would have the certainty from my firm of getting a price, but we would not give a guarantee that everything he brought along would bring the highest price. Up to a sample he would get a certain amount. I did not know that if a New Zealand company wanted to import the latest machinery it could not buy it. As far as I know it is not a fact that the Tobacco Trust owns machinery plants. I was talking not long ago to a man in Auckland who is anxious to get machinery of the kind, and he has simply to wait his turn to get it. In a tobacco-growing district you do not want too great a proportion of saline atmosphere, because it tends to make the tobacco burn badly. At Paekakariki it would be better, I imagine, over the range of hills.

5. *To Mr. Veitch.*] We only ask for the elimination of the duty on machine-made cigarettes as opposed to hand-made. In the way of experiments, I suggest that the Department of Agriculture should carry out practical experiments to demonstrate the tobacco-growing capabilities of different districts in the Dominion.

6. *To Mr. Craigie.*] The sea air is bad, but not fatal. I do not know the Otago Central district. The quality of the New Zealand tobacco could not be compared with the Virginian tobacco. No place in the world could compete with Virginia. Labour is a big factor. You must do certain work at certain times, and do it quickly. In Virginia a man who has a small farm turns his family out, and they do the work in a day or two. In Nelson, where there are a number of small settlers, the people could assist each other. New Zealand could not supply the total demand for leaf for local consumption. It can only look for a share of it. It has been so in South Africa.

7. *To Mr. Sidey.*] If the farmer were to get a frost when the seeds are showing up an inch or an inch and a half that would be the end of them.

8. *To the Chairman.*] Outside brands of cigarettes come into the New Zealand market, such as State Express, Clarence, 333, Abdullahs, and others. We control the well-known brands—Three Castles, Havelock, and so on. The supplies imported into New Zealand are not sufficient for public requirements at present, owing to the shipping difficulties. Stocks are short in the meantime. I do not think there is any danger of an over-supply of the local article. If you get too much one year the price would go down, but next year a smaller quantity would be grown. That happens in Australia. I do not think there would be any demand for New Zealand leaf outside New Zealand. On the imported leaf 2s. is paid, and when it is made up a further 1s. is paid, and that is sufficient, in my opinion. With regard to freight, four years ago the freight on tobacco from America was 30s. or 35s. per ton. My suggestion is that the 1s. 6d. per pound on machine-made cigarettes should be removed. That grants by way of loans for buildings should be made by the Government to growers of leaf. Also, an expert ought to be provided. We are quite prepared to foster the industry in the initial stages, and our company would purchase the New-Zealand-grown article if it was of satisfactory quality. The industry is a desirable one for the Government to encourage, especially if they wish to assist the returned soldiers. It is one that will give a reasonable living to any man.

9. *To Mr. Hudson.*] My company is not associated with the Hawke's Bay company. They wanted us to buy them out, but we refused. There is sufficient competition in New Zealand to ensure that the grower will get a reasonable price.

10. *To Dr. A. K. Newman.*] I cannot speak definitely of the climate north of Auckland. From Nelson and from the district inland from Hastings I have seen samples which would command a very fair price, but only as a blend.

JOHN NICOL, National Hat-mills (Limited), examined. (No. 4.)

I am a director of the National Hat-mills (Limited), Wellington. While in Australia recently it was noticeable to me, in reading the public Press, how the people there are urging new industries to be formed, especially primary industries, and as one walks through Melbourne one is impressed with the number of industries already established there. In Melbourne there are as many chimney-stacks as in the whole of New Zealand. I attempted recently to get from the Customs Department the value of the felt hats imported into New Zealand annually, but I could not get the information. There is a tariff on hats and caps, which includes fur-felt hats, wool-felt hats, straw hats, and caps; they are all under one heading, and it is difficult to say what proportion represents the felt hats. It is suggested, however, that probably half represents the felt hats. In 1903 the importations were £45,000, and with slight variations it has gone up, until in 1912 it was £102,000, and in 1916 it was £139,000. The importing of these goods is greatly on the increase. Apart from war conditions, the industry has been going down. Years ago there were six factories in New Zealand, and now there are only three, which are much smaller than some of the factories that used to be in existence. In Dunedin there were two factories designed to make hats from rabbits' fur. At the present time the only way to carry on a factory is by importing the felt, which is made up in a shape like a funnel. It is prepared in England or on the Continent, and is finished here from that stage forward. I submit that this is an industry that ought to be supported by the country. We have some of the best furs—the rabbit-fur and the hare-fur—and a large proportion of them is exported. The export is growing. In 1914 the export was £48,000; in 1916 it was £76,000; in 1918 furs were not exported, but they are being exported now. In

Australia I found that the people some years ago were in the position we were in, and they were in that position until the Labour Government introduced a protective tariff—not a revenue tariff. Our tariff is largely a revenue tariff as far as hats are concerned. In Australia, as a result of the protective tariff, the turnover of one Melbourne company is £180,000 per annum, or more than the value of the whole of the hats required for New Zealand in a year. Our importations in 1916 were valued at £139,000, and probably not more than half of that would be for felt hats. I am prepared to give to the Committee in confidence the name of the firm in Melbourne. There is another point: The manufacturers here are responsible for only about 20 per cent. of the hats used in New Zealand not because they cannot make them, but because they cannot make them to pay. They cannot do the first processes to pay. While in Australia I noticed that the manufacturers, although they have a much higher tariff than we have, were selling their hats for less than half of what they can be imported for here from any other part of the world. One manufacturer told me that he was satisfied with his profits, and he had no intention of raising the price. The point is that if a tariff is raised it does not follow that the public have to pay the difference. In Australia the locally made hats are being supplied at less than half the cost of the imported hat, and our position would be similar, except that the landed cost would be slightly less. When we come back to normal, the three factories in New Zealand will be starving for business. We think that the tariff in Australia is something like the one we ought to have in New Zealand. In New Zealand the tariff is: "Hats of all kinds, including straw hats, also caps, 25 per cent. *ad valorem.*" There is no preferential tax in New Zealand on hats. Hats from England, where they pay higher wages than in Europe, have to pay the same tariff as hats from Europe. Before the war the Italian and Austrian hats, for which the manufacturers had to pay wages of from 3d. to 5d. per hour, with a week of sixty or eighty hours, could come into New Zealand with the same percentage tariff as the English hats. The Australian tariff is: "On goods the produce or manufacture of the United Kingdom—wool-felt hats, in any stage of manufacture, 15s. per dozen, 35 per cent. *ad val.*, whichever rate returns the higher duty; fur-felt hats, in any stage of manufacture, 24s. per dozen, 35 per cent. *ad val.*, whichever rate returns the higher duty." We would suggest, then—(1) That the Australian duty on felt hats and hoods from the United Kingdom be adopted for New Zealand, and an addition of 50 per cent. on the above be charged on them from all other countries; and (2) that hatmakers' machinery, tools, and raw materials should be placed on the free list.

1. *To Mr. Hornsby.*] If the Government do as I suggest it would be possible to build up an industry in New Zealand. I will guarantee to do it, and utilize the rabbit-fur, which would not then be exported.

2. *To Dr. A. K. Newman.*] In the second year of the war we employed in Wellington about forty hands, and at present we employ about ten. I think the other firms in New Zealand are in the same position. If the tariff I suggest were placed on hats it would encourage the firms and engage probably six hundred or seven hundred hands. Several of the processes require skilled labour, but a large proportion of the labour is unskilled.

3. *To Mr. Craigie.*] A large proportion of the hats we get in comes from Australia. If New Zealand adopted the Australian tariff hats would be cheaper than they are at present. We cannot make the hood for the hat and sell it at its cost before the war. I am not aware that some of the hats that were imported from England before the war were made in Austria, where labour is cheap. There might have been a few, but the bulk of the hats from England comes from reputable firms in that country. The Japanese have got into the market in New Zealand in straw hats. There is a big profit on hats. If the price to the manufacturer is 8s., the price to the public would be 20s. If the tariff is put on it would be dearer to the manufacturer, but not necessarily to the public.

4. *To Mr. Sidey.*] Hats are not made right through in New Zealand to-day. They were in the past, but the factories had to close down. If the Committee recommends the tariff I suggest, and the Government adopts it, it would not be necessary for the Government to regulate the price of hats, because the competition would regulate the price.

5. *To the Chairman.*] The high duty in Australia has tended to keep the prices to the public low.

ROBERT W. DE MONTALK, Architect, examined. (No. 5.)

I wish to speak about the use of concrete blocks for building and other purposes. My purpose in giving evidence is principally with the hope of inducing the substitution of a better medium than timber in buildings, fences, and the like, and a better material than stone and clay-binding for roads, but particularly to deal with concrete as a substitute for timber and corrugated iron in the building of dwellings. There are three essentials in connection with the housing problem —cheapness, damp-proof, and quickness in erection—and, in addition, permanence and fireproof are desirable. By the use of concrete and reinforced concrete in certain shapes these points can be placed at the disposal of every one building a home, provided one condition is forthcoming—that is, sufficient capital to provide adequate machinery and labour, in order to enable production in quantity such as is provided in the timber industry. Houses may be built in concrete and reinforced concrete on lines identical with those of the present wooden houses. Boards, studs, rafters, &c., would all be made of reinforced concrete. The houses could be made with hollow walls, and thus would be damp-proof, which has hitherto been a difficulty in regard to concrete houses. I can state definitely that, given sufficient and efficient machinery and orders for materials in quantity, concrete houses can be built at the present price of wooden houses. Further, in designs where flat concrete roofs are a feature the cost of building will be reduced accordingly. In this climate pitched roofs are unnecessary, and the flat roof would be a desirable feature. Concrete houses would cost the same as wooden houses, but there would not be the necessity of

external repairs and continual painting. They would be fireproof, and thus the cost of insurance would be reduced. They would be damp-proof and vermin-proof, and hence would make for the better health of the occupiers. As a result, rents could be materially reduced on account of the great saving in depreciation, repairs, renovation, and insurance. The whole concrete house is the only way to reduce rents. Warehouses could also be built of concrete, and under the system I propose the cost would be the same as wood. No one would hesitate about using concrete. The benefit would be a saving of life, as in the case of fires, and less insurance. There is an opening for great business in concrete fencing—posts, rails, palings, pickets—at the same cost as wood. Having, I trust, shown the advantages to the people if concrete for homes can be provided for them the question arises, In what way can the Government assist to this end? I will state how the Government may assist:—

(1.) By State enterprise in the manufacture and sale of parts.

(2.) By guaranteeing to any private company who will manufacture for the purpose the purchase by the Government of a minimum quantity per annum for a number of years at a fixed price.

(3.) By utilizing factory-manufactured concrete and reinforced concrete in all Government buildings in lieu of wood or of wood and corrugated iron, and by the use of concrete material in workers' dwellings.

(4.) By making it law that every new building (or addition) in every town or borough shall be completely fireproof.

(5.) By making it law that every building in the Dominion used as an hotel, boardinghouse, hospital, or nursing home, if not a fireproof structure, shall be made a fireproof structure within seven years from the passing of the Act.

If effect were given to Nos. 2, 3, and 4, then Nos. 1 and 5 might be eliminated. In this event I think sufficient encouragement would be offered to private enterprise.

Coming to roads and footpaths, all the existing roads in the Dominion require remaking. Of main arterial highways it may be taken that there are eight thousand to ten thousand miles which must in the near future be reconstructed, and the earlier this is commenced the better and more economical it will be to the people. Concrete in some form, whether laid *en masse* or made in parts in factories, is the material *par excellence* for this class of work. I am of opinion that the factory-made road is the better for several reasons. Notwithstanding the excellence that can be provided by properly made concrete roads made *en masse*, the piece-made road affords these advantages:—

(1.) Mass roads require the use of perhaps double the quantity of aggregate than those piece-made, and although there are localities where stone and shingle are plentiful, yet there are many districts where there is none of this material. Great economy is gained where the stone and shingle obtain, and if concrete is going to be largely used it would be well to consider the natural supplies.

(2.) Mass roads present a hard unrelaxing surface, whereas the piece roads provide resiliency and afford more comfortable travel.

(3.) In the matter of wash-outs the mass road would fall in and the cost of repairs would be considerable, while the piece-made road would be replaced with its own material at slight cost.

(4.) Concrete tracks, piece-made, are infinitely better and stronger than those laid *in situ*.

(5.) Factory-built roads can be manufactured all the year round, laid when required, and utilized for traffic at once, whereas *en masse* roads must be constructed in suitable weather, and all traffic must be kept off them for a month, which means serious inconvenience to the users.

(6.) These remarks apply equally to footpaths. Single-traffic roads could be laid down for about £1,800 per mile, and double-traffic roads at £3,500 per mile. Vehicle-tracks could be laid down for £1,000 per mile (single track).

I have not touched on the shipbuilding industry, but I believe the concrete ocean liner is a possible industry, and would pay.

If my proposals are given effect to the industries which will be greately benefited are—(1) Cement-manufacture, (2) stone quarrying and crushing, (3) freighters of sea-borne shingle, and (4) steel-merchants and workers in the carrying trade. Of necessity an enormous impetus must be given to these trades, while a new trade will arise for concrete workers. The workers involved in the trades I have mentioned are largely unskilled workers or general labourers, and if my suggestions as to roads were carried out, such a thing as unemployment could not occur in the Dominion for many years. I claim to be the pioneer in New Zealand for the use of reinforced concrete for homes and for general buildings. I designed and had carried out the first whole concrete house in the Dominion, and I designed and built the largest complete fireproof hotel in the Dominion—I refer to "Cargen," in Auckland. Before the war the Prime Minister promised that he would try the reinforced-concrete road, for which I had taken out a patent, but when the war broke out he said he would have to go back on his word, and that nothing could be done till after the war.

1. *To Mr. Luke.*] I think that the building of the blocks away from the site, and making them in a factory with proper machinery, would be the cheapest method. The parts could then be assembled on the site. Concrete blocks could be used for different designs and details on a sliding scale.

2. *To Mr. Hornsby.*] In a piece road the size of the blocks would be regulated according to the weight. A block of 7 ft. by 3 ft. could be used, but bigger blocks could be made, provided the lifting machinery was available. That would be reinforced concrete. Such a road could be taken to the backblocks or elsewhere and laid down. It would cost £1,700 or £1,800 per mile for a road made with blocks 7 ft. by 3 ft. and 3 in. thick. I propose to tar it on top for the wearing-surface.

3. *To Dr. A. K. Newman.*] The flag-paved road would have an advantage over a concrete road when repair work was necessary in connection with an underground conduit.

4. *To Mr. Craigie.*] My house-building scheme is one of boards, studs, rafters, &c., made of concrete in a factory and taken to the site. The hollow walls are made by putting in wedge-shaped pieces.

5. *To Mr. Sidey.*] I can only build a concrete house as cheaply as a wooden house, provided it is done on a sufficiently large scale. I would like the Committee to urge the Government to give me sufficient consideration to put me in a position to build houses of concrete as cheaply as houses of wood can be built. As for capital, you would require at least £10,000 to get an up-to-date plant for the production of concrete for the purposes I have mentioned.

6. *To the Chairman.*] I am convinced that what is known as the block system will never be perfect. The joint is never good. My scheme is not a block scheme, but a scheme of boards and studs.

L. MENCE, Photographer, examined. (No. 6.)

I live at Featherston. It has occurred to me that it would be a good thing to take cinematograph views of New Zealand subjects. I find, however, that the New Zealand picture companies do not want such views. They say that the public do not want them, and therefore I cannot sell the work I am doing. If the Committee can help me I shall be pleased. The majority of the picture companies are under a combination, which sends its films round the Dominion. If I prepare a film it does not fall in with the circuit, and for that reason I do not see where I come in. A little time ago I took a film of a dairy herd. It is an educative film, and ought to be shown.

1. *To Mr. Sidey.*] I have put the matter before the Education Department, but have not received a reply yet. I know that some of the schools are getting cinema pictures, but I presume they are obtaining their supplies from America. I have not sent films out of the country.

GEORGE E. BAKER, Indent Agent and Manager of the Dominion Toy Company, examined. (No. 7.)

We have been manufacturing toys in Wellington since February last, and have had a fair amount of success. Owing to the high freight we have been able to compete with the imported article. The freight is now reduced considerably. What we would like is to get an increase in the duty on imported toys. Up to the present we have made a considerable number—about two dozen different kinds—but there is no telling how many we could make. We have not touched wooden toys. The duty on toys generally is 20 per cent., and we say that it should be at least another 10 per cent.

1. *To Mr. Hornsby.*] We manufacture an article at, say, 10s., but the wholesale man and the retailer have to get their profits, and the public will have to pay 20s. for that article.

2. *To the Chairman.*] The 10-per-cent. increase in duty would cover the decrease in the freight. Dolls' heads are imported free of duty, as they are for manufacture. The printed material used for dolls is also free of duty. Before the war many toys came from Germany. If they are going to come out again under cheap freights we shall have strong competition. Last year, which was our initial year, we about paid expenses, but the influenza epidemic was against us. In 1914 the value of imported toys and fancy goods was about £237,000. We reckon that about one-tenth of the amount represented toys—say, £20,000.

3. *To Mr. Hornsby.*] Before Christmas we had fifteen girls employed, and if the industry develops our factory is large enough for fifty hands.

4. *To Mr. Veitch.*] We are paying duty on a good deal of imported material.

5. *To Mr. Luke.*] If we could get the duty off the raw material it would help us. We were willing to give a guarantee that anything we import would not be used for anything but manufacture, but that was not sufficient for the Customs officials. They wanted it cut up.

6. *To Mr. Craigie.*] When freights become normal it will go against us unless we get some protection. We could exist if the duty was taken off the raw material. We can compete with Japan, but it is a burning question to put a duty against a nation that is our ally.

FRIDAY, 7TH FEBRUARY, 1919.

EVAN PARRY, M.I.E.E., Chief Electrical Engineer, Public Works Department, examined. (No. 8.)

I wish first to make some remarks with regard to the hydro-electric-power scheme of the North Island, in connection with which details have been prepared. In respect to the South Island, the scheme has not yet been prepared in detail, but I hope before I leave New Zealand to prepare that, leaving details to be filled in by my successor as time goes on. It takes a considerable amount of time and study to fill in the details, and all I can hope to do is to determine the main outline and the principal features of a similar scheme of supply and distribution for the South Island. I would also like to emphasize the fact that the scheme is on a very sure foundation, because it is founded on the ordinary needs of the community—that is to say, we have examined very carefully the position with regard to a community which is fairly well served at the present day—what its requirements are in the way of electric power and electric services of all kind—its requirements per head of the population. In founding this scheme I have not taken anything like the maximum, but something like half, so that the scheme is founded on a very conservative basis. At the same time we have kept in mind further developments and also special requirements in the way of special industries. We have kept that in mind by making sure that there

is an adequate reserve in the sources of water to draw upon to meet these extraordinary requirements and the requirements of special industries. I would illustrate that a little better by reference to what has happened in Tasmania. In Tasmania the Government originally granted a concession to a company to develop the Great Lakes sources of water-power, which is situated near the centre of Tasmania. That company assigned a certain amount of capital for the purpose, but failed to complete, and were not able to secure the balance in order to complete the works. The Tasmanian Government ultimately took over the business on my recommendation and at a valuation which I had prepared. I gave them a forecast of the business to be done, and it was on that basis that they took it over. In making that forecast I simply took the ordinary requirements of the community—that is to say, railways, tramways, lighting in the principal towns, some irrigation, and the requirements of the mines—that is to say, the business of the community as it then appeared—and I just mentioned the possibility of special industries in the way of electro-metallurgical and electro-chemical industries. The point I wish to make is this: A few months after the Tasmanian Government took over the works and were about to complete the plant they made a contract to supply 25,000 horse-power for the reduction of zinc-ores by the electrolytic process. I had carefully consulted mining experts and others during the preparation of my report, and nobody ever suggested the possibility of that particular industry at the time. I thought the works had been developed on a rather large scale to start with, but they turned out to be developed on too small a scale in view of the requirements of these special industries. The size of the original works were 10,000 horse-power. The Tasmanian Government immediately added another 8,000 horse-power, and they have another 16,000 horse-power on order. I just mention that to illustrate what I was saying with regard to our scheme for the North Island. It has been founded on the ordinary requirements of the community, but we have seen to it that there is a surplus available at the source, which can be drawn upon at any time to meet any of these special requirements. We have also kept in mind before anything else the needs of the rural public. I think the more isolated a person is the more he requires the aid of mechanical power. It is probably more expensive to supply him than it is to supply the town population. We know from our experience at Lake Coleridge that that class of business is remunerative, and is quite as remunerative as the town business, for the reason that the farmer is more dependent upon the power than are dwellers in the towns. The town dweller can get his coal fairly cheaply; he can get gas if he wants it; and he does not, as a matter of fact, use electricity to the same extent as the farmer. And it is for that reason we are able to assure ourselves that the country business is quite as remunerative as the town business. We also have this in front of us as a principle; to provide such a general system of distribution that the supply of electric power is available wherever the circumstances are such as to need the supply of power. At the present time the industrial promoter, when locating his works, has to consider how he is going to get his coal and water, with the result that the final location is not the best for the business itself, but is the best possible compromise he can obtain under the circumstances. I think that if such a general system of distribution is made available there will be a very great industrial development, especially in the way of treating ores of different kinds. At the present time anybody contemplating that sort of business—such as the treating of ores or sluicing or dredging—is always faced with the proposition that the business is not a permanent one. Sometimes he recognizes that it will be of only three, seven, or ten years' duration, and it is a very big problem to provide a power plant which will only be used for that period. Quite a number of minerals will be treated which no one would think of treating under the present circumstances. We think also that a general scheme of distribution is absolutely necessary in order to enable the Railway Department to keep pace with the requirements and needs of the community. I may mention just what is happening in other places, which is really a very sure guide in regard to the course of development in New Zealand in the matter of railways. For instance, there is the Chicago–Milwaukee–St. Paul system. They have a section or division 440 miles in length over the Rocky Mountains, which was a great obstacle to traffic. They decided to electrify that section, with the result that they have now forgotten that the mountain division exists, to quote the words used by the president of the railway, whereas formerly it was their greatest worry. There is another division, 220 miles long, further west, known as the Cascade Division, which is also an obstacle, and they are now proceeding to electrify that division as well, and there is a section between on easy grades which they will continue to operate by steam. There is no intention at the present time to electrify the rest of the railway system, nor is it necessary to do so, as steam haulage is capable of very great expansion on easy grades; it is only on steep grades that its limitations are felt, and it is important to notice that by improving the traffic-carrying capacity on the critical sections with steep grades the whole railway system is improved to the same extent at the cost of electrifying the mountain section. Applying that to New Zealand, I think you will see where the advantages of an electric-power system of distribution comes in, which shall be available wherever it is required by the Railway Department to tide over those critical sections.

Mr. Hornsby: The Rimutaka, for instance.

Mr. Parry: I think that is rather too critical. I think that ought to be eliminated altogether. I am thinking of a section between Taumarunui and Taihape, for instance. The time will undoubtedly come when the traffic requirements will be such that this will form a serious obstacle to any increased traffic, and the country will then be faced with the necessity of regrading that section, whereas by electrifying that one section they will be able to surmount that particular difficulty and also improve the carrying-capacity of the whole of the North-Island-main-line system. We think that if such a system of electric power is generally available there will also be development of light railways in New Zealand. I mean by light railways a class of railway or tramway that can be placed on the roads, thus using the ordinary gradients of a good road, and which would not be so

costly as a main line of railway or branch line of a main line. I am further quite confident we shall see development in the way of a special industry—that is, of an electro-chemical and electric-metallurgical character. It is very necessary in such cases that the supply of power should be available at the place where the ore is to be found. There is a class of industry—electro-chemical and electro-metallurgical—which requires to be carried out in a very big scale for the world market. New Zealand is well provided to meet those requirements. The right place for an industry of that kind is at the South Island Sounds, where they have a harbour and water-power and other facilities all adjacent. That will no doubt come in time, but we have not devoted very special attention to that feature. What we kept steadily in mind is the ordinary needs of the community, by providing a generous distribution of power which will be available to every householder throughout the Dominion. I would like to point out in that map how we arrived at the basis of our scheme. [Witness indicated on plans the distribution of the population, the main sources of supply of hydro-electric power, the substations, &c.] We had to prepare this map to get a basis of our supply and distribution. As a result we selected three sources of supply—one on the Mangahao opposite Shannon, one on the Waikato at Arapuni, and the other at Waikaremoana. We selected those as the very best combination, and we are quite satisfied that they will give the necessary supply of energy. That combination of the three sources is really better than a single source, as the system as a whole is more economical in first cost than a system based on a single source, and there is the further advantage that a continuity of supply is secured, as the three sources are not likely to fail at the same time. You will see in my report presented to Parliament last session that the three sources are essential to my scheme. The Mangahao source is only capable of giving 24,000 horse-power. The scheme would be improved if that source had been capable of giving 50,000 horse-power; and it could have been improved also if we had a source of some 20,000 horse-power in the Taranaki District; and, say, 10,000 horse-power in the Whangarei district. But that is not available. Still, it is a very good scheme. We anticipate that the supply of Mangahao of 24,000 horse-power will be very rapidly exhausted, and the work in connection with the Waikaremoana source should be proceeded with almost simultaneously. With reference to the South Island, here is a map the purpose of which is to show the distribution of the population on the same scale as is shown on the North Island map. [Witness indicated on the map the proposed system of distribution, &c.]

1. *Dr. A. K. Newman.*] What proposals do you make for getting more power between Arapuni, North Auckland, and Taupo? Do you propose in later years to harness the Huka Falls and get other additional power?—It is quite possible it will be needed. They are beginning to realize in Tasmania that they have not enough in the whole of Tasmania to meet the requirements, because one firm alone contracted for 25,000 horse-power, and I understand they will require 25,000 horse-power more. I had an application from another firm wanting to know if we could supply them with power, because they were afraid their rivals were monopolizing all the power available in Tasmania.

2. What is the amount of power available?—At Aratiatia there is 120,000 horse-power available. I do not not know that there is another on the Waikato except Arapuni—at least, not a good one. A distinction ought to be made between a possible development and an economical development. There are no end of power-sources there which on investigation we find we cannot develop economically.

3. *Mr. Luke.*] Have you got the volume and head at the other sources?—Yes; in the Taranaki District there is a source of 5,000 and 10,000 horse-power which I would not touch myself or recommend the Government to develop, because the cost would be too much per horse-power to develop. The Arapuni and Aratiatia sources can be very cheaply developed. We reckon that it will cost between £8 and £9 per horse-power to develop. A steam plant may cost £20 or £25 per horse-power.

4. *Mr. Veitch.*] You said that a special industry in Tasmania is taking 25,000 horse-power and wants 25,000 more. Without hydro-electric power that industry would never have existed?—It would have been out of the question altogether. Before the war the ore went to Germany for treatment, and they are now bringing ore, or will be bringing ore, from Broken Hill to the neighbourhood of Hobart for treatment.

5. Are you aware of the position on the Main Trunk line now, particularly between Taumarunui and Taihape? You have not gone into that?—No.

6. It is a very important matter. They have arrived at the stage that unless they can reconstruct the bridges in that area they cannot increase the axle-work over them?—I imagine the Railway Department will in the order of development first strengthen the bridges—it would not be a very costly thing—so as to enable it to increase the axle-load and so increase the traffic capacity of the section. But I say the time will come, as in America, when the Railway Department will be at the end of its tether. I am assuming that improvements, such as strengthening bridges, increasing siding-accommodation, &c., will be carried out before electrification will be considered, but sooner or later they will reach the end of their tether, and they will have to fall back upon electric working. If a supply of power is not available what usually happens is that a railway company or railway department has just to put up with it. If there is a source of electric power available, they naturally avail themselves of it, and so keep pace with the requirements and development of the community. It is a fact that in the United States the reason why electric power has not been used to a greater extent under these circumstances is that a supply of power was not available, and the companies were not prepared to face the expenditure of providing sources of power and the cost of transmission. When power became available the railway authorities immediately availed themselves of the facilities offered. It is facts of that kind we have had to keep in view in connection with our system, and that is why I am so confident

that a general system of distribution of electric power is really necessary for a community before it can keep pace with its normal requirements.

7. You speak about using electricity for developing different ores. Has any inquiry been made as to the existence of these ores in New Zealand? Are you satisfied that we have got these ores?—No, I cannot say that; but from inquiries which have been made I know that there are deposits which would be treated if the power were available.

8. Cheap power?—Yes. At the present time they cannot afford to put down the plant.

9. *Mr. Luke.*] When the Dominions Commission was out here they said they gathered from the reports of geologists in New Zealand that New Zealand is a highly mineralized country, but that there are not very large mineral deposits in any part of the country: do you subscribe to that statement?—I have heard those who know express the same view. Mr. Morgan, the Geologist, has expressed the same view; and that is where this hydro-electric power will come in: it is because the minerals are scattered that I believe the electric power will be of greater service.

10. Taking the Parapara ore, of course that is very rich. In your opinion, would Parapara lend itself more to electric treatment than to treatment by the old process?—No, I would not recommend that at all.

11. *To Dr. A. K. Newman.*] I have recommended that the Waihi Company's plant should be taken over immediately on terms which are provided for in the license. In that event we could take all the necessary steps to distribute the surplus available from that source, and we would also use part of the surplus for construction purposes for the big works at Arapuni. The distance is about seven miles between the two. I gather from inquiries which have been made that there is likely to be a big industrial development in that neighbourhood, and also the farmers are crying out for it. The Waihi Company's business is sufficient to pay working-expenses and interest on the present capital. It will need more capital to increase the distribution, but that will pay for itself.

12. *To Mr. Hornsby.*] The taking-over of the company's plant is provided for in the license. The Government may take it over at any time on payment of cost. We would have to expend some money upon the plant to make it suitable for our purposes. In regard to other works generally, I have already said that I would not recommend the Government to take them over; they would have to maintain them themselves and utilize them for their own purposes.

13. *To Mr. Sidey.*] In regard to the best scheme for the South Island, I have made up my mind in main outline, but not in detail. I will leave that to my successor. I have some more investigation work to do in connection with the main outline.

14. How long do you anticipate it will take to carry out your scheme for the North Island?—The report says ten years.

15. What is it that will take the time—labour?—No; it is a question of growth, like a tree. You cannot get all the business in one day.

16. Do you suggest that the State should not touch the South Island until after it has finished the North Island?—No; I am not making any suggestion at all.

17. What is your idea with regard to the work in the South: where should it start?—If the money and labour are available there is no reason why it should not start at the same time and carry it all out simultaneously.

18. Is it your opinion that it is desirable that the State should undertake and control the whole of the water-power schemes for both Islands?—Yes, I am of opinion that that is the only satisfactory way of doing it.

19. What labour do you anticipate will be required to carry out the scheme?—We want quantity, and we want quality, too.

20. How many men are likely to be wanted?—Take the Mangahao line. I suppose we will want four hundred or five hundred men there, and they have got to be skilled men.

21. Is that where you propose to start?—We will be getting the approaches and the roads ready in a few weeks.

22. You think it would be better to start the works in the North and the South Island at once: what are the objections to doing it?—It is simply a question of finance. There is no obstacle in the way except finance and labour.

23. Last session of Parliament an Act was passed empowering local authorities to undertake this work—apparently on the assumption that the Government would not go on with the work in the South Island. If the local authorities could do it in the South Island, would not it be quite as easy for the Government to do it?—Quite.

24. Because the local authorities would have to find the money and the labour too?—Yes. The difficulty with regard to the Government doing it is that they would have to face the expenditure for the whole of the South Island at the same time.

The Chairman: The Act applies to the whole of New Zealand. There are quite a number of places in the North Island which might take advantage of the Act.

Mr. Parry: You ask me how long it would take to carry out this scheme. It is very difficult to say, because it is really a growth. Take the district within three hundred miles of the Christchurch centre. It has taken three years, and we have not quite satisfied all requirements in that area yet. That is what I mean when I say it is a growth.

25. *Mr. Sidey.*] Could not you be going on with another work at the same time?—Yes; but Parliament decided that Lake Coleridge should be treated as an experiment.

26. *Mr. Hornsby.*] Have they reached the limit of the power at Lake Coleridge?—No. There is 8,000 horse-power there now, and the present headworks is capable of supplying a further 4,000 horse-power, and when that is exhausted it will be necessary to provide an addition to the headworks. The source is capable of yielding 30,000 to 36,000 horse-power altogether.

27. *Mr. Luke.*] Is that by diverting another river?—Yes, and constructing headworks.

28. *Mr. Sidey.*] What are the chief sources of supply in the South Island?—There is Tekapo, which Mr. Hay gives at 130,000 horse-power. There is a very big development there. It is rather costly. There is a smaller development at the mouth of Tekapo—20,000 horse-power continuous, which is an economic development. There is another 20,000 available at Pukaki, utilizing the water as it leaves the lake. And there is one at Ohau, and there are several on the Waitaki. And there is a big power between Wanaka and Hawea—90,000 horse-power—that will be easily developed. There is another on Hawea itself, by running a race some distance down the plains. That is in the neighbourhood of 100,000 horse-power. That is a possible source, and a water-race and irrigation-channel at the same time.

29. *Mr. Hudson.*] What is the most northern source in the South Island?—The Clarence River—a very big source, and it will be very easily and economically developed; and it could easily be linked up with Lake Coleridge in the South; and they would serve the Nelson and Blenheim districts, and would serve Westport as well.

30. *Mr. Sidey.*] What about the southern Sounds?—They are not suitable for utilization for our purposes. In all probability, so far as I can see, these complex ores obtained in Tasmania and Australia will probably be shipped to the West Coast Sounds in the course of time—to a place where there is power and which is adjacent to a deep-water harbour.

31. *The Chairman.*] With regard to local schemes, where the Government is unable to supply power within a reasonable time, what is approximately the cost per horse-power that they would be justified in paying?—I take it they would have Lake Coleridge as a model.

32. That cost £50 per horse-power?—£45, or thereabouts.

33. But would different districts be justified in expending money up to £50 per horse-power in order to get the power they require?—Yes, they would be justified in expending up to £100.

34. *Mr. Sidey.*] What horse-power do you think is available in the North Island?—At page 11 of my report in regard to the North Island—D.-1A—particulars are given in regard to that. 160,000 horse-power is the plant capacity we are providing for at the outset of this scheme, on the understanding that we may obtain more if required.

35. What is the horse-power you will have in reserve?—64,000 at Arapuni, 98,000 at Waikaremoana, no more at Mangahao—possibly less as time goes on.

36. In regard to the South Island, are your plans sufficiently far forward to say what power can be developed under your scheme?—I could not say at present, but it will be on the same basis—one-fifth horse-power per head of the population.

37. *Mr. Hornsby.*] The Huka Falls: is that a payable proposition?—We would combine Huka and Aratiatia, and make one scheme of it if we undertook to develop this source.

38. *The Chairman.*] I am not quite clear about the cost per horse-power that districts might be justified in expending. Do I understand from you that it would be advisable to expend as much as £100 per horse-power in carrying out small local schemes?—Some of the small local schemes have cost as much as £150 per horse-power for headworks and generating plant.

39. You would not recommend an expenditure of over £100 as a profitable undertaking?—I think that is getting towards the limit. I would put it in this way: the headworks, the generating-stations, the pipe-lines—we limit them to £20 per horse-power. Actually they vary considerably. Arapuni is estimated at £8·64 per horse-power; the others run up to £10 or £12. If they are liable to cost more than £20 we reject them. Anything from £9 or £10 to £20 for large sources; £20 or £30 more per horse-power for transmission and substations. There is a town reticulation, and a country reticulation on top of that, which might run up to another £25. That makes a total of £70 per horse-power. That would bring it up to £90 in some cases.

40. Do you suggest that where the capital cost per horse-power is over £100 that the people should wait perhaps ten years or twenty years for a supply, as the case may be?—I think they should go ahead.

41. Even if it costs more?—Not if it costs more than £100. Local authorities undertaking local business also undertake the retail work, so that £100 includes that.

42. Judging from your experience of public-works activities in connection with this question, how long will it be, in your opinïion, before these works can be put in hand and completed?—One of the difficulties we are up against is labour, and the right class of labour. Sixteen thousand men have been killed in the war, and a large number of others have been disabled. You will have to wait for a generation before the country gets back to the same position it was in before the war.

43. The trouble is we cannot wait?—That affects the rate of progress.

44. We would like some suggestions from you as to the best methods of getting over the difficulty and of getting on with the development of these schemes. You admit that the difficulties are great?—I could not agree to do more than the preparatory work at the present time—that is, to carry out the roadwork and the exploration-work. I would not care to tackle the works themselves—not the tunnel-work, &c., at the present time. If you start on wrong lines you can never bring it back on the right lines again.

45. There are serious difficulties in the way of doing extensive works at the present time. Do you suggest that the Government should confine itself to one source of power in the meantime, and complete it rather than spread its energies over a number of different propositions?—That is somewhat difficult to answer. Take Mangahao, it is so dependent on the Waikaremoana source: if you proceed with Mangahao first it will be almost necessary before very long—within two years, say—to make a start with the other as well.

46. Would it be possible for you to furnish us with a written report making suggestions with regard to the works to be proceeded with, considering the difficulties in front of us?—Yes, I think I could promise that.

47. *Mr. Hornsby.*] It would be mostly unskilled labour—the labour required for the preliminary works?—Yes.

48. *The Chairman.*] Last session Parliament voted a certain sum of money: was that ample for your requirements in connection with the preliminary works?—Quite ample. I would like to say that I have never been hampered with regard to money at all.

The Chairman: When the £150,000 was voted it was stated freely that it was not sufficient. You state that the money voted was sufficient, considering the labour available.

49. *Mr. Poland.*] How much of it has been expended up to the present?—None at all. We would like £150,000 or £100,000 for developing South Canterbury—developing the Coleridge system. When I was referring to labour—the necessity of skilled labour—I was speaking in regard to tunnel-work.

50. *Mr. Sidey.*] In the event of local authorities undertaking this scheme, it is very desirable, is it not, that any work they undertake should conform with the general scheme?—Yes.

51. How about works being undertaken in the Sounds, which you say are not generally available for ordinary schemes: what is your opinion about work of that kind?—The Government could grant a license to approved firms, allowing them to develop the work in their own way, and at a nominal rental, in order to encourage the industry, reserving the right to take it over.

52. *Mr. Poland.*] In your opinion the Government should start all three North Island schemes simultaneously?—Yes.

53. And provide all the money that is necessary?—Yes.

54. How long would it take to develop 160,000 horse-power from those three sources mentioned in your report—it would be available gradually?—Yes. We would not put all the plant in at once—only enough to meet possible requirements. We could put three machines in at a time at each source, and add to it unit by unit. At Lake Coleridge we put in three 8,000 horse-power units; and we have ordered a fourth, and a fifth is under order.

55. Supposing the labour was available?—It would take three years.

56. *Mr. Sidey.*] Completing the whole scheme within three years?—We would go on with those three works [indicating on plan]—10,000 horse-power in each. In three years' time I would not anticipate that the whole three would be linked up. The transmission-line would be constructed, which would be extended as time goes on.

57. As far as you can see at the present time, under the conditions as you see them to-day, you reckon it would take three years to fully bring the northern scheme into effect?—Not fully, just to give a start.

58. It would be all in operation in ten years' time according to the scheme you are outlining now?—Yes.

59. With regard to the South Island, supposing you take the basis as it is to-day, with regard to the South Island: how long do you estimate it will be after you commence the South Island before you have it in full operation?—There is no reason why it should take any longer.

60. Would it take as long, seeing that you have got the Lake Coleridge scheme in operation?—It would take the same time to develop the new ones.

61. I am taking the first answer you gave us with regard to the North Island scheme. Looking at it under existing conditions, you reckon that it would take ten years to bring that scheme into full operation?—Yes.

62. Do you mean to say that it would take ten years to bring the South Island scheme into full operation from the time you started?—Yes, somewhere about that.

63. *The Chairman.*] Is New Zealand specially favoured in respect to making water-supply available for these purposes—favoured as against other countries—Australia, for instance?—Yes, New Zealand is favoured.

64. Do you think we have been backward in developing this power?—No. I should not say that we have been backward.

65. Compared with European countries, is New Zealand specially favoured with regard to water-power?—The population makes a big difference, but this country is favoured in respect to water-power.

66. *Mr. Sidey.*] Is there any other country so favoured as New Zealand?—I should say that Tasmania is, for its size.

67. *The Chairman.*] What will happen in the event of this Dominion not developing industries? Will we gradually decline in industrial power? Is it absolutely necessary for the development of New Zealand generally that this power should be developed to the utmost?—Yes, I think so. Last year we had an application from London for 2,500 horse-power which we had to reject.

68. *Mr. Sidey.*] That is, at Christchurch?—Yes, to start a new industry.

69. What about the manufacture of nitrogen—is that practical in New Zealand?—Yes, but I do not think it has much of a future here.

70. Aluminium?—We have had a request during the war for aluminium, but we have not got the necessary material.

71. *Mr. Hudson.*] Do you know anything which would do more towards the development of the country than electricity?—No, because there is nothing that you can so easily transmit, and you can apply electricity to every possible purpose.

72. Referring to the question asked by the Chairman in connection with small local bodies installing electricity, what price would a local body be justified in paying per horse-power, taking average conditions and, say, coal is £1 15s. a ton?—Some of them have already expended £100 per horse-power on their headworks and power plant, and £30 or £40 more on reticulation.

73. Could you give us the outside figure?—It is hard to say.

74. What is the figure that they ought not to go beyond?—I know some of them who are doing very good business who have expended £150 per horse-power, and it is paying them. There is almost always a certain amount of business to be done at high prices.

75. Is the question of the distance the power has to be carried very important?—240 or 250 miles is about the longest, but it is not the limit of distance.

76. *Mr. Hornsby.*] How much is lost in transmission?—Not much—10 or 15 per cent. We reckon under New Zealand conditions that it pays to develop 20,000 horse-power rather than exceed 150 miles in transmission.

77. *Mr. Hudson.*] So far as domestic requirements are concerned—cooking, &c.—how does electricity compare with coal?—I think there is a saving in it. It is like every other agent of the kind: you have to look after it, otherwise it may cost a good deal more.

78. It is suitable for the working-man for cooking purposes?—Yes; I think it is essentially a working-man's power. It is not so important to a man who can pay higher prices.

79. For the working-man who has to study economy?—He cannot afford to use any other power.

80. In connection with the working of railways, how many miles would it be practicable to transmit the power for that purpose?—Are you referring particularly to our scheme?

81. You referred to the Rocky Mountains and said that electricity was used on certain sections, and that steam was used on one link. Could the power be used for this purpose all over the North Island—could it be transmitted from one centre?—We would provide such a system of distribution that they could get a supply practically every thirty miles, because the substations are already established for general requirements.

82. Would it be necessary to have a supply every thirty miles?—No, it would not be necessary.

83. Every forty or fifty miles?—Yes, they could do the transmission themselves; but if the transmission is available every thirty miles they would prefer to get it every thirty miles, or oftener if they could.

84. In connection with taking the power all over the country, will cables be used?—No; all overhead.

85. *Mr. Sidey.*] I understand that the chief difficulty as to the early completion of this work is the want of tunnel-workers?—Yes, skilled men of all kinds.

86. Would you recommend the Government if they cannot get the work done by that class of skilled labour to import labour to get the work done?—I would rather not answer that. I think that is outside my province altogether. Other countries are short of labour, more so even than New Zealand.

87. *Mr. Luke.*] Do you think the railways of New Zealand will be electrically controlled eventually?—I think it will be a very long time before that comes about.

88. Would our water-power provide for the electrification of our railways as well as provide for the domestic needs?—Yes, quite sufficient; it will be a very long time before all the railways are supplied.

89. We want the benefit of your knowledge, as you are leaving us?—I see no intention in other countries of electrifying the main lines, except mountain sections and long tunnels.

90. Take the question of the electrification of the Otira Tunnel: is it intended to electrify the tunnel and adopt steam at both ends of the tunnel?—I have presented a report dealing with four different schemes, taking different lengths of electrification, but in all probability the Government will confine itself—and wisely too—to just the tunnel and the approaches.

91. Would that apply to the Lyttelton Tunnel too?—No; in the opinion of the Railway Department the greatest need is to enlarge the tunnel and double the line. If the line is electrified now it is thought that that will be an obstacle to enlarging the tunnel.

92. *Mr. Hornsby.*] If that tunnel were electrified, would not that enormously increase the facilities?—I think it would. I do not know whether it would be enormous or not, but it would materially increase the traffic capacity.

93. *Mr. Luke.*] What is the limit of distance of transmission for a paying concern?—There is no need to consider that. I have not really considered it. We have the sources near at hand.

94. I thought there were some difficulties in the North Island?—I would like to see 50,000 or more horse-power in the neighbourhood of Mangahao, so as to avoid transmitting from Waikaremoana or Waikato.

95. *The Chairman.*] What is the minimum size of the scheme that might be gone on with?—About 50,000 horse-power, I thould think.

96. *Mr. Luke.*] With regard to the treatment of the ironsand at New Plymouth, do you think that is going to be a commercial success by electrical treatment?—I think the only way to treat the ironsands is by electricity.

97. *Mr. Craigie.*] In regard to the North Island scheme and the linking-up of the big sources, how far would that go north of Auckland?—We provide for the whole of the Island. We would go right up to the far North. My scheme provides for New Zealand for all time, because there are further resources to draw upon.

98. Taking our position—trying to help the Government to push along our industries—seeing that the utilization of this power is going to help us to pay our way, do you not think the sooner this work is done the better?—Yes; and I would go a little further than that. I say the industries will come—you do not need to foster them. Nobody can tell beforehand what industries will develop until you first provide the power.

99. Would the reticulation amount to much for the local bodies? What would be the relative cost of the reticulation—the substations to the head stations?—I could give you fairly sound figures if you postponed the answer to that question till this afternoon.

100. Would it not be better for the Government to nationalize the whole affair, and install all these headworks?—Undoubtedly that is the best way of doing it.

101. There would be two advantages: it would be done quicker, and the State would be able to finance it better?—Yes, I think the State is the right body to undertake all that work.

102. In the case of Lake Tekapo you said that 20,000 horse-power could be developed without a great deal of expense?—I know it could be developed economically at the mountain—say, at £16 per horse-power—that is, at a guess.

103. Supposing South Canterbury and North Otago joined together, could that be utilized and used for linking up?—I merely stated the power that is available. It is not well located for linking up.

104. Do you prefer Waitaki?—I prefer it on account of its location. We intended to investigate that thoroughly because it is well situated.

105. *Mr. Hornsby.*] During your preliminary statement to us this morning you mentioned a matter of very great importance—that is, light lines of railway. Of course, you know the difficulty with respect to metalling our roads in many places. Do I understand you to say that the grades of ordinary good roads could be utilized for light lines of railway?—Yes; you have the example in Wellington of the Wadestown and Brooklyn tram-lines.

106. Would you say that such lines made along road-lines, if electric power were utilized, could carry moderately large-sized trains?—Generally there would be a composite vehicle—light goods at one end and passengers at the other end. There would be reserve wagons for wool, &c., which could hitch on to the car as a trailer.

107. With overhead wires?—Yes, like the Wellington tramway system.

108. *Mr. Sidey.*] What provision do you propose to make for Stewart Island?—I have not considered Stewart Island.

109. *The Chairman.*] You have promised to submit in writing a suggested outline of the works in both Islands which should be proceeded with as expeditiously as possible, considering the financial condition and the labour available?—I do not know the financial condition.

110. We will leave out the words "financial condition." You said you could do with another vote of £150,000 for the Lake Coleridge scheme. There would be no difficulty with regard to labour. It is a matter of distribution?—Yes.

H. J. H. BLOW, Under-Secretary of Mines, examined. (No. 9.)

1. *The Chairman.*] The Committee has under consideration the question of the Parapara iron leases. It was thought that you could throw some light on the position with any information regarding the iron deposits. First of all, we want to know whether the land containing the iron deposits is available, and, if it is not, what the position may be?—There are three leases. The Parapara lease was entered into in 1905. The original Washbourn lease was dated 1886, but it expired, and was released from the 1st July, 1907. The Onakaka lease was entered into in 1912. I do not think anything is being done on any of the leases just now. They are all under protection until peace is declared.

2. *Mr. Sidey.*] Are they liable to forfeiture when peace is declared?—That is very much a legal question. Personally I think they are liable to forfeiture, but Mr. Sidey knows the meaning of the term "protection."

3. *The Chairman.*] You have not told us how long these leases have to run?—The Parapara lease has a currency of forty-two years from 1905, but is renewable. The Onakaka lease has a currency of sixty-three years from 1912. The Washbourn lease is for a term of twenty-one years from 1907.

4. What is the area of the land comprised in each lease, and the rental received by the Crown for the lease?—The area of Parapara is 920 acres; rent, £115 per annum. Washbourn, 56 acres and 36 perches; rent, £5 12s. per annum. The Onakaka lease is 870 acres; rent, £108 15s. per annum. The leases are in print, and are at the disposal of the Committee. The leases are set forth in parliamentary paper I.–16, 1912. That is a valuable paper, and I would strongly recommend the members of the Committee to peruse it. I may add that I had the honour of giving information on this question before the Committee.

5. *Mr. Sidey.*] Have there been any modifications since that time—any modifications in the terms of the leases?—No, except there may be further protection.

6. But there may be further reports on the deposits themselves?—Yes; I was dealing with the leases.

7. *Mr. Luke.*] Are the leases held by people resident in the Dominion or mostly outside?—They are all held in the Dominion. The Parapara lease was originally granted to Sir Alfred Cadman. He is now dead. The Public Trustee is administering his estate, but I believe the lease has been sold to some Christchurch gentlemen. The Washbourn lease is also held by some Christchurch people. Onakaka was granted to a Mr. Turnbull, of Nelson, and he still holds it.

8. They are not held nominally by people in the Dominion but actually by people outside?—I do not think so; and I do not see any reason why they should. The rents are quite small.

9. Are there any commitments from the Crown which they have to comply with which hamper the development at all? Has any development to be done within a certain period of time?—Yes, but that is under protection now.

10. Previous to that was there any condition imposed?—Yes; it is all set forth in the lease. They had to expend so-much money.

11. Have they complied with the conditions?—The Parapara people complied for some time, and then they applied for protection and got it.

12. But up to the time of the protection period they were carrying out the terms of the lease?—I think so.

13. You were head of the Department for many years. The Dominions Commission some five or six years ago rather disparaged the capacity of the Parapara deposits. From your experience do you think there are valuable and extensive beds of mineral at Parapara?—Oh, yes.

14. The conditions of the lease have been complied with so far?—Yes. The present protection was granted under special Act passed in 1914 in consequence of the war.

15. *Mr. Hudson.*] How long is that protection to remain in force?—Until peace is declared.

16. *Mr. Sidey.*] Not until six months after?—No.

17. *Mr. Hudson.*] Is Parapara the only lease that is renewable?—Yes, I think so.

18. *Mr. Sidey.*] Was a formal application made to the Court for protection, or are they simply relying upon our moratorium?—An application was made to the Court and protection was granted by the Warden. The Act requires that.

19. You expressed the opinion that the leases should be forfeitable otherwise?—I think it is clear that if the conditions are not complied with the ordinary legal provisions would apply.

20. You are satisfied that they have not been complied with?—I think the conditions were fairly complied with up to the time protection was taken.

21. Before the war?—Considerably before the war.

22. It was not a war protection at all?—Protection was granted some time before the war began, but when the war started the law was amended to give wider powers as regards granting protection, and under that protection has been granted until peace has been declared.

23. Was there any opposition to that?—No

24. The Crown has never opposed the application for protection?—No.

25. But had protection not been granted there can be no question that non-observance of the conditions would have rendered the leases liable to forfeiture?—Yes.

26. *The Chairman.*] Perhaps you could give the Committee your opinion as to the value of the deposits from a manufacturing and development point of view?—In a report made by Mr. Binns, F.G.S., in November, 1878, he estimated the quantity of iron-ore at 53,000,000 tons. Dr. Bell, in Geological Bulletin No. 3, in 1907, estimated the Washbourn block at 23,000,000 tons. He gave no precise figures as regards Parapara or Onakaka, but said he thought the total ore in sight in the three blocks was probably 64,000,000 tons. As regards the quality of the ore, Dr. Bell, on analysis of samples from the different outcrops, came to the conclusion that the ore will yield about 45 per cent. of metallic iron. Other sampling has been done since—since the drives have been put in—with very similar results. The ore is not free from phosphorus and sulphur. In fact, for some purposes the percentage of phosphorus is rather high. Dr. Bell made it 0·15 per cent. Samples from the drives taken since make it 0·13 per cent. As regards sulphur, the percentages are respectively 0·08 and 0·075. For the purposes of comparison the members of the Committee might desire to know what the percentages are in the ore from Iron Knob, which is at present being worked by the Broken Hill Company at Newcastle. Their ore yields 68·7 per cent. of metallic iron, and the percentage of phosphorus is 0·02, as against our 0·13. Ours, therefore, has six times as much phosphorus as the ore from Iron Knob.

27. *Mr. Hudson.*] And as to sulphur?—The amount of sulphur is not large either in ours or in the Australian ore. The iron used at Messrs. Hoskins's works at Lithgow has a metallic-iron content of 55·8 per cent., and in phosphorus is quite as high as ours—0·17.

28. *Mr. Sidey.*] You gave evidence in regard to this question some time ago?—Yes, in 1912.

29. Did you not express the opinion that the State ought to undertake the working of these deposits?—I am a bit of a State socialist. I think we have made a fair success of the State coalmines, and I think we can make a success of this if anybody can.

30. Do you think the quality of the ore, as disclosed by the reports you have read, would justify the State undertaking the work at the present time—as likely to be a successful undertaking?—The quality of the ore is rather low. It is lower than the Lithgow ore, and considerably lower than the Iron Knob ore; and in other respects the New Zealand conditions are less favourable than the Australian. The Broken Hill people have located their works at Newcastle, and right by one of the finest coalfields in the world. Our Parapara ore is a long way from any coal that would be of any use. We would have to bring our coal from Westport.

31. The works in New South Wales are thoroughly successful?—I believe they are highly successful at present prices, but they are getting £18 a ton for rails. The pre-war price was £6 f.o.b., London, and they are getting more than that for flat sheets.

32. This Committee is anxious to know whether it can recommend the Government to undertake the work itself or grant privileges to others to undertake the working of these deposits as soon as possible as a local industry?—The first thing would be to get rid of these leases. If the leases were got rid of and the deposits once more reverted to the State I should think the wiser policy would be for the State to retain them. As to whether they should be worked immediately or not, I think that requires very careful consideration. Personally I would be inclined to advise that the State should wait and see how the Newcastle works fare for at least a year after conditions have been restored to normal.

33. Have there been any reports furnished subsequent to the date of that report in the 1912 paper?—No public report.

34. Any confidential reports?—Yes, there was a confidential report.

35. Can this Committee get access to that report, or are you in a position to state whether that report throws any further light on the subject?—Not a great deal. The only witnesses before that Committee were officers of the Crown, and the same gentlemen are available to you—Mr. Morgan, Mr. Reed, myself, and Mr. Parry.

36. To whom was the confidential report furnished?—To the Minister of Mines.

37. *Mr. Craigie.*] The Committee went into the Parapara business and the Ethelburga Syndicate?—Yes; the report I refer to is on that subject.

38. Do you remember the terms they offered?—Their terms were quite extravagant.

39. We did not entertain them at the time?—The Committee would not look at them. We had to pay them about £30,000 per annum.

40. If this Committee recommended, and the Government agreed, the first thing would be to buy out the leases?—No; I do not think you need buy them out.

41. *Dr. A. K. Newman.*] Were any samples of this ore sent to any ironworks to ascertain whether it would smelt easily or not?—I am not aware of any samples being sent, but I think it would smelt quite easily. It requires a flux of limestone, but that is in abundance on the spot.

42. Is there any handicap in the way of smelting it?—None, except that the coal is rather distant.

43. Any chemical?—No; the material is easily worked; much more easily than Taranaki ironsand.

44. *Mr. Hornsby.*] Is there anything on record to show that Parapara ore being of somewhat low grade, Taranaki ironsand might be worked with it in order to work up the quality of the iron?—There is no information on that point at present—no opinion by any expert of first-class standing. The Government is endeavouring to arrange for a metallurgist of high standing to visit New Zealand, and that is one of the questions to be submitted to him. Personally I think that a mixture of the two ores is perhaps what is wanted.

45. *Mr. Hudson.*] Do you know Mr. Turnbull?—No, not personally.

46. Do you know anything of his position as a mining expert?—No.

47. You have never seen a report that he has written?—No.

48. You said coal would be a difficulty. Do you not know that coal would be available on the spot?—The estimate of the iron-ore deposit is 64,000,000 tons. It takes more than a ton of coal to smelt a ton of iron.

49. I understand that the whole mountain there is practically a reef of coal—to the cape?—Why do they not work it in the present coal famine?

50. There are labour difficulties and other difficulties. You consider that the coal available on the spot is not to be calculated on?—No, not for this purpose. The only coal that I am aware of in New Zealand that would be really suitable is the State coal and Paparoa. The coal to be used must be free from sulphur, and most of our coals in New Zealand are sulphurous. I was in New South Wales recently, and they asked me why we did not coke the Paparoa coal, which they said was one of the finest in the world for coking purposes. Paparoa and State coal would do, but State coal does for other purposes too. We can get 16s. a ton for the slack.

51. In your opinion, Westport is the nearest coal that can be looked for for working the Parapara ore?—Yes.

52. Limestone is available on the spot, and also a deep enough harbour?—It would require a wharf three-quarters of a mile long to get an ocean-going ship alongside the wharf.

53. *Mr. Luke.*] The harbour facilities are good, providing a long enough wharf is made?—No, I would not call them good. It is an open bay—Golden Bay; but the seas there are not very heavy, so that a ship could lie there without much disturbance.

54. If such a wharf were constructed, could a vessel lie there in any weather?—In most weathers.

55. You answered a question very pertinently about the sulphur in the coal—that is an important factor. You consider that there is no suitable coal nearer than Westport?—I think you can say Greymouth. I think the State coal contains less sulphur than Westport.

56. Is the ore very refractory?—I think not.

57. You know that New Zealand has been looking to Australia for iron for years?—Yes.

58. That iron has been commercially successful—as it is, without much mixing. What about Parapara?—Pig iron is wanted for so many purposes, consequently the iron-manufacturer wants different qualities for different purposes. At Parapara they would only produce one quality.

59. *The Chairman.*] Do you think it is advisable for the Government to obtain a report in connection with the deposit and the possibility of its manufacture commercially in view of what has been done in Australia. Our reports are evidently dated a long way back. Could we not get a report more up to date?—The Newcastle works are working under favourable conditions, and they would be a formidable competitor to any ironworks in New Zealand.

60. With regard to the supply of iron to New Zealand itself?—Yes. Parapara is a rather out-of-the-way place. I am afraid the freight from Parapara to Auckland or Dunedin would be nearly as high as from Newcastle. So if Parapara cannot produce pig on the spot at the same price as Newcastle, then I think Newcastle could run Parapara out of the market, unless the Government imposed protective duties.

61. *Mr. Luke.*] For a great number of years we had contracts with the Hoskins people, and we were importing their pig iron at 2s. 6d. a tons less than it could be got from the Old Country. One good feature of it was that it could be used without any scrap. I would like to ascertain what the analysis of Parapara is for foundry purposes?—We have no analysis of the iron, but we have of the ore.

62. *The Chairman.*] First you told us that it was a feasible proposition for the State to take up the business, and afterwards you said that in view of the formidable competition of Australia it might be somewhat dangerous?—I do not think I went quite so far as to say that. What I said was that if these leases can be got out of the way I think it would be wise if the property can be got into the hands of the Government and for the State to hold the land.

63. *Mr. Sidey.*] You are of opinion that if it can be worked profitably the State ought to undertake it as a State institution?—First-grade deposits are being worked out; it is possible they may be exhausted in forty or fifty years. When that day comes second-grade deposits will become valuable.

64. *Mr. Luke.*] Is Parapara deep mining or is it got by cutting into the hill?—It is a good thick skin over the top of the hill.

65. *Mr. Sidey.*] Do you know whether any of those who have obtained leases have expended money in developing the property?—Yes, a great deal, but not all in the way of mining. Drives were put in on one lease, the bush was felled, a wharf constructed, and other considerable improvements effected, but nothing has been done lately.

66. Have you found what depth the iron goes before it begins to peter out—how thick is the deposit?—It varies up to 250 ft. It is a good thick cover. As I have said, the Government is endeavouring to arrange for a metallurgist to visit New Zealand and report on this deposit and on the Taranaki ironsand. I would advise that his report be first obtained.

67. *The Chairman.*] Has that arrangement been made?—The High Commissioner has been written to on the subject.

FRANK REED, Inspecting Engineer of Mines, examined. (No. 10.)

1. *The Chairman.*] The Committee is making some inquiries in regard to the deposits of iron-ore at Parapara and in regard to ironsand and other kindred matters, and we would like to get some idea of the position as it appears to you. Perhaps you could tell us something about the Parapara deposit first?—During the last thirteen years I have had considerable experience in connection with the Mines Department regarding the Parapara iron-ore, and I accompanied the Committee which visited Parapara a few years ago, and gave evidence before that Committee.

2. *Mr. Luke.*] What is the nature of the deposit of the iron-ore there?—It occurs on the surface at Parapara. It is a sedimentary deposit of limonite, and it is very extensive. It was estimated by Dr. Bell at over 60,000,000 tons; that there are 50,000,000 tons *in situ*, I believe.

3. What is the depth of the deposit?—It has not been proved. The total depth has never been tested.

4. Seeing that it is practically a surface work and the depth is not supposed to be great it would not be an expensive undertaking to mine it?—No. I should say it would be possibly the cheapest form of iron-mining in existence. It will only require quarrying from a very high face, and it is close to the sea-board.

5. At Lake Superior they practically shoot the ores down into the bins?—Yes.

6. About the harbour, can you give us any idea of the facilities of the harbour for working it?—It is in Golden Bay, and may be said to be almost at the water's edge. Golden Bay is shallow, and it would mean the construction of a wharf or jetty of considerable length to get to water sufficiently deep for shipping.

7. Do you think it is a place where the work at the wharf could be carried on in almost any weather?—They could work Golden Bay practically at all time. The cost of coke would be one of the greatest drawbacks.

8. Is the ore very refractory?—It contains less than 50 per cent. of metallic iron, therefore it would be classed as a high-class second-grade ore. It is what they call a phosphoric ore. It contains 0·15 per cent. of phosphorus, which makes it a phosphoric ore—that is, not a Bessemer ore.

9. Have you have any experience of the iron in Hoskins's works in New South Wales?—No. I have knowledge of what Hoskins's works produce, but I have never used any of their iron or steel.

10. Hoskins's iron you could use at any foundry with a very small amount of scrap for general work. You have no knowledge as to whether this ore approximates that?—Upon analysis the ore at Parapara would be about equal to that which Hoskins uses. He obtains it from several different mines, but the quality at Parapara is as good as some Hoskins has used.

11. It would approximate very much to their steel?—Yes. On the other hand, Hoskins can work at a very much lower cost, and he can get coke at 17s. and 19s. a ton, whereas here it would cost possibly £2 a ton at the blast furnaces.

12. If the coking were done at Greymouth and they took the ore down to Greymouth, would they be in as good a position as they are in New South Wales?—No. First of all, the cost of coke at Greymouth and Westport is £1 10s., which is 40 per cent. more than Hoskins pays for it. Likewise, there is in addition the cost of transportation to Parapara. The transport of ore containing more than 50 per cent. of valueless matter to Greymouth would exceed in cost the transport of coke to Parapara.

13. Is the higher cost of coal at Greymouth on account of the longer haulage or the class of coal?—At Greymouth the coal of the Paparoa and Liverpool Colleries is very suitable for coking; but the production of coke in New Zealand is much less in quantity than in New South Wales, and the cost is high accordingly, but with a large production of coke on the West Coast no doubt the cost would be reduced.

14. In your opinion as an engineer, do you think it offers an inducement on the return of normal conditions to carry out the undertaking as a commercial undertaking?—Not at the present time.

15. I mean, after getting over the disabilities of the war?—For several reasons it would not be profitable for many years to work the iron deposits in New Zealand, in my opinion.

16. What was the inducement offered in the case of the Ethelburga Syndicate? Did the company think that the Dominion would guarantee the interest on their money?—They required a very large guarantee by the Government.

17. *The Chairman*] They made a profit, anyhow?—Yes.

18. *Mr. Luke.*] You think that was a scheme that was not undertaken whole-heartedly as a commercial undertaking, or was it made with the idea of exploiting the country?—I think it was the latter.

19. Generally speaking, you think the prospects at some future date would be very good for the purpose of developing the industry?—Yes, but at present the cost would be too high. That is, we cannot possibly compete with outside iron and steel, and our local demand is too small to enable a blast furnace being kept going all the year round.

20. I quite agree with you there, unless it was a very high-grade ore, and you say it is not a high-grade ore?—No, it is not a high-grade ore.

21. *Mr. Hudson.*] Are we to infer from what you say that there is no use New Zealand doing the treatment and developing this ore at present?—Yes. At the present time our demands are too small to warrant the erection of a blast furnace and steelworks. We could not keep them going more than half-time with our present requirements, and the export of iron and steel to other countries, with our cost of production, is out of the question entirely.

22. What is the position in regard to pig iron?—The cost of production of pig iron in New Zealand at the present time, or immediately before the war, would considerably exceed the retail price that was then paid—£5 per ton, c.i.f., Wellington.

23. *The Chairman.*] It would cost more than that to produce?—Yes, owing to the high cost of coke and wages, and then there is the smallness of the output.

24. *Mr. Hudson.*] Speaking about coke, do you consider the coal produced on the spot is unsuitable?—Yes. No coal containing more than 1 per cent. of sulphur is suitable for blast-furnace coke. The only two collieries in New Zealand producing the coking-coal which we require —that containing a small quantity of sulphur—are Paparoa Colliery and the Liverpool State Colliery.

25. Does that mean that coke would have to be brought from there?—Yes, or from Australia.

26. Or from Greymouth?—The Liverpool and Paparoa Collieries are both near Greymouth.

27. When you speak of Parapara I presume you include Onakaka and Washbourn?—Yes.

28. Do you know Mr. Turnbull, who is interested in Onakaka?—Yes, I have met him.

29. You have never seen a report furnished by him?—No; it was furnished some years ago, I believe.

30. *The Chairman.*] I would like to ask your opinion of the possibilities in connection with the smelting of ironsand?—During December, 1917, I was asked to report upon the operations at Moturoa. I furnished a report after witnessing the smelting operations and going into the matter thoroughly.

31. Has that report been published?—It is on the Mines Department's file.

32. Is it confidential or otherwise?—All the official files are confidential—*i.e.*, they are the property of the Government.

33. Are you prepared to advise the Committee as to the prospects?—Yes. I was advised by the Under-Secretary that I should answer any questions.

34. What is the practicability of the smelting of ironsand as a commercial undertaking?—I have a number of samples here, the product of Taranaki ironsand [samples produced]. I may say that experiments have been made with the ironsand there since 1850, since when they have been endeavouring to successfully smelt the magnetic ironsand. I may also say that nowhere in the world has magnetic ironsand been treated successfully commercially. Attempts have been made in Canada, and all have hitherto failed. I do not say that the smelting of Taranaki ironsand has failed, but so far the results have not been profitable. They have evolved a process called the Heskett-Fraser process for smelting Taranaki ironsand. They have experimented by that process on several occasions, and on each occasion they have got an improved product. They have not arrived at perfection yet, and they cannot guarantee a marketable pig iron. The defect has been up to now that the class of pig iron varies between white and grey. White pig iron is practically steel, and is too hard for working in machines.

Mr. Luke: I put through 20 tons of it in our furnace with the last briquettes they had, and all the iron that we got was about the size of my hand.

The Chairman: That was a long time ago.

Mr. Reed: Samples were sent to several foundries in New Zealand. Samples were sent to Robertson and Co., Luke and Co. (Wellington), Duncan (Christchurch), and Reid and Gray (Dunedin). I did not visit Messrs. Lukes' works, but visited all the others. I got samples of castings at the different foundries, and they all reported to me the same—namely, that the pig iron from Taranaki was patchy in quality, some being too hard and some workable. The difficulty was to separate the good from the bad, the result being that the castings came out partly white and partly grey iron. White iron is harder than grey. I here exhibit to the Committee [produced] a piece of a casting from Messrs. Robertson and Co., of Wellington, from pig iron supplied by the New Zealand Smelting Company, Taranaki. This is grey and white iron, and it will be seen that the extremity is white iron, which is much too hard to work in a machine. I have here [produced] a piece of iron casting supplied to me by Messrs. Reid and Gray, of Dunedin, showing the extremities to be white also, which is, as I have explained, much too hard to work in the machines. It requires 2,200° F. to produce grey iron, but 2,000° F. may produce white iron, which is valueless and detrimental here. This sample [produced] is a piece of a cast-iron cylinder ring from Messrs. Robertson and Co. The casting is good grey metal. This is a good casting made from Taranaki ironsand by Robertson and Co. I may say that in the tests I have shown you all but one exhibit the same defect—*i.e.*, white-iron extremities; but at a subsequent trial at the furnace some months afterwards, when the process had been improved, the results were much better, but white iron or steel was in evidence. I believe that with a few more attempts they would be able to produce a marketable pig iron.

35. *Mr. Hornsby.*] Is it possible to mix Taranaki ironsand and the Parapara deposit and work the two qualities together, and so get a high-grade iron?—It would be quite possible; but I do not see where it would improve the quality, because both of them carry more phosphorus

than is contained in what is called a Bessemer ore. Taranaki ironsand carries a high percentage of titanium, which is refractory, whereas Parapara carries little of it, so that it would handicap Parapara ore by mixing it with Taranaki ironsand. I would not mix them.

36. Is it possible, instead of using the furnaces you have been speaking of, to use electrical power? Would it be possible to install electrical furnaces to treat this ore at Parapara?—It would be possible but not advisable. I have here a recent article read before the Staffordshire Iron and Steel Institute, showing the developments of the electric steel furnace. It is an extract which appeared in a recognized journal, the *Colliery Guardian*, and refers to the purposes for which electrical steel furnaces are used. The date is November, 1918 [extract read]. I may say that none of the large works use electric steel furnaces except for smelting scrap steel, but it is possible that in the course of time electric heat may be employed for smelting ore.

37. Could the residuum of slag be utilized for the manufacture of basic slag for agricultural purposes?—No, because the phosphorus-percentage in New Zealand ore is much too small to produce a basic slag, although it is much too high to produce Bessemer or first-quality steel. To make steel from both Taranaki and Parapara ore would necessitate the use of what is called the basic process, using the open-hearth furnace.

38. Therefore as to Parapara ore the residuum could not be utilized?—No, the slag would be valuless.

39. *Dr. A. K. Newman.*] Do you think the problem of getting the titanium out of the ironsand is possible of solution, because that appears to be the keynote of success?—I may say that in the treatment by the Heskett-Fraser process of Taranaki ironsand they can eliminate most of the titanium.

40. That is one of the reasons of its success?—Yes. I believe that is something quite new, and there is no doubt about it that it is successful in eliminating much of the titanium.

41. *Mr. Veitch.*] Do you know of any other iron deposit in New Zealand that you think would be of any magnitude that could be successfully worked?—No.

42. You do not think the time is ripe?—I have gone into the question thoroughly, and I am perfectly satisfied that the time is not ripe. It is not opportune to work our iron deposits at a profit.

43. Do you know of anything having been done to ascertain whether there is coal suitable for working the ore in the vicinity of the deposits?—The country has been very well prospected for coal. They are working collieries in the neighbourhood now, but none of the coal is suitable for producing a blast-furnace coke.

44. *Mr. Craigie.*] You are aware that Parapara is under lease to certain syndicates on certain terms?—Yes.

45. Would you recommend that the Government should determine those leases and hold them, so that they can be worked by the State—so that, in fact, later on, when conditions are favourable, that can be done?—I am certainly favourable to the leases being cancelled at once, and thus to bring the ore back to the Crown.

46. You hold that until the conditions are more favourable they should not be worked, but might be worked later on?—Certainly.

47. *Mr. Sidey.*] You are very hopeful about the Taranaki ironsand being worked?—I am satisfied that both will be worked, and will be of great benefit to the country in time to come.

48. You think that Taranaki ironsand can be profitably worked now?—No; but I believe they will shortly produce marketable pig iron, but not at a cost that will enable them to compete with the imported pig iron. There are five different grades of pig iron used in the foundries in New Zealand. One blast furnace using one ore can only produce one grade of pig iron. The output of one furnace would greatly exceed all New Zealand's requirements for one grade of pig iron.

49. I understand you to say that, even although they could produce an article which is satisfactory and which is a marketable article, it could not be produced at the present time at a payable price?—Yes. I am satisfied that Taranaki cannot produce marketable pig iron at a price to compete with the imported article at the pre-war price.

50. The Committee is anxious to know of any other mining industries which can be successfully established in this country. Take, for example, the oil industry?—When I was advised that I would perhaps be required to appear before this Committee I got a few figures together in connection with other industries, and I could make certain recommendations as to those minerals which we have here and which I believe can be successfully developed.

51. *Mr. Luke.*] There are two conditions that would make that successful. One would be the export of pig iron or the making of rails. I quite agree with you about the making of bars of a multiplicity of sizes, that we could not compete with the imported article, but could we compete under certain conditions in the manufacture of our own rails? Would that keep a furnace going, plus the foundry requirements?—I do not know what our requirements in rails would be. If you had a large demand for steel rails that would help one blast furnace to be worked continuously but there are other things that have to be considered. Some New Zealand ore might not be very suitable for the manufacture of rails. I am not satisfied that Taranaki ironsand would be suitable for the manufacture of steel rails. I believe that Parapara ore might be so used.

52. *The Chairman.*] Can you tell us what it is costing the Taranaki people to produce pig iron per ton?—I estimated that the price ran into many pounds for producing the small quantity which they did, as they threw nearly all of it away—the white iron. Very little grey pig iron was produced. I do not think they have produced many tons from ironsand, and I think the total expenditure at the Taranaki furnace has been about £40,000.

53. From what I can gather it is quite a practical thing to produce. They may probably in time produce grey pig iron, but it is the matter of cost that is going to block them?—Yes, they can produce pig iron of a kind quite easily.

54. But you are satisfied the cost is too great?—Yes.

55. It has been the custom in Australia and Canada for the State to offer a bonus for the production of iron and steel: would that not be practicable here?—Yes, it has been done here.

56. It has been offered here?—There was an Act of Parliament passed providing for that. Yes, the date when applications for such bounties expired, I think, in 1916.

57. Do you recommend that that Act should be re-enacted—that a further offer should be made?—The maximum bounties offered by the Government were 12s. a ton for pig iron and 12s. for steel, and that would not make up the difference, in my opinion, between the retail price of the imported article and the cost of production in New Zealand.

58. What would be the difference?—That is difficult to say. I could only give you a guess. I do not think they can produce pig iron at Taranaki under £6 10s. per ton, and at Parapara under £6 per ton. These are only approximate estimates.

59. Have you any idea of what the interest and depreciation would be?—No; it would be very considerable. Iron and steel works require a lot of money to lay down.

60. Would you care to make a statement with regard to new industries?—I prepared a list of subjects for investigation in connection with the industries of New Zealand—the mineral industries which I consider are the most important for investigation. To begin with, I would draw your attention to the great value and quantity of mineral oils—burning, lubricating, gas-oil, and paraffin—imported into this country. For 1917 the value of these oils imported was £892,083. That is the Customs value of the oils and paraffin imported into New Zealand. The value is estimated at the fair cost value plus 10 per cent.

61. That does not include freights, which are enormous?—That does not include the freights. There have been attempts made for many years to obtain a supply of crude petroleum in New Zealand. Up to the present time about twenty-five deep boreholes have been drilled in New Zealand—in Hawke's Bay, Taranaki, Canterbury, and Westland. The deepest of these bores is 5,274 ft., at Moturoa; it is named the Blenheim Well. None of these boreholes have yet proved oil in quantity of commercial value. One company—the Taranaki Oil Wells (Limited)—gained the Government bonus of £7,250 for the production of a million gallons of crude oil, but it took them six years to obtain that quantity from three or four boreholes, which have now greatly declined in productiveness. So that up to the present the results of our deep drilling have been negative. But it cannot be said that the drilling should be stopped or that the operations must be condemned, for throughout the world it has been proved that a great percentage of unsuccessful boreholes are drilled before a payable supply is obtained. I have here a leading article from the English *Colliery Guardian* upon a paper recently published by the Smithsonian Institute of the United States upon oil-prospecting and the results of oil-prospecting in different countries, and it is here stated that nearly all the successful oilfields were discovered by what is called "wild-catting" or boring haphazard. It states that in the United States every field has been located only after hundreds of holes have been drilled. It does not, however, support haphazard in preference to scientific boring, but it states the above as a fact nevertheless. So that as regards drilling in New Zealand we must not condemn the prospects entirely on account of the twenty-five deep holes that have not secured a commercial supply. The difficulty of drilling in New Zealand in many places is owing to gravel and alluvium preventing the formation of the underlying rocks being observed and the best positions for drilling being determined. In Canterbury a borehole has been drilled through 1,500 ft. of gravel and conglomerate. At Taranaki the rocks are covered with volcanic debris, and they have drilled there 5,274 ft., but no rocks outcrop. The Government has subsidized the undertaikng very well indeed by loans or grants. That is all I can tell you about the drilling. I consider that the prospects of petroleum shale are very much better. Last week I returned from Orepuki. There has been expended in connection with the shale-works there £124,000. The works have been shut down for many years. The deposits of shale there require further boring to prove their extent. The cause of the failure may be attributed to the defective treatment of the shale and to the fact that the mine was laid down in an unsuitable place. To restore the works and reopen the mine, I estimate, will cost £55,000. That will permit £15,000 for working capital to go on with. The developments at Orepuki are easily the most promising in New Zealand for the production of petroleum. The works there, if they were in operation, would not, however, supply more than a small proportion of our requirements—possibly one-fifth. Boring has also been done at Waikaka, in Southland. It is stated that twenty-two boreholes have been put down to develop a shale-seam varying from 1 ft. to about 18 ft. In quality the Waikaka shale is not quite so good as that at Orepuki, judging by the analysis of the Dominion Analyst. I certainly think that encouragement should be offered for the development of shale-oil, because we know that we have got it of high quality, whereas we do not know anything for certain regarding oil-wells yet. I believe that to encourage the oil-shale industry is well warranted.

62. *Mr. Hornsby.*] I suppose you know the cause of the first failure of the Orepuki shale-works?—Yes; one cause was the import duty on kerosene being removed, but the quality of the oil produced was not marketable; also the mine caught fire. There were several things which caused the failure. The 5d. per gallon duty being removed would not make any difference to them.

63. Do you think if that deposit were properly developed there is a future for the shale industry in this country for the production of oils and paraffin-wax? We had specimens in the lobby many years ago. I think it was about 1901. We had the crude oil, paraffin-wax, and the completely refined article?—Yes, we have the full analysis. Fifty-seven tins were sent Home

to the works to be properly treated, with very satisfactory results, I think. The analysis and reports show that it is quite a high-class article, although in the retorting here a failure was made by overheating the retorts. There is no doubt that Orepuki oil-shale warrants further investigation.

64. *Dr. A. K. Newman.*] Are there not other shale deposits there?—I do not think there are any others known except those at Waikaka and Orepuki.

65. Are there any in the North Island?—I could not say. I do not know of any.

66. Do you think there is any future for natural gas?—Certainly. If sufficient gas is found near the towns it is of value.

67. Are there any prospects in New Zealand in the way of using natural gas?—Yes.

68. Do you think the indications are that it will be found in great quantities?—I do not think we have evidence to warrant our thinking that there are great quantities of natural gas in New Zealand. I believe in one place they are getting it and using it—somewhere in the Napier district.

69. Is it at Otane and Makoraka at Gisborne?—I have heard of it being used, but I do not know of any place where it is used in quantity. To be of value it has to flow continually for years in great volume, and it must be of suitable quality. I do not say it is not of suitable quality here, but I do not know of any great quantity. There is no doubt as to the quality of the Orepuki shale.

70. *Mr. Veitch.*] In your opinion the conditions at Orepuki would be such as to justify encouragement of the industry?—Yes.

71. Along what lines do you suggest the industry should be encouraged?—By the company calling up sufficient capital to reopen the works. It is not suggested that the State should do anything.

72. In your opinion if the company can get the money—say, £55,000—they could carry on without Government assistance?—The Government might consider the taxing of imported kerosene and oils.

73. *The Chairman.*] Or giving a bonus?—Yes.

74. *Mr. Veitch.*] Or giving preference in their own departments perhaps?—Yes.

75. Could it be produced to compete with the imported article?—It would be too much of a guess to give you the cost of production, but if the retail prices at present existing prevail in all probability Orepuki would be able to compete. The prospects really would depend upon the success of the boring operations which I recommend should be carried out, but results would likewise depend on the success of retorting at the works as reconstituted, so that an estimate of cost of production at the present time would be altogether too much in the nature of a guess. I simply recommend that the matter should be further investigated and the ground proved by boring.

76. *Mr. Craigie.*] You state that the company expended £124,000 there?—Yes, by the New Zealand Oil and Coal Company (Limited), which has never paid a dividend. The company owns the Kaitangata Collieries also. It has thus not very much inducement to go on.

77. Do you think, from a national point of view, it would be a fair thing to ask the Government to assist in some way, by bonus, or subsidy, or tariff?—I think it is a reasonable field for the State to aid in some form. I do not think there is any branch of the mining industry for which assistance is more appropriate considering the great value of our imports of oils.

78. *Mr. Sidey.*] What concessions have the company got?—They have a lease. That is the only concession they possess. During 1903 they obtained a bonus from the Government for the production of oil. They received £5,000 for the first 100,000 gallons of crude petroleum. They have a lease of 1,260 acres.

79. Does that include the whole of the suitable ground—the shale deposits?—I do not know. Nobody can form an estimate till the ground is bored.

80. Does that mean investigation by the State?—The State cannot investigate at present. The lease belongs to the company.

81. In other districts?—I would prefer to concentrate on the exploration on this property to start with.

82. You think, so far as the development of shale-oil is concerned, we should concentrate on Orepuki?—I would recommend that the company should. I do not say the Government should. The owners of the property should concentrate their attention on exploration by further boring.

83. *The Chairman.*] You could not offer a bonus to one special company. It would be offered generally.

84. *Mr. Sidey.*] I want to know, in regard to the encouragement of the shale industry, what you think we should recommend?—It could be done in the form of a subsidy upon drilling, in the imposition of a tax upon imported oils, the restoration of the duty on kerosene, or by a bonus on production of oil.

85. A subsidy on per foot of drilling?—Yes.

86. You would recommend something of that kind?—Yes.

87. That would be for shale-oil?—Yes.

88. That would be so that any one could take advantage of it, and not only the Orepuki Company?—Yes.

89. What would you recommend should be done further with a view of possibly developing the oil industry?—I do not know that the Government can do anything further. They are paying all the working-costs of the Taranaki Oil Wells Company and the Oil Lands Company at Moturoa.

90. *The Chairman.*] You might explain that that is done to encourage drilling at great depths?—They desire to test the extreme depths. That is the reason the Government is paying costs. It is to assist deep drilling for petroleum.

91. *Mr. Sidey.*] You say that at the present time the Government is paying the whole of the costs of one company's boring operations?—The whole of the wages.

92. *The Chairman.*] The whole cost is not borne by the Government. They are paying the wages only for the special purpose of testing the very deep boring?—The Taranaki Oil Wells Company are receiving their full wages from the Government for re-casing and relining the holes and restoring the works. They are not proceeding deeper at the present time, but they propose to do so later, when the holes are recased and restored.

93. *Mr. Sidey.*] You do not suggest that in the meantime the Government should be asked to do any more in the way of boring for oil?—My own personal opinion is that that should be left to private enterprise—the boring for oil. The Government bonus for the production of crude and refined oils might be restored.

94. Would not a similar course to that be followed with regard to shale-oil?—No. In the case of shale we have an assured supply, and in the other case it is only problematical. To prove the shale it will only cost a few thousand pounds, but in the other case it might cost several millions.

95. Because of the greater depth?—Yes, and the greater number of holes, and the greater area of territory necessary to prospect for oil. The deepest shale-bores would be only a few hundred feet in depth, but the oil-bores would be as many thousands.

96. You recommend with regard to oil that the Government offer a subsidy on the output?—Yes.

97. You are of opinion that that would be a fair recommendation for the Committee to make?—I do not know if I am in a position to recommend to the Committee, but I would recommend it to the Minister.

98. *The Chairman.*] You are aware that in England the British Government are constantly expending money in order to thoroughly test whether there is oil to be found in England or not?—Yes.

99. From your knowledge of England, do you think that is a reasonable proposition as against, say, a like expenditure in New Zealand?—England is a very much more populous and richer country than New Zealand, and wants oil much more.

100. As to the prospects of getting oil there?—I do not know that they are better than they are here. In England they have commenced distilling it from cannel coal.

101. The indications for oil are no better than they are here?—I do not think so.

102. The British Government are spending a large sum in prospecting there?—Yes, I believe so.

103. You said that, in your opinion, prospecting for oil should be done by private individuals?—Yes, because the land is held by them.

104. But, knowing the speculative nature of the business, is it a matter that private individuals are likely to take up, especially in view of past experience?—Some private individuals have more enterprise than others.

105. They have expended a large sum of money in trying to find out whether there is oil or not. Would it not be fairer that the Government should prospect at the expense of the State?—I do not know any country where the Government has expended any money in exploring private property, for the reason that all discoveries would belong to the landowners.

106. This country is expending over a million pounds annually in the importation of oils. In the national interest would it not be better to have this question settled whether there is oil here or not?—It would cost millions of pounds to test New Zealand. I do not think it would be just to the general taxpayer to expend millions of money for the benefit of the holders of the freehold.

107. The State could protect itself easily by law in the event of a discovery of oil being made. What I want to thresh out is this: if this is left to private enterprise nothing will be done, whereas if the Government take the matter up and prospect it might be of material benefit to the country?—There has been over £100,000 expended already for private people.

108. They are pretty sick of that, are they not?—I should say they would be.

109. *Mr. Hornsby.*] Would it not be a reasonable thing for the Committee to recommend that the Government, in order to encourage the Orepuki shale industry to develop, should do the necessary boring to test that deposit?—Yes.

110. That would be a reasonable request to make?—Yes; bearing in mind that £124,000 has been expended, that the quality of the shale is assured, it would be equitable for the Government to pay the cost of drilling in the same way as they are paying the cost at Taranaki at the present time.

111. *The Chairman.*] The works at Orepuki are at present idle?—Yes, since 17th July, 1903.

112. They are entirely owned by a private company?—Yes, by a British company, with some New Zealand shareholders.

113. The extent of the deposits have not yet been tested?—They are considerable, but they require further exploration. I may state in regard to another question—the brown coal of New Zealand—that Sir James Hector, Mr. Morgan, the late Mr. Mackay, and other geologists estimate that there are probably 728,000,000 tons of brown coal *in situ* in New Zealand. That is a large quantity of brown coal. Brown coal contains more than 10 per cent. and less than 20 per cent. of moisture. Last year the New Zealand output of that coal was 629,174 tons, one-third of which was dross or slack. It is sold at a loss by the producers or thrown away. In America and Britain they are distilling coal for oil and by-products. They propose starting works in connection with it at Alton Bay in Victoria. Their brown coal is inferior in quality to our brown coal. The question is whether our brown coal is suitable for distillation. Such investiga-

tions could be undertaken by the State. There are 728,000,000 tons of that coal, and if it could be utilized in that way it would be of great benefit to the State. This is, I think, a most important subject for investigation.

114. *Mr. Sidey.*] Will you give us a list of the subjects you intend to bring before us?—There is dolomite required for steel-manufacture. That has been discovered in the Collingwood district, and the sample of it which has been analysed is satisfactory. Dolomite is absolutely necessary in connection with the manufacture of steel by the basic process, and in Australia they have had to bring it from Middlesborough, England, at a cost of £5 per ton. That would mean a saving of nearly £4 per ton if we could get it here. It was found many years ago in this country.

115. *Mr. Sidey.*] Is there any prospect of the development of aluminium?—I am not aware that it has been found in commercial quantities in New Zealand.

116. As to asbestos?—It exists here, but not in payable quantity.

117. Molybdenite?—In minute, unprofitable quantities.

118. Platinum?—It exists in Southland, but has been sluiced away at the alluvial-gold claims up till recent years, because the price obtained was then too low. Now it is worth from £20 to £30 an ounce, but alluvial gold-mining in Southland has much declined.

119. *The Chairman.*] Have you any knowledge of the distillation of alcohol for industrial purposes?—No. Dr. Maclaurin is the authority on that.

120. *Mr. Hornsby.*] With regard to mica, I believe it exists in very large quantities in the Nelson District?—So far as I know, it does not occur in any size or quantity that is marketable.

121. You know where it was obtained?—I believe, near the head of the Karamea and Baton Rivers.

122. Do you think it is worth looking into?—I have heard nothing favourable about it.

123. You know there is no large deposit there?—I know only of samples, and have never heard it favourably reported upon. In New Zealand, as well as in other places, people claim to have found out all sorts of minerals and frequently exaggerate their value and extent.

SATURDAY, 8TH FEBRUARY, 1919.

CLAUDE HEATH WOOD, Accountant, examined. (No. 11.)

I represent Jackson and Co., paint-manufacturers, of Wellington. Mr. Jackson is unable to attend, but in his absence I wish to bring under the notice of this Committee that Jackson and Co., paint-manufacturers, have been making several lines of paint for a number of years. Many of the lines used in our trade are obtainable in New Zealand, but so far have been practically undeveloped. At Parapara there are ferric oxide, barium sulphate, chalk, and various other things. Some of these are found in abundance in the Nelson District, and they could be developed with the one plant if we could only get the support of the Government in regard to the purchasing of our products. There is almost enough paint used by the Public Works Department, the Railways Department, and other Departments to keep a factory going; but during the past year, for instance, the business done with the various Government Departments has been far from encouraging. The business with the Defence Department last year amounted to about £1,000, with the Public Works Department £191, with the Railways Department £13, with the Education Department £10, with the Prisons Department £5, and with the Post and Telegraph Department 2s. 3d. There is enough oxide used by the Railway Department for trucks, stations, and bridges to keep a factory occupied, but the whole of the oxide sold to the Public Works Department last year was 8 cwt., and to the Railway Department nothing. Putty is another line that we manufacture. The contractors of the new Parliamentary Buildings are using quantities of putty, and it is also being used extensively round the town. Yet the whole of our business in putty for the last ten months with the Public Works Department amounts to 4 cwt. As for mixed paints, we are manufacturers of mixed paints, and have been giving most of our attention to that work for the last two years, but so far we have not been able to get in with the Government Departments to supply them in any quantity. The Defence Department has certainly patronized our paint branch to some extent, but nothing like what it should be possible for us to get from them. The Public Works Department has taken practically nothing. In the past ten months we sold to that Department only 1 lb. of mixed paint. The Richardson Shipping Company, of Napier, last year took 120 gallons for their ships. The Eastbourne Borough Council and other concerns, and farmers, also go in for paint extensively, but the Government Departments will not touch it. Flat varnish has been used a good deal, and we make it almost equal to anything on the market, but we are unable to get a sale for it to any of the Government Departments or local bodies that ought to patronize local industry. There are many of the lines we manufacture in regard to which we ought to be protected by way of duties. Some of our lines we can turn out equally as good as imported lines, but we cannot get the necessary protection from the Government to give us the assistance we require. In March, 1918, we sent a letter to Mr. Montgomery, of the Customs Department, on the matter. I will forward to the Committee copies of this letter and copies of the reply we received. While mentioning the oxides and other New Zealand pigments I may say that Mr. Jackson has spent considerable time and money on them, and Professor Easterfield is still working on the Parapara oxide to obtain a brighter red. It is possible to obtain a nice shade, but it is not as bright a red as is called for in the painting of roofs. The oxide contains the largest percentage of ferric oxide discovered so far. Chalk is another line which is found in the Nelson District. Excellent distemper can be manufactured from it. Barium sulphate, or barites, which is an adulterant for paint, is to be found in large quantities in the West Coast district. Possibly there would be a market for some of these things in other countries. So far,

however, no encouragement has been given to the industry, and it is not a business proposition to develop these lines without protection from the Government.

1. *To Mr. Luke.*] I do not think the Government are bound by their contracts. The contracts, I understand, were cancelled on account of war conditions. When supplies are wanted now the Government call for tenders. There are repeated applications for supplies of paint from the Public Works Department and the Railways Department. We tender on every opportunity. I am certain that in many cases the tenders from the Public Works Department never reach us, because the business we have done with them for the last year would not represent the amount of paint that would give the Royal Oak Hôtel a couple of coats. We are supposed to get the same chance as other tenderers, but we do not get it. There is a prejudice against the locally manufactured material. We have given the Department samples of our material to compare with the best lines on the market. Various painters, decorators, and master tradesmen admit that the majority of our lines are equal to anything on the market, but we cannot get the Government Departments to take them up. With the City Council we have the same difficulty. We have shown them certain lines, but they buy a line at almost double the cost of ours. The City Council sent out tenders for various lines, but in the past twelve months our business with them does not amount to more than £50. I understand that the chief workman in the place is an old Englishman, and we cannot convince him that the locally manufactured article is equal to the imported. The hæmatite class of paint was made by people in the Parapara district forty years ago. It was ground by a crude process—in fact, when a tin was opened there was a sediment of 1 in. or 2 in., and it went off the market, as better lines were imported. We have overcome the grinding proposition, and can grind it now as fine as anything imported from England, America, or other countries. The prejudice against hæmatite was largely against the large percentage of unground material in it. We treat it by better means now. We obtained permission from Mr. Montgomery, of the Customs, to set up a still to experiment with turpentine and methylated spirits during the recent shortage, but so far we have not been able to work them up to a commercial proposition.

2. *To Mr. Hudson.*] All the railway-stations and all the under-gear of carriages are painted with oxide, but we never sell to the Department, in spite of the fact that we have written to it and gone to Petone to demonstrate that our products are equal to those they are using and cheaper. We only got a line of ground pumice from them because they could not get it anywhere else. Generally speaking, the chief lines of the paint trade that we manufacture are equal to anything imported. If an expert saw the two side by side he would report on the local production as favourably as on the imported article. Various painters who have been in the habit of using imported lines have taken to our lines, and use them only. Hæmatite can compete with the imported article, though for colour it is a question whether we can get as bright a colour as that of the imported article. For durability and fineness in grinding we can get our oxide up to anything that is imported.

3. *To Mr. Hornsby.*] Some of our prices are lower than the prices of the imported articles. It must be remembered that there is a difference between the Imperial gallon and the American gallon, the former being the greater. At the present time the market rate for the best imported paint is £1 5s. per gallon, and our price is £1 0s. 6d. Much of our material comes from Parapara, and there is no difficulty in obtaining it. There are about 2,000,000 tons of it on the surface. We purchase from Mr. Washbourn, who has an estate there.

4. *To Dr. A. K. Newman.*] Our putty has the same strength and durability as the imported putty. During the past week two large firms in the town have been unable to get their English supplies to hand, and had to fall back on our lines. We are willing to demonstrate the two lines side by side to the Committee. At present we employ ten hands, but we have been working short-staffed since the epidemic. With a fair share of the Government business we would have to employ more hands.

5. *To Mr. Craigie.*] I am not sure that the duty on mixed paints was put on to encourage local industry. Australia has invested in paint-factories about a quarter of a million sterling. We have to import the raw oil, the white-lead, and the pigments for colouring. Most of the general mixed paints are imported. There are a few lines of ochres and umbers that are obtainable locally. The hæmatite that the Railway Department use is not New Zealand hæmatite. About thirty or forty years ago they used it, but they fell away from it on account of the stuff not being properly ground. I know that manufacturers at Home make a speciality of some line, such as colours, varnishes, enamels, and so on, and the men who import no doubt know where they can get the best. Our articles, however, are admitted by many painters to be better than anything else that is used. I should like the Committee to see if something cannot be done to make the various Government Departments recognize the industry. When they can obtain goods at a better price and equally as good made in the country they should not buy foreign articles. I know that some years ago a man in this town made bad varnish, and anything like that cripples a new industry for a time.

6. *To Mr. Sidey.*] I would like the Committee to (1) induce the Government Departments to order more of our material, and (2) recommend increased duties. During the war we could turn out our paint cheaper than the imported article, but notwithstanding that we have not been able to make headway. Now that the war is over, unless we get encouragement and establish our industry, keen foreign competition will set in, and the local industry will have to die in time. If the duties we ask for are put on it would help us to a great extent. The duties in Australia have made the industry there, and they have not one factory but several factories.

7. *To the Chairman.*] It is a matter of expense to us to pay Professor Easterfield for his experiments. In that respect the Government might help us. Mr. Aston, of the Department of

Agriculture, has assisted us a good deal free of charge. I think the Government ought to place officials at our disposal, for the reason that we are endeavouring to establish an industry. We do not manufacture paint-brushes. They are made by the Otago Brush Company in Dunedin, and by Bunting and Co. in Christchurch. The duties in New Zealand on imported brushware have enabled the brushware companies to get in, and we want similar protection for our line. There are 2,000,000 tons of ferric oxide in sight at Parapara. Oxide can be largely used for roof-paint, but it has not been made here to any extent up to the present. If the Railway Department and the Education Department were to use it they would order enough to make it a paying proposition.

8. *To Mr. Hornsby.*] We import gum as an ingredient for varnishes. Kauri-gum is used in some varnishes, but it does not make the best varnish.

9. *To Mr. Hudson.*] I have seen samples of coloured clays from Rotorua. Some of them have a small percentage of oxide, and they might be of commercial value in cheap paints and be worked up into an industry.

10. *To Mr. Sidey.*] The Defence Department has used some of our paints and distempers. Our manufacture of terebine is sold at 6s. 6d., and the imported article is 12s. 6d.

MONDAY, 10TH FEBRUARY, 1919.

FRANK REED, Inspecting Engineer of Mines, further examined. (No. 12.)

Before I go into fresh matter I wish to explain, in connection with the cost of production of pig iron in New Zealand, that my estimate of the other day was only a very approximate one. In making the estimate of £6 per ton for the production of pig iron from Parapara ore and of £6 10s. per ton from Taranaki ore I made provision for loss of time owing to the furnace producing only one grade of pig iron, whereas five grades are at present used in New Zealand. The capacity of the furnace at Taranaki is stated to be 30 tons a day, which represents about 11,000 tons of pig iron per annum, working full time. The demand for pig iron in New Zealand has never exceeded 11,554 tons per annum, therefore it would be necessary for the furnace at Taranaki to supply the whole demand of New Zealand and produce five grades, whereas it will produce only one grade; there would thus be great loss of time, and consequently increased working-cost. Should the demand equal the production, then my estimated cost could be well reduced at least 25 per cent. Mr. Luke asked, if our requirements in steel rails were obtained from New Zealand, whether it would enable a furnace to be employed full time. Now, the steel-rail importation for 1911 is, I believe, the highest on record. It was 21,564 tons. Therefore if any New Zealand furnace could supply iron suitable for steel-rail manufacture and it obtained the whole of the New Zealand demand a blast furnace and steelworks would be warranted, provided the cost was satisfactory, to supply, say, 11,000 tons of pig iron and 21,564 tons of steel rails. I have given this explanation because probably the shareholders in these concerns will object to my estimate. They will not look on it in the same light as I do—namely, that the furnaces, if they are not working full time, will cause a number of men to be idle who require to be paid during that idle period, thus increasing the cost per ton.

1. *Mr. Hudson.*] You consider that it would not be a payable proposition?—Not at present.

2. How do you account for big extensions in Australia at present?—They are new works and practically in an experimental stage. Australia has a population of six millions, where we have a population of only one million to supply.

3. Quite recently the Broken Hill Company has been extending its works?—They only opened them a year ago. They have not installed yet the whole of the plant as originally intended. They had an official opening a year ago at the works as far as they were constructed, but they are still continuing their original scheme in laying out works.

4. Is Queensland not starting works?—I could not say.

5. They were advertising for a manager?—Possibly.

6. What about the Blyth River ore deposits? Are not the Commonwealth Government making a move to get possession of the works?—I do not know. I only know of the Lithgow Works (Mr. Hoskins) and the Broken Hill Works at Newcastle.

7. And what about Western Australia?—There is nothing being done there. There are no iron deposits of any magnitude there.

8. You mentioned on Friday that coke would have to be procured from Greymouth. What about Mount Burnett?—I know the mine there. The coal contains too much sulphur—more than 1 per cent.—to produce blast-furnace coke. They could make coke, but it would not be suitable. Having inspected the mine I do not think the coal is of great extent—in fact, none of the official reports are favourable regarding its extent. The coal-seam is almost vertical, instead of horizontal.

9. *Mr. Veitch.*] After all, the question of whether we should attempt to develop the iron industry would depend almost entirely on the quality of the ore, would it not?—I base it more on the cost of production. We have got a fair quality of ore at Parapara—perhaps better than fair. It is a question of the cost of production, and, of course, the cost of production depends much upon the demand.

10. Would the cost of production be appreciably reduced if we could find a suitable coal somewhere near Parapara, assuming that Parapara is developed?—If you could get a coking-coal near Parapara the cost of production would be reduced to the extent of the difference of the cost of transport between the point at which you find the coal near Parapara and the cost of transport from Greymouth.

11. Under favourable conditions would that cost be considerable: there might be vessels belonging to the Department or to the company that would transport?—The cost might represent 8s. per ton in difference. That is a safe estimate. If you could get in the immediate neighbourhood a coking-coal you would obtain it 8s. per ton cheaper than if you imported from Greymouth. You can say this: A ton of coal produces 70 per cent. of a ton of coke, and about 1 ton of coke may be said to be charged into the furnace per ton of pig iron produced.

12. Have you any idea of what has been done in the way of prospecting the ground in that locality for coal suitable for ironwork?—Do you mean surface investigation or boring?

13. I am speaking in a general sense?—The Government has done considerable geological survey work in the neighbourhood for many years—Sir James Hector, Mr. Binns, and Dr. Bell. The country has been excellently geologized, in my opinion.

14. *Mr. Hudson.*] Professor Marshall also?—Yes; but he is not in the Government service. The locality has been overrun by geologists. The Government, however, do not sink shafts on Crown lands or private lands. It is not, I think, the function of the Government to do it directly, except in connection with a State colliery. The Government subsidizes mining considerably, but does not directly undertake that class of work.

15. *Mr. Veitch.*] Would you consider it advisable to do anything further in the way of general prospecting for suitable coal in that locality?—Considering that private enterprise has opened up and developed small mines in the locality, and that almost every outcrop of coal must be known, I cannot offer any encouragement to search for non-sulphurous coal there.

16. Is that because all that has been already found is sulphurous?—Yes. All that has been found in the district and in New Zealand, with the exception of that in the Paparoa Ranges, carries excessive sulphur for blast-furnace coke.

17. New Zealand must be a sulphurous country?—No; other countries are the same. In England the only excellent coking-coal is found at Brancepeth in Durham. It is a rarity to get coal with less than 1 per cent. of sulphur. Referring to Greymouth district furnishing the only suitable coking-coal, it must be admitted that the Westport Coal Company occasionally get a coal at Millerton, near Westport, with less than 1 per cent. of sulphur, and they manufacture coke at the mine. The average grade of their coal, however, contains an excessive amount of sulphur for a blast furnace.

18. *Mr. Sidey.*] Notwithstanding the further time you have taken to look into the matter you are still of opinion that, even though all the iron for the rails was produced in this country, the cost would not justify opening the industry here at the present time?—We cannot compete with pre-war retail prices. I am certain that we could not compete in New Zealand in iron and steel with the imported article at pre-war rates.

19. The rails could not be made as cheaply in this country as the imported article?—No.

20. Would you recommend obtaining the services of another expert in connection with the iron industry?—Not at the present time. Any expert in the metallurgical process cannot affect the basic facts as to the cost of production here, and of the imported iron and steel.

21. No expert brought in here could throw additional light on the question?—Yes. A metallurgical expert could supply suggestions regarding metallurgical treatment, and perhaps more economic treatment than that practised at the Taranaki furnace.

22. Would that not be advantageous?—Yes.

23. And the result of his advice might be such as to make the industry payable?—I do not think so. I think that the advice of an expert as to metallurgical treatment would be of advantage, but I do not consider that any metallurgical advice could overcome the difficulties as to cost of production to such an extent as to compete with the outside article.

24. Are you aware that steps have already been taken to obtain the services of another expert?—I understand the High Commissioner has been asked if a suitable man is available in England.

25. Your own opinion is that at the present time there is nothing that could be done by such an expert that would be of material advantage?—Expert advice is always useful, but in this case it would not get over the difficulties as to cost.

26. *Mr. Hudson.*] Have you any idea of what the ore costs alongside the furnace at Parapara?—It ought to be done at 4s. per ton of ore at the most.

27. *The Chairman.*] You said that if iron could be produced suitable for steel rails the industry would be justifiable?—I said that pig iron could possibly be produced at Parapara suitable for steel rails—that is, by the basic process.

28. Is it possible to produce at Parapara pig iron suitable for manufacture into rails?—I think it is probable that the Parapara pig iron is suitable for the manufacture of steel rails.

29. That is not so with regard to ironsand?—I am doubtful about the ironsand, basing my opinion on the grade of pig iron hitherto produced.

30. You think that if pig iron could be produced suitable for rails it might be well to go on with it, and yet you say it would not be a payable proposition?—I say that in time no doubt Parapara iron will be used for the production of pig iron and the manufacture of steel rails. It is not suitable at present, owing to the question of cost of production.

31. You estimated the cost of production at Parapara at £6 per ton?—Yes, making allowance for the loss of time.

32. In the event of it being proved that this pig iron would make steel rails, would it enable a foundry to go ahead on full time?—If the whole of the demand of New Zealand for steel rails, plus the whole of the demand for pig iron, were supplied from a furnace and steelworks at Parapara it would entail a production of 30,000 tons of pig iron per annum, which would warrant the installation of a blast furnace, provided the cost of production did not exceed the cost of imported pig iron and steel rails.

33. You estimated the cost at £6 per ton, and said it might be reduced by 25 per cent. if the work was kept going all the year round?—Yes; my estimates are approximate, however.

34. The State might see fit to subsidize the industry to some extent?—Yes.

35. In calculating the cost of production I presume you have taken into account the cost of labour?—Yes, of labour as far as we know it to-day.

36. I understand you have information to give us on other matters?—I wish to refer to the subject of investigation and research regarding the potentialities of brown-coal slack for the distillation of crude oil and by-products. I have already stated that the geological estimate of brown coal *in situ* in New Zealand is 728,000,000 tons, and that the total output at the end of 1917 of such coal was 13,774,384 tons. The output for 1917 was 629,174 tons. About 33 per cent. of the output is slack—that is, it passes through a screen of 1 in. mesh. In Victoria a company is being formed with a working capital of over one million to work the brown coal at Alton Bay, near Melbourne. The prospectus states that it is proposed to manufacture and distil from brown coal various chemical products, including motor-spirits, illuminating and lubricating oils, paraffin, sulphate of ammonia, and calcium carbide, also to supply electrical energy generated by using as fuel under the boiler the waste which is produced in the process of distillation. The brown coal of Germany is used on a large scale for by-products recovery; the output of brown coal was 75,000,000 tons per annum. It is largely used to produce oil and valuable by-products. It is estimated that less than 10 gallons of crude oil per ton of coal is sufficient to warrant oil-works. Recent tests with brown coal in New Zealand give an excess over 10 gallons, varying up to 15 gallons. I suggest that this is a subject deserving of consideration in New Zealand. At the present time the slack from the brown-coal mines is sold at a loss on the cost of production at all the mines. It is sometimes thrown away in the slack-heap. The difficulty in the matter is that brown-coal deposits are largely held by private companies, and for the utilization of the slack produced at such collieries it would be necessary to install works in a central position. The owner of such works would have to enter into an agreement with the colliery companies to purchase their slack of brown coal. The oil requirements of New Zealand could be, to a certain extent, obtained from such sources.

37. *Dr. A. K. Newman.*] Would it not be a handicap to the scheme if the slack is scattered all over the country?—The Waikato Coalfield is the principal producer, and all the mines are within eight miles of Huntly. If works were established at Huntly, which probably is the future Newcastle of New Zealand as regards the coal trade, the works could be supplied with slack without great cost for transport.

38. Has not the production of electricity from brown coal been found very expensive: I am referring to some gigantic works near Berlin?—Brown coal has not the evaporative power of bituminous coal, but there is an output of 75,000,000 tons of brown coal per annum in Germany. It is not so good as bituminous coal for producing heat, but in the proposal for Alton Bay it is the waste from the distillation of the brown coal which will be used as a fuel.

39. While I think strongly of your proposal, I do not remember reading that it is in a working and profitable condition in Great Britain?—In Great Britain they are working on a cannel coal. I am unable to state if it is on a payable basis yet.

40. Or anywhere else in the world?—It is quite a new idea. I am not able to state as to the results commercially.

41. But is it in practice anywhere?—It is one of those new things that has to be considered. It is a subject for investigation. A few years ago the aeroplane had not become practicable, and somebody had to make a start. The demand for oils has increased so enormously of late years that something has to be done to procure oils, and as it is hoped to get oil in New Zealand I make this suggestion.

42. *Mr. Veitch.*] We might at least watch Australia's experience?—Yes. I have an article on the subject. It is considered important enough to be incorporated in the first bulletin of the Board of Science and Art recently published in New Zealand.

43. *Dr. A. K. Newman.*] I only want to point out that the scheme is not yet in working-order?—No; I cannot say it has been profitably applied hitherto. I have not expressed a definite opinion either way as to whether it can be profitably carried out here.

44. *Mr. Craigie.*] Is the Alton Bay a large mine in Victoria?—No. It has, I believe, a considerable deposit of brown coal which it is proposed to work for crude oil and by-products, and the reports on it by experts in England are distinctly favourable.

45. Their intention is to develop the output for the purpose you mention?—Yes. It is considered important enough for the New Zealand Trade Commissioner in Melbourne to communicate to the Government in New Zealand the details, also experts' reports on it, with other particulars. The reports are by eminent men in Great Britain. They recommend a plant to cost over a million.

46. The company seems pretty large, with a million of money. Are they going on?—I see a note on the prospectus that owing to the declaration of war the formation of the company in London was suspended.

47. On a large scale it could be more economically worked than on a small scale?—Yes, if the management is equally good.

48. You say that Huntly would be the centre. Would the output of the mines be sufficient to put a deal of capital into it?—It would depend on the demand. The output of coal is large. There are five collieries working there, and the output is likely to increase.

49. The works you have referred to in Australia are near Melbourne?—Yes.

50. They could retail their electricity to a good market?—Yes.

51. What would be the position at Huntly if hydro-electric works were started?—If the hydro-electric works sold power cheaper than that which could be produced at the brown-coal distillation works there would be no outside market for electrical energy from the distillation works.

52. *Mr. Veitch.*] Could not the mines use electrical power?—A fair amount, but not a great deal.

53. *Mr. Craigie.*] Do you not think that on account of the mines being scattered all over New Zealand it would be impossible to shift the stuff to a centre?—Although the mines are scattered the two centres of brown coal could be placed at Stirling or Milton for the Otago coalfields, and at Huntly for the Waikato Coalfield.

54. In the meantime it is an experiment, and it might be wise for New Zealand to wait and see if it is a success?—Yes, and for New Zealand to investigate.

55. *Mr. Sidey.*] What course do you suggest this country should take in connection with the matter?—As to laboratory research work.

56. You do not suggest that the State should offer a bonus?—No. There should be laboratory research first to see if distillation from slack coal is a warrantable industry to offer a bonus for.

57. Do you say that the State should undertake that work?—Yes. Who else will undertake laboratory research on an extensive scale?

58. With regard to the brown coals about Dunedin—the ordinary lignite and Green Island and Walton Park—are they likely to be profitably worked in that way?—The brown coals in the neighbourhood of Dunedin produced a better average of crude oil than those in Southland and from the Waikato collieries.

59. *The Chairman.*] I suppose it is almost impossible to get an idea of the capital cost of the works required at this stage?—Quite impossible.

60. *Mr. Hudson.*] What use could the crude oil be put to?—For the manufacture and distillation of motor-spirits, illuminating and lubricating oils, paraffin, sulphate of ammonia, and calcium carbide.

61. *The Chairman.*] We will be glad to hear about the other matters now?—The only other subject is a minor matter in connection with the search for magnesite or dolomite. Dolomite is used in the basic process for the manufacture of steel. In Australia it is imported from Middlesborough, England, at a cost of £5 a ton, c.i.f. If such a deposit were discovered in New Zealand it would materially reduce the cost of steel-production. It is believed to occur in the Collingwood district, and has been reported upon by Sir James Hector, but the exact locality is unknown. I merely suggest that the Geological Survey might be directed towards the search for a deposit of dolomite, otherwise known as magnesian limestone. A discovery of this mineral would assist in the successful manufacture of steel by the reduction of cost.

62. *Mr. Veitch.*] Is there a market outside?—Yes; it can be exported extensively to Australia if a good quality is discovered. At the present time it is used at the small steelworks which operate upon scrap steel which we have in the Dominion.

63. *The Chairman.*] You say it was discovered by Sir James Hector: is the place of the discovery known?—The actual spot is unknown, but it is in the Collingwood district. The only record we have is an analysis by the late Mr. Skey, Dominion Analyst; and the fact is recorded that Sir James Hector found a small deposit in the Collingwood district many years ago. He discovered it at a time when there was no interest whatever here in the steel industry either in this country or in Australia.

64. Do you suggest that the Government should offer a bonus for its discovery in payable quantities?—I do not know that it is for me to make such a suggestion, but I may say that at the time Sir James Hector made this discovery the basic process of steel-manufacture which requires the use of dolomite had not been invented by Gilchrist and Thomas, so Sir James Hector had really no motive to devote much time to it. Now it has become a very practical question.

65. *Mr. Veitch.*] Suppose the Government intended to try and develop the industry, on what lines should it be carried out?—By geological investigation in the locality where it is supposed that the deposits occur. Mr. Morgan, Director of the Geological Survey Department, has a knowledge of it. I have here a letter from him on the subject.

66. *Mr. Hudson.*] Has any effort been made amongst the old miners in the Collingwood district to ascertain if they can help in any way?—I doubt very much whether any one in that district knows what dolomite is, or what it is required for. I believe that I personally was the first to draw attention to it—at the time of the visit of a parliamentary Committee some years ago. Messrs. Morton, Ferguson, and Miles visited Parapara at the request of the Government, and made a report upon the iron deposits and prospects; and in connection with the question of the manufacture of steel in New Zealand, which is an important matter, I made some investigations in connection with dolomite. Mr. John Bassett, a resident then of those parts, did some prospecting near Parapara, and he got something which was a near approach to dolomite, but not quite suitable for a basic-furnace lining.

67. Was he able to locate it?—Not Sir James Hector's supply. I have the analyses here of the specimens which were obtained by Sir James Hector and Mr. Bassett. The latter obtained a serpentine magnesite which nearly contains the requisite percentage or proportions of lime and magnesia which are required in connection with the furnace-lining. It is a subject well worth further investigation.

68. *Mr. Sidey.*] What is your opinion as to the best method of research to adopt?—I think the Geological Survey Department should send some one to investigate. Mr. Morgan believes that he can find the place where Sir James Hector got the dolomite.

69. You suggest that the Department should send an officer to prospect?—Yes, a geologist. I feel confident that Mr. Morgan will report on the same lines as I have done.

70. *Dr. A. K. Newman.*] Dolomite is necessary for the making of steel?—Yes, by the basic process I have referred to. It is used in Australia upon phosphoric iron, also elsewhere.

71. What quantity of dolomite would be used for a ton of steel?—I could not say exactly at the moment, but could let the Committee know later on. (Witness subsequently stated that at Lithgow Ironworks, New South Wales, 1 ton of dolomite was used per ton of steel produced.)

72. Supposing there were ironworks at Parapara making steel, if this stuff had to be brought from a distance would it add much to the cost of the steel?—Yes; it is quite a material item.

73. If dolomite were obtained in the vicinity of the works it would materially reduce the cost of production?—Yes, it would materially reduce the cost of steel-manufacture, and it would also create an important industry in the Dominion; it would probably result in an export of dolomite to Australia and perhaps to India.

74. Was Sir James Hector's discovery of dolomite in the Parapara district?—I think Mr. Morgan locates it somewhere in the vicinity of the old Wallsend Colliery, near Collingwood.

75. *Mr. Veitch.*] Will you send the Committee a calculation of the quantity and cost per ton used in the manufacture of steel?—Yes.

76. *Dr. A. K. Newman.*] What can you tell us about phosphates for manures? What are the prospects of discovering phosphatic rocks in New Zealand?—The only evidence I can give on phosphates is second-hand.

The Chairman: We will have the Agricultural Chemist before us.

77. *Dr. A. K. Newman.*] I wanted to know if there is any chance of our developing an industry in phosphatic rocks in New Zealand?—There is a small quantity at Milburn and Clarendon, in the Otago District. It is marketable, but the output is declining. Particulars in regard to that are given in the last annual report of the Mines Department.

78. What are the prospects of developing a large industry in scheelite? It has been exported. Can you say whether there is a very large amount of scheelite in New Zealand?—It is impossible to state even approximately the amount of scheelite *in situ*. In 1918 the production of scheelite had declined, notwithstanding the fact that the British Government had increased the price over the pre-war rate of about £1 10s. per unit of tungstic acid—that is, 1 per cent.—to the present price of £3 8s. per unit of tungstic acid. There has been a considerable decline in the output of scheelite in New Zealand since the war began. There are a considerable number of men prospecting for scheelite in New Zealand, but important discoveries have not been made during the last year or two. The output of scheelite in 1917 was 161 tons, whereas in 1916 it was 266 tons.

79. Is that owing to the shortage of scheelite or owing to other causes?—I would say that it is owing to the shortage of known supplies.

80. This country contains excellent marble?—I would say it contains fair marble compared with the Italian.

81. I do not suppose it is equal to the best statuary marble in Italy; but is there a prospect of our doing an export trade in marble?—I could not say. There is an enormous quantity of marble here in the Riwaka district, Nelson. For the information of the Committee I may say that I have here samples of shale rock. It is a mudstone containing carbonaceous matter. [Specimen produced.]

82. *Mr. Veitch.*] In Wanganui I have seen large quantities of a substance like that—close to the town?—Mudstone resembling this is one of the commonest rocks in New Zealand, but it must contain sufficient carbonaceous matter to be oil-shale.

83. *Mr. Hudson.*] With regard to molybdenite, do you think that it is possible that that may become a commercial product in New Zealand?—It is of great value for hardening steel, but the quantities discovered so far in New Zealand have been too minute to work. I have seen some *in situ* in the ranges at the back of Karamea, but in too small quantities to be considered of commercial value.

84. You could not offer any inducement or encouragement for the production of molybdenite?—Nobody in New Zealand has shown a supply that would be profitable in quantity. In the Waihi Extended Gold-mine it was claimed that it had been found, but on examination it was proved to occur only as traces.

E. J. Guiness, Chief Clerk, Stores Branch, Railway Department, examined. (No. 13.)

With regard to the encouragement of local industry, it is our settled policy to do so, and over a number of years we have gone to a good deal of trouble to ascertain what materials and manufactures this country can supply us with. In 1913 we built up a special schedule to give local industry an opportunity to supply our requirements. We advertised the fact that we wanted local suppliers to come to us, and since then we have been using many locally made goods. I may say that paint, which has already been mentioned before the Committee, was not included in the schedule, as it was not sufficiently high grade to satisfy requirements. It is not possible to test a paint in a month. It requires twelve months, and it would be better to have years. We calculate on repainting our buildings every five or six years, and sometimes seven years. We are continually testing paints. Some are under test at present. Next June the schedule is to be rebuilt, and the matter of locally manufactured paints will then be considered. It suits us to get our paint locally.

1. *To the Chairman.*] I know Jackson and Co.'s paint. We have bought a little of it. We have bought ochres from them, but not other paints. The reason we did not buy was this: Early in 1914 we entered into contracts for the supply of paints, and the contracts were current when the war commenced. The contractors arranged, however, to carry on the contracts, and they are being carried on at the present time. The arrangement was entirely favourable to the Department. I have heard of the Permanent Paint Company, Christchurch. We are testing their products now. It is just a new company. It will be some time before we know the result

of the tests. We could not honestly set out to give a big order for paint unless we know what we are buying, not even if we know the materials used in the manufacture. There is only one test for paint, and that is its lasting-quality and the efficiency of the material of which it is based. A chemical analysis of the paint is no good. Roof-paint is made mostly from oxides. We can test it reasonably in about six months. We use a lot of New Zealand hæmatite and imported oxides.

2. *To Mr. Hudson.*] It is not fair to say that the Government Departments will not support local industries. It is my business as a Government official to see that local industries get a fair chance of showing what they can do. At the same time we have to see that the materials are sufficiently good to warrant being purchased. We cannot lose sight of the fact that we are spending public revenues, and as trustees of public revenue we have to get the best results for the expenditure. We have given local production preferential treatment to this extent: if they can produce an article locally and the price is not unreasonable as compared with the imported article we buy the local product every time. We are willing to test Jackson and Co.'s products, keep a record of them, and build our future orders on the results. That has not been done as far as I know. Personally, I was not handling the matter until eighteen months ago, but I believe my predecessor went to Jackson and Co. and asked them to do something of that kind. My remarks apply to everything of local production, and not only to paint. For years we have not imported a broom or brushware. Our supplies are manufactured in New Zealand. We also take locally manufactured galvanized buckets, stretchers, mattresses, leather goods, hose-pipes for water-tanks, leather belting, and other lines.

3. *To Mr. Sidey.*] It has not been proved to us that the quality of Jackson and Co.'s paint is up to the standard.

4. *To Mr. Craigie.*] A few years ago we used more hæmatite than we use now. We used more when we got the Nelson article. The Nelson was better than the Thames. An English oxide is supplied to us under contract by local manufacturers. We use a lot of oxide for roofs, and a lot of red-lead for bridges and girders. Our technical experts tell us about the quality of paints. The essential thing is good oil. If we got good oil we could use the Nelson hæmatite. Oxide is brighter than hæmatite. We would not give a guarantee to use any exclusive paint and leave others out of consideration. Hæmatite has not the holding-qualities of oxide, not even for roofs. Wagons have to go through tunnels which are full of sulphur, and the paint must be of good quality to resist the chemical effects.

5. *To Mr. Veitch.*] Paint-manufacturing is comparatively new in New Zealand, and it is so new that we cannot give a definite opinion about it. The English oxides are supplied by local merchants. It is easy to select an item and say that we should import it, but I point out that we have a thousand lines, and if we start to import them we must put up a big building to hold great stocks. This would tie up a tremendous lot of capital, and, considering what the interest would be on that capital, it would not pay us to import when we can get the goods from the stores of local merchants.

6. *To Dr. A. K. Newman.*] We have used locally made putty, particularly a Dunedin make, but we found that the colour and the quality were not sufficiently good. When we used it on windows it broke off.

7. *To the Chairman.*] We are not going to buy locally manufactured paints without testing them, but the test would not run over five years. When I spoke of five years I said that we did our repainting of buildings every five years or seven years. We might arrange with a paint-manufacturer to use his paint on a building as a test, the painter to refund if the paint did not prove satisfactory, but it is a question that has not been before us. A twelve-months' test would give us an idea of what a paint was likely to be. I admit that it would not be possible to get an absolute guarantee of the purity of a paint. There is a guarantee on the tins and in the catalogues.

8. *To Mr. Craigie.*] We are large users of paints. It would be better to import oils and paints for ourselves, but that opens up a question that it might take me a couple of hours to explain. We import direct from the manufacturer all our white-lead and all the oil we use. Wherever it pays the Department to do it, the Department goes direct to the manufacturer.

9. *To Mr. Veitch.*] There is no reason why disinfectants with high coefficiency should not be made in New Zealand. We have not done any business with the Restar Company in disinfectants, but there is a sample in my office. It is not reasonable for a company to come along with a disinfectant to-day and expect us to try it next week. We already have stocks. In some cases we have a two-years' stock. The Restar product is under analysis at present to ascertain how it compares with the imported article. The price is about the same, and if the quality is all right the Department will be prepared to give the company consideration next time. There were other disinfectants made in New Zealand, and we would have to consider the claims of all of them. At the time of the influenza epidemic manufacturers of disinfectants came to us and said, "We are producing disinfectants that will suit your purpose." We could not take any risks, however. We had our own stocks. We have to see to it that disinfectants are odourless and colourless, otherwise the travelling public would complain. I can assure the Committee that in the matter of production the Department will give reasonable preference to the local article in purchasing goods in the future. That is the settled policy of the Department.

10. *To the Chairman.*] We have used Steelite red for roofs. It is a good paint. The Department has an indenting branch for the importation of its goods direct. At the same time, it calls for goods through local merchants. That fact, however, opens up a position which I cannot explain in a few words. Our method of procuring supplies has been adopted by every Harbour Board and City Council in New Zealand. It has been adopted, too, by a good many of the Australian railways. At the same time the Department is willing to learn or to improve its methods.

JOHN HUTCHESON, of Hutcheson, Wilson, and Co. (Limited), examined. (No. 14.)

I am chairman of directors of the Dominion Ferrolith Company, at present engaged chiefly in the manufacture of "Ardolith" artificial slates—that is, asbestos roofing-slates—and my chief object in coming before this Committee is not to ask the Government for spoon-feeding—I have never believed in that—but principally to ask the Committee, if it deems proper, to assist to get Government Departments off our backs. I propose to show you in a very concise and clear way how very badly we have been discriminated against. I might have made a bother about it with Ministers, and probably would have got some relief, but I recognized that Ministers have been fully occupied and absorbed with one business—that is, to uphold our end in the war. That is the reason why we have suffered the disabilities which have been placed upon us up till now. First of all, the Lands Department has been a very serious hindrance and drawback to us. We are now penalized to an extent which I hope to persuade you to believe is quite unfair. On the 22nd March, 1916, I approached Mr. Massey, as head of the Government, asking whether he would look into a question connected with a strip of land known as the Melling Village Workers' Settlement, adjacent to the railway-siding of Melling. Mr. Massey replied very promptly, stating that the inquiries asked for would be made. We wished to have a more permanent tenure than tenants at will. The reason we wished to have some more permanent tenure than tenants at will was because the land is liable to flooding—liable to periodical inundations to a depth of 4 ft. 6 in. over the whole area. Our first buildings were built with the knowledge that there were recurrent floods. I will show the Committee photographs of the land under flood. [Photograph produced.] The reason we have stayed there is because we want to be convenient to shingle and water, the chief ingredients used in our industry. In view of the circumstances our principal building was constructed above high-water mark. It is like a huge coffer-dam, and was made watertight. Mr. Massey's letter was sent to the Lands and Survey Department, and Mr. McClure notified me on the 11th April that he had received Mr. Massey's letter, and was looking into the matter. On the 4th September we received a letter stating that the Lands Department had resolved to offer the settlement in three lots for cash by public auction in eight weeks. The letter stated that it was "proposed to fix the price of Lot 1 (part of which you are now occupying) at £430, and the other two lots at £340 and £420 respectively." Those were the prices fixed by the Crown lands valuer. Still delay and turmoil went on, and after further delay, on the 30th October, I received a letter from Mr. Brodrick stating what was proposed to be done by the Wellington Land Board. After all this delay an application was made to the Post and Telegraph Department, and inside of a week we had the lease signed. We are rated on the valuation of the Valuation Department's value; and that is where we want relief. I saw the Valuer-General, but he pointed to the valuation of his officers. I showed him the photograph of the land under water. There was land sold in the neighbourhood at £75 per acre, whereas we were rated upon a very different valuation. The local body, the Hutt Borough Council, adopts the valuation of the Valuation Department. We tried every possible means of getting an appeal, but we could not get it. Now I come to the Railway Department. The principal ingredients in Ardolith asbestos slates are cement and asbestos fibre. The railway freights per ton, Wellington to Masterton—sixty-six miles—are as follows: New-Zealand-made cement, Class E, 8s. 1d., (rate and a half) 12s. 1½d.; any kind of asbestos, Class C, £1 7s. 8d., (single rate) £1 7s. 8d. To make 1,000 slates requires 1 ton of cement and 6¾ cwt. of asbestos. Railway freight to Masterton on 1 ton cement, 12s. 1½d.; railway freight to Masterton on 6¾ cwt. asbestos, 9s. 4d. Wellington to Masterton freight on raw material for 1,000 slates, £1 1s. 5½d. Wellington to Masterton freight on 1,000 imported slates—27 cwt., at 11s. 2d. per ton—14s. 11d. Discrimination against raw material and in favour of imported manufactures, 6s. 6½d. As the Masterton manufacturer may possibly send the slates when made back to Wellington, it will obviously cost him £1 16s. 4½d. to send 1,000 slates to Wellington, as against 14s. 11d. for the Wellington importer to send 1,000 slates to Masterton. My little company is not in any way connected with asbestos claims, so what I suggest is purely unselfish and impersonal. I spent a month in Nelson last Christmas twelvemonth and visited Collingwood and Takaka. I am firmly convinced that there are sufficient deposits of asbestos there that the Government as the owner of the mineral wealth of the country could very well bring to market at a price very much lower, and the article is of very much better quality than we and other institutions like us require—an article which we are now getting from Canada. I may state that the last 40 tons from America passed over five different railways in Canada and the United States, and finally came by mail-steamer from San Francisco. For the last two quantities of 40 tons a banker's credit of £1,200 was required on each occasion to cover the freight for each shipment. The freight alone cost two and a half times more than the cost of the material landed at Melling after the war. I am told by some of the gentlemen at Motueka that if there was only a decent road over the hillside from Mount Arthur to the claims plenty of marketable asbestos could be obtained at a very reasonable price. I have here a small sample of some of the Motueka asbestos, and it is infinitely superior to what we require for our work. I have also here a small sample of the Canadian stuff that we are using. [Samples produced.] The latter sample is the very lowest grade which we could make a decent slate with. We would prefer a higher grade. The sample of New Zealand asbestos which I have here is surely such that the Government should assist in developing. I have no interest in it except that we would be prospective users of it. At present we would use from 8 to 10 tons a month, and we are only in our infancy. The following are the railway freights over a distance of 100 miles on the following goods per ton:—Roofing-material: Imported slates (natural), 13s.; imported earthenware tiles, 13s.; imported asbestos roofing-slates, 13s. New-Zealand-made slates (natural), 10s. 2d.; New Zealand earthenware tiles, 7s. 11d.; New Zealand asbestos slates, 13s. Asbestos (mineral), crude or fibre, New Zealand or imported, £1 13s. 7d. In regard to our New-Zealand-manufactured article, Ardolith, we are getting a good market for it, but we are severely handi-

capped by the railway freights. The Railway Department makes us pay £25 a year for our siding, and we use it as little as possible. The great increase in the cost of steel, from £7 10s. to £35, and the fact that it has become unprocurable has put us out of making telegraph-poles. Our output of slates is about six thousand slates of Ardolith a week, and by an extension of our buildings we could increase the output to sixty thousand. We do not want spoon-feeding, but we want the Government Departments off our back. There are about a hundred slates in a crate and about seven hundred to the ton. I may state that we patented the reinforced-concrete piles. Undoubtedly it was an entirely new idea. But the Government stole the idea from us, and got prisoners to do the work in Canterbury; but they could not make the piles anything like ours in quality. It was the Inspector of Prisons who got the prisoners to make these piles. Persons came out to see what we were doing, and the next thing we knew was that prisoners were making these poles in prison institutions in Canterbury, but they cannot compete with us either in price or quality. When times become normal we will resume the work, and we have reason to believe that the Prisons Department will not do so. At present we are compelled by force of circumstances to get our asbestos from abroad. Yet we know that the substance is in New Zealand. Will the Government help us to get the deposits in New Zealand? So long as the bulk of the asbestos comes from overseas and our New Zealand deposits remain undeveloped, I think there ought to be some slight differentiation between the asbestos—the raw material—as against the imported slates made from asbestos. That is in the interests of those engaged in trying to develop the deposits in New Zealand.

1. *To Mr. Hornsby.*] I have been a little unguarded perhaps in saying that I know that there are quantities of asbestos deposits in the Nelson District. I should have said that I have had assurances quite recently that samples were shown by a representative of the Takaka Company—a Canterbury man—who said he was assured by an expert miner and mineralogist, who said that the asbestos was five-eighths of an inch in length, and was pure, fibrous, and silky; and it was stated that there were large quantities of the material in sight. The samples I was shown, some of which I have here, are quite suitable for our business. I would suggest that the Committee should take the evidence of the following gentlemen on this question, for they have taken a great interest in the matter: J. A. Wallace (Mayor of Motueka), Mr. Manoy and Mr. Orchard (of Christchurch); and the Committee might also take the evidence of Mr. Morgan, of the Geological Department. I understand that the last-named gentleman states that up to the present time asbestos in considerable quantities has not yet been discovered in New Zealand, although samples had been obtained from certain districts. I think that the tiles we manufacture should be put in the same class of the railway tariff as New Zealand earthenware tiles. We have every ground of analogy in asking that New-Zealand-made tiles and New-Zealand-made asbestos slate should be in one class. Asbestos slates at present are carried under the N Class, and the tiles are carried in a much lower class—I think, the P or Q Class.

2. *To Dr. A. K. Newman.*] I cannot say whether there are any deposits of second-class asbestos in New Zealand. I may state that I had a good deal of conversation with Mr. Aston, Government Chemist, who was in the district at the time, and he seemed to take the deepest interest in the question. The whole thing appeared to be too big a proposition for a small company to develop, but a miner had been prospecting on the land for some years—I am referring to the lease at Mount Arthur. The best quality is in the least proportion, of course, but I understand that at two places there is a large quantity of the material.

3. *To Mr. Veitch.*] It was costing a penny a pound to pack down to Motueka. In regard to development and the question of price and as to competition with the imported article, I may state that Mr. Orchard, the last man with whom I had a conversation on the matter, has gone down to Christchurch to communicate with his partners, and he will furnish particulars showing the prices both before the enormous freights were charged and also without the high freights. He said he would look into the matter, but he was almost sure that he could offer us a better article than the imported under both heads, and I replied that we would make a contract with them if he could do so.

4. *To Mr. Craigie.*] Our grievance against the Railway Department is on account of the differential charges. If asbestos can be found and supplied in sufficient quantities the articles produced would be a New Zealand manufacture right through. As to the question of the durability of asbestos slates, I think there is no end to the life of the article. I do not think there is any disintegration possible, because the materials are not subject to climatic changes. We have quite a ready market for the article.

5. *To Mr. Sidey.*] We have frequently made representations to the Railway Department with regard to the freights. We want to be put on the same footing as locally manufactured tiles—to have the railway freights altered in the direction I have suggested. The charge for asbestos is an extremely large freight—it is a terrific rate. At present we employ from nine to eleven hands, but it is at present only a one-unit plant.

6. *To Mr. Hudson.*] I met Mr. Wallace, Mayor of Motueka, and Mr. Manoy, who is a leading merchant in the Nelson District, and I think they are about as keen men as I know.

7. *To the Chairman.*] The Railway Department interprets "slates" as "natural slates." In support of our contention we can make the same analogy between manufactured slates and manufactured tiles.

Dr. J. Allan Thomson, Director of the Dominion Museum, examined. (No. 15.)

I appear before the Committee to-day as the representative of the New Zealand Institute. I have brought along the files of the *New Zealand Journal of Science and Technology*, of which I am the editor. I have prepared a list of the papers in it that will be of special interest to the Committee. The *Journal* combines two ideas: it has departmental reports, and it gives information on industrial matters from the scientific point of view.

JOHN ALEXANDER MANSON, Company-manager, Palmerston North, examined. (No. 16.)

I desire to lay before the Committee a process to effect an improvement in the burning-qualities of lignite. It is a process which removes the water and the hydrocarbons. I wish to place the matter before the Committee in private. [The process was described.] I ask the Committee to recommend the Government to make a grant towards the expense of sending 5 or 10 tons to America to give the process a test. I think that £100 would cover the expense, and in return the whole of the results will be available to the Government.

E. PHILLIPS TURNER, Chief Officer, Forestry Branch, Lands Department, examined. (No. 17.)

On the subject of wood-pulp I have here a short paper which I wrote for the *New Zealand Journal of Science and Technology*. If you go in for pulping paper it is essential to have large forests containing a supply of suitable timber. In New Zealand the most suitable timber is probably white-pine. There is not a large amount of it left, and what is left is required for butter-boxes. It is therefore out of the question. The only remaining plentiful timbers are the birches (or beeches), kamai (or tawhero), and taraire (in the North of Auckland). Our birches are closely related to the Tasmanian myrtle, the difficulty about which is that the fibres are short. The chief timber used for pulping purposes in America is spruce. Ninety per cent. of the timber used in the world for pulp-making is spruce. The balance is composed of aspin, cottonwood, and balsam fir. In America there is an abundance of hard woods, but the spruce is used, as it is more suitable. It has been said that the New Zealand hardwood timbers could be used for pulping purposes. Tawa has not been tried, nor taraire. It is possible that the birches have been tried, but we have no official knowledge of it. It seems improbable that the pulping of native timbers could be carried on successfully in New Zealand. White-pine would certainly be suitable if available. The Australian Government are considering the planting of trees which are known to be suitable for pulping purposes, and it has been recommended by an expert that the spruce should be planted in large areas in Tasmania. On the West Coast of New Zealand the same thing might be done.

1. *To Mr. Hornsby.*] The Tasmanian beech is very similar to our silver-beech. Most of our silver-beech is to be found in the Catlin's River district. There is a good deal of it in the Nelson District. It is also found in the North Island.

2. *To Mr. Sidey.*] If spruce were planted it would take probably fifty-seven years before it could be used for wood-pulp. I am judging by the rate of growth that the spruce makes in Europe under forest conditions. We have not planted spruce here under forest conditions. Possibly it would grow quicker here, but I would not put it down at more than ten years quicker.

3. *To Mr. Hornsby.*] The production of timber should be our first aim, and the pulp-trees should be secondary.

4. *To Dr. A. K. Newman.*] I believe that experiments have been made with New Zealand trees by a syndicate that got an area on the West Coast, but I cannot make out what timbers they used, as the reports are very confusing. Only that tree is suitable for papermaking which will felt. I do not think that totara would felt. Spruce and Norwegian pine are converted into pulp, and practically no other tree is used.

5. *To Mr. Craigie.*] It is likely that *Pinus insignis* may be found suitable for pulping, though I do not know that any tests have been made. It is highly desirable that it should be tested. It grows quickly. In twenty years a crop might be got from *Pinus insignis*.

6. *To Mr. Sidey.*] A wood-pulping plant takes over £60,000 to establish. The smallest plant likely to be profitable uses about 12,000 superficial feet of timber per day, and an authoritative work states that 100,000 acres are required to keep a mill going. It would not be desirable to establish the wood-pulping industry here at present. We have not sufficient timber to warrant it.

7. *To the Chairman.*] The Government has only started planting *Pinus insignis* since 1913. We have largely increased the planting of the trees. There are sufficient plantations now in existence to enable us to form in years to come an opinion of the capabilities of the tree. I have considered the question of commercial alcohol from timber waste. It can be produced in the United States at from 6d. to 7d. per gallon.

8. *To Mr. Sidey.*] One of the most important things to be done is to prevent the waste that is going on in connection with the conversion of our native forests. There has been waste in every direction in the forest, in the mill, and all round. Where forest is on poor land which is not suitable for settlement the probability is that it will be retained under forest, and in some instances the regeneration of the native growth will be aimed at. Systematic trials will be made, and in other instances it is probable that we shall introduce valuable exotic shade-bearing trees, such as the Californian redwood, the Douglas fir (Oregon pine), and the West American cedar. We shall have to try experiments in introducing exotic trees into the native forests to ascertain which will stand the conditions best. Contemporaneous with the effort there will be two policies gone into. In the first place, there will be regeneration where it can be done, and no doubt it can be done in kauri forests, and the interplanting of exotic trees. At the same time we shall continue the planting of the most valuable exotic trees in bare open country, especially the *Pinus insignis*, for the production of butter-box timber. The *Pinus insignis* will also supply a large amount of beautiful timber. It has already been satisfactorily used in Canterbury for house-building. The antiseptic treatment of timber has been largely gone in for in America, and with antiseptic treatment a timber like *Pinus insignis* can be made as durable as the best kauri. The report of Mr. Hutchins has just been received. I cannot say that the Government at the present time is carrying out the demarcation in forests as recommended by the writer, but no doubt it will be aimed at when the thing is properly organized. Apropos of that matter, it involves a question of policy, and I wish the Committee to understand that the Government, or the Minister

in charge of the Department, is fully alive to the importance of forestry, and he will carry out the best methods as far as he is able to. We shall have to increase our staff and engage special men to carry out the demarcation, to ascertain whether the wood is suitable for the production of alcohol, and to deal with other questions. We are planting at the rate of £2,700 a year in the North and South Islands, and the chief trees we are planting are the Corsican pine, the Western yellow-pine, the Douglas fir, and the *Pinus insignis*. These are all very valuable timbers. There are forestry regulations in existence, but they require enforcing and in some respects amplifying. Fire is the greatest danger we have.

9. *To Mr. Hudson.*] I know that Japanese oak comes here and is sold as American oak, to which it is inferior.

10. *To Mr. Hornsby.*] Up to the present we have over twenty thousand trees planted round Rotorua. The district has proved particularly suitable for tree-growth. The country round Taupo is equally suitable. In regard to the treeless parts of Otago, we are not planting so largely in the South Island as in the North Island. We have planted in the vicinity of Naseby and Ranfurly a few hundred acres, but in Otago generally there is not much planted. There are about 800 acres planted at Dusky Hill, and, I think, over 2,000 acres at Conical Hills. We have a reserve of 5,000 acres for planting at Greenvale. As to planting in the arid districts of Central Otago, although trees may grow there the conditions are adverse to the growth of trees for commercial purposes. The fact that trees do not exist in Otago Central shows that it is not very suitable for tree-growth.

11. *To Dr. A. K. Newman.*] Statistics show that in spite of all the substitutes which have been discovered the consumption of timber is being maintained all over the world. The use of timber and all its derivatives—such as paper-pulp and other things—is increasing very largely all over the world. The use of timber may be ousted in one direction, but it comes in in another. Many articles in ordinary use are made from wood-pulp. Silk is very largely made from visco, which is got from wood-pulp. It has been used for string and in the manufacture of linoleum. And the little vessels you see used for holding cream, and many other articles, are made from wood-pulp. Western American spruce is used in connection with the manufacture of aeroplanes.

12. *To Mr. Veitch.*] We issue young trees from the Government plantations to the farmers at practically cost price in order to encourage them to plant shelter-trees. Last year we issued over three hundred thousand trees to farmers. We advertise the conditions in the *Journal of the Department of Agriculture*, which is a very valuable publication, and I think every farmer ought to get it. At Kaingaroa we are planting belts of different kinds of forest-trees, leaving intervals of land for farming purposes. Thirty thousand trees have been planted in that area. The trees are being planted where the land is easy—not broken—land which can be easily kept under grass. Our Nursery-managers say that the wind is the most adverse factor that has to be dealt with. These belts of trees will afford shelter.

13. *To Mr. Craigie.*] We have not any exact records of the forest area in New Zealand, nor is there reliable information as to the area of forest that exists carrying commercial timber. Without that information it is impossible to say how long our forests and the commercial timber in those forests will last. We have, however, obtained a rough idea of it, and that information has been supplied to the Minister, but I could not say offhand what it is. I may say, however, that it is less than is generally supposed—that is, the area of what may be considered commercial forests. The Commissioners of Crown Lands have reported that the timber forests in the different districts are giving out, except in Westland, and there it is estimated that at the present rate of consumption, and under the present methods of treatment, the forest there will only last another thirty years, but does not take into consideration the fact of the increased demand caused by the depletion of the timber in other districts. I may say that I have not admitted that they will be exhausted in that time, because I say that the new system of planting and treatment of forests will result in lengthening our supplies of forest timber. I do not think it will pay to plant any of our native trees in open areas as we are planting foreign trees. The rate of growth of our native trees has never been properly established—it has only been guessed at; but the little work that has been done in that direction goes to show that the rate of growth is quicker than is generally supposed. I think the rate of growth of the kauri has been pretty generally ascertained. I think it would pay to plant kauri in kauri districts, and possibly it would also pay to plant totara. The method of dealing with these forests would not be so much a question of planting as to arrange that only trees of a certain diameter shall be cut out, and that the trees under that diameter shall be left until they have attained the required size. Mr. Cheeseman, of Auckland, has made the most systematic investigation into the question of the rate of growth of the kauri. Speaking generally, although some very interesting data has been gathered in regard to the question of the growth of our native trees, such information can only be taken as an indication, and not as absolute information. The rate of growth of the kauri appears to be about 3·7 years to 1 in. diameter—that is, according to Mr. Cheeseman's investigations, and he has measured the cross-sections of thirty or forty trees, I think. That shows that the kauri, at any rate, is not by any means a slow-growing tree; in fact, this table which I have shows that its rate of growth is nearly double as fast as the spruce-tree. Whatever may be said about other trees, I think we may take it that it certainly will pay to regenerate kauri forests, and I think you might include totara.

14. *To Mr. Sidey.*] As far as scientific investigation goes, it has not been proved that trees increased the precipitation of rain. I think the greatest height at which trees are being planted now is some 1,600 ft., on the Kaingaroa Plateau.

15. *To the Chairman.*] The Forestry Commission in 1913 obtained information with respect to the utilization of *Pinus insignis* for butter-boxes. I could not say whether further experiments have been made to determine that question. The specimen of that timber which I have here has

no odour, but experiments which have been made with the treatment of white-pine with paraffin-wax has shown, I am told, that any slight odour can be overcome. The puriri is a pretty quick-growing tree. The young tree is not durable; the durable tree is from 80 to 120 years of age.

16. *To Mr. Sidey.*] As to the suggestion to offer a bonus for the production of creosote, I may say that we do not know how the price of creosote will come down after the war. Some time ago communications were sent to a number of gas companies to ascertain if they would make creosote, and they said they did not think it would be worth while, because of the big demand for gas-tar, but if a bonus were offered they would consider the question of the manufacture of tar. The treatment of soft timber with creosote greatly increases its durability. I have not gone into the question as to what bonus should be offered, but I think it might well be 2d. a gallon. The object of offering a bonus would be to get it cheaper than it could be got from England.

17. *To the Chairman.*] I am referring to coal-tar creosote, not wood creosote. It is distilled from gas-tar. Coal-tar creosote is not largely used at the present time in New Zealand.

TUESDAY, 11TH FEBRUARY, 1919.

Dr. J. ALLAN THOMSON, Director of the Dominion Museum, further examined. (No. 18.)

I wish to speak on the subject of the establishment of a Board of Scientific and Industrial Research, a scheme for which has been outlined by the New Zealand Institute and which is in print in the *New Zealand Journal of Science and Technology*. At a meeting of the Board of Governors of the Institute the President (Dr. Cockayne), Professor Easterfield, and myself were appointed to lay before the Committee certain resolutions and the scheme which the Institute has drawn up. Shortly after the war broke out it became evident that if Britain was to retain her trade there would have to be much greater application of scientific processes to industry than had previously been the case, and in 1915 the British Government started an organization to provide for research in connection with industries. They started in a small way, and only £25,000 was voted in the first year. At the same time they sent out despatches to all the colonial Governments suggesting that they should establish similar organizations, and that all these organizations should co-operate in an Imperial scheme of research. The developments were rapid in Great Britain, and in the second year (1916–17) the Government altered the scheme, set up a Department of Scientific Research, and gave it an appropriation of £1,038,000. In the meantime various oversea dominions made steps in the same direction—the Commonwealth of Australia, Canada, and South Africa. Steps were also made by the United States, France, and Italy. Practically the only one of the allied countries that had been at war with Germany that had not set up an organization was New Zealand. When the original despatch came to New Zealand it was referred to the Minister of Internal Affairs, who ordered me, as Director of the Dominion Museum, to prepare a report upon it. But apparently subsequent despatches were minuted to the Department of Agriculture or to the Education Department, and I think it has been owing to this lack of co-ordination between the three Departments that the matter has not been further advanced. Various branches of the Institute took up the matter, and a large number of bodies discussed the question and made recommendations. Later on the matter was referred by the Government to the National Efficiency Board, which asked the New Zealand Institute to prepare a scheme and to submit it to the Board. The Institue set up a committee in Wellington, and the result was the scheme which has been laid before you in the *Journal*. The scheme was subsequently adopted by the Board of Governors of the New Zealand Institute, and it may be considered as the well-considered opinion of the whole of the scientific men of New Zealand. There is a feature in the British Department of Science and Industry which we have incorporated, and it is the only feature of the scheme to which exception has been taken; it is found in clauses 2 (*e*) and 2 (*f*) :—

> 2. (*e.*) The Board should be a trust to administer public and other funds given for the purpose for which it is constituted.
> 2. (*f.*) An adequate sum—not less than £100,000—should be voted by Parliament to cover the expenditure for five years, such sum to be paid to the trust and be vested by it in interest-bearing securities.

This idea of a trust was started in England. The British Government set up a Department of Scientific and Industrial Research, and they made the Committee of the Privy Council, which was in charge of the Department, an Imperial trust for the encouragement of scientific and industrial research. There were several reasons for this. One reason was that scientific investigation of a difficult nature may extend over several years, and a Board could not start a proper programme and carry it out unless its finance was absolutely assured. Another reason, which is perhaps equally important, and is very important in New Zealand, is the difficulty of getting men who will carry out investigations. The University trains a number of science graduates from year to year, and some of these go further and take a National Research Scholarship and do research work, which is generally of an industrial nature. A fair number of these students have passed through the University in recent years, but after they have done so there is no career open to them. Quite a number of them have given up science and gone in for medicine, and that is the end of their scientific investigations. The scientific men in New Zealand who are capable of carrying out researches owing to their experience in research and in technology are few in number, and are all occupied with other duties, and cannot possibly undertake the investigation of the numerous problems that are needed in New Zealand. It is necessary that

they should have younger men working under them, and we cannot get these men unless we can offer them a career. If you have a Board with an endowment, that Board will offer a five-years engagement to a young man, and will make it worth his while going on with scientific work. At present it pays a man better to go in for school-teaching than for scientific investigation. When the Hon. Mr. Russell, as Minister of Internal Affairs, attended the meeting of the Board of Governors of the New Zealand Institute last year and said that Cabinet would not for a moment agree to the endowment part of the scheme the following resolution was passed: "That this meeting of the Board of Governors considers it an essential part of the scheme for scientific and industrial research that the Board should be a trust to administer public and other funds given for the purpose for which it is constituted, and that for the first five years its finances should not be subjected to any amendment by Parliament, although duly audited." The Board would make a programme extending over five years, and as far as that programme is concerned we do not want any outside control. At the end of five years, if the Board has not made good, Parliament could refuse to give any further money. You cannot test out these schemes in one year or two years, and we think it is reasonable to ask for finances for five years. The Board consists of a Minister of Science and Industry, a salaried Director, and four other members (not salaried), who would be elected from all the bodies interested in the working of the scheme. Two of the members would represent industry and two science, and the Director would be a scientist with a knowledge of industry. The Minister would be the only Government official. The question of how this Board is going to work with the Government Departments is an important matter, and is referred to in clauses 7 (*a*) and 7 (*b*). It is not suggested that the four members should receive remuneration. We believe we can get four persons who will undertake the duties for patriotic reasons, being allowed probably travelling-expenses.

1. *To Mr. Sidey.*] The Efficiency Board has communicated the scheme to the Government. The constituency is in accordance with the recommendation of the New Zealand Institute. When the Hon. Mr. Russell attended the meeting of the Institute he made a verbal statement. He said he approved of the scheme generally, except the clause which created a trust. He considered that no Government would ever agree to such a clause. The resolution of the Institute, in reply to the Minister's statement, was communicated to the Efficiency Board. There was a Board of Science and Art in New Zealand. When it met in 1918 the matter had been before the Efficiency Board, and the Board of Science and Art considered it was not necessary for it to pursue the matter any further. I am aware that on this Board there are five persons appointed by the Governor-General in Council. I think the various bodies with which the Board of Science and Industry would have to work would be better satisfied if they had an election than if they had to deal with a Board appointed solely by the Governor-General in Council. I suggest that the Committee should recommend the Government to introduce legislation to give statutory enactment to the scheme. The Board of Science and Art has not made any recommendation in pursuance of subclause (2) of section 9 of its Act, except with regard to the spending of money on publications.

2. *To Mr. Craigie.*] We suggested the sum of £100,000 to the Efficiency Board, and the Board approved of the suggestion. We have not made out a detailed estimate of how the money would be spent. The Director would give all his time to the work of the Board. The idea of the scheme is to develop our natural products and to find out by scientific tests how they can be used.

3. *To Mr. Veitch.*] The Board of Science and Art it is proposed to leave to look after the Museum. It is a Board with no specific authority, in that it has no estimates over which it has any control. The system of trying to get men who were already overworked to take up grants to carry on industrial research was a futile method of going to work. The problems in New Zealand demand the whole time of capable men over a series of years. It will be the duty of the Director to make himself acquainted with industrial conditions and with a certain amount of the scientific work or problems connected with any given industry. He would also oversee the work of the men carrying on research work, and there is no one in the Institute at present who can do that. Scientific men have a temperament. A man cannot do the best research work if he is continually turning to details of organization. Nearly all the scientific heads of departments are overburdened with departmental work and cannot get at the scientific work. It is not possible, under the present constitution of Government Departments, to get the desired effect by strengthening the scientific staffs of the various Government Departments. The Departments deal with certain questions of industry, and there are a large number of industries which are not affected by any Government Department. Then, try as we will to prevent it, overlapping is liable to take place in Government Departments. Further, a large part of the work must be done in the universities. The professors of the universities are in many subjects the most qualified men, and they have better facilities for doing research work in some of the laboratories than we have in the Government laboratory. We do not want to create a new laboratory, but to use all the existing laboratories, both Government and university, and to have a Board which will bring the Government Departments and the University into line with one another.

4. Nearly every large industry—like the flax, brewing, sawmilling, and freezing industries—has a number of problems to consider. Some of those problems depend not only on specific investigations in regard to applied science, but depend upon investigations in pure science. You cannot get a Government Department or an individual firm to carry out investigations in pure science, although such investigations may have an important effect on the industry in question. The Department of Agriculture carries out a number of investigations, but they do not carry out all the investigations. There is not the slightest doubt that we have lost a large number of valuable men from time to time—men who have gone to other countries. I know personally three or four

men at the time I was at Home—men who came back to New Zealand, but who found their way to the United States, Borneo, Australia, and to other places. The expenditure of this money for several years would enable the Board of experts to carry out work which would be of immense value and importance to New Zealand.

5. *To Mr. Hudson.*] As to the position of these men at the end of the five years in New Zealand, it is very probable that in any given industry if they had a research man working on the problems of that industry for four or five years the manufacturers would find him so valuable that they would give him a much bigger salary as a scientific expert in their industry than he would get from the Board. There are a number of such men employed, although the number is small. But the possibility of making such appointments has never been considered in many cases. We are not going to solve all the problems in New Zealand in five years' time. The position has improved so much in England, owing to the new attitude which has been taken in regard to science, that it must be reflected out here, and we think there will be careers in the future such as there have not been in the past. If such a scheme were brought into operation the result would, I think, be as I have indicated, but at present we cannot say that the student has anything in front of him except teaching science in secondary schools. This Board would work in with an institute like the Cawthron Institute.

6. *To Mr. Hornsby.*] The actual body set up in England is now called a Government Department. Although a Committee of the Privy Council is in charge of the scheme at Home, it is really worked by an Advisory Council of scientific men, and, as far as we know, the Committee of the Privy Council has never interfered with any of their recommendations.

7. *To Mr. Luke.*] The New Zealand Institute is a self-governing scientific society, and it would not give up its self-government. Something of the sort was proposed a few years ago, and the Institute opposed it. I am in favour of setting up a distinct Board apart from the Institute. In England the Government for many years have given grants for research, but more for pure than applied science, although I believe there has been set up an organization for industrial research. Here it was suggested that the annual grant would be increased if the Institute handed over to the Government the control of their publications, and the Institute refused. No self-respecting body would hand over the control of its publications to an outside body. They refused the increased Government grant under those conditions. I have every reason to believe that the relations between the Institute and the proposed Board will be satisfactory, and that the two bodies will co-operate in matters of scientific and industrial research. As to the local Advisory Councils, there is a very strong feeling in other districts against having a Board centralized in Wellington. They consider it would be very much better to have local Boards dealing with the industries of the provinces. I think the local Advisory Councils would be of great benefit in certain ways.

8. *To Dr. A. K. Newman.*] One of the proposed functions of the Board is to "Advise primary producers upon all questions of the application of science to their industries, and to advise persons, firms, or companies engaged in industrial pursuits as to improvements in the arts and processes employed, and as to the utilization of waste products." As for keeping a staff of experts and sending them out, I do not think that is what is contemplated under this scheme; but it should be the duty of the head office to keep a bureau of information. As to the Board having a number of experts or trade "doctors" to be consulted by manufacturers, that would cost so much that we would hardly venture to bring it forward. I do not know that I agree with your statement that trade manufacturers would be willing to consult these men, because up to the present it has been exceedingly difficult for men to earn a living in that way. The difficulty is that they are not willing to pay them on the same scale as a lawyer. If a scientific man asks for a fee, many firms are not willing to pay it. There is no doubt if the scheme were in operation many of the men holding research scholarships would ultimately set up as trade "doctors"; but I do not see why there should be a college of those professional men. We would, however, train up men of that kind by this scheme. I think the idea is too generally held that mineral wealth lies in the rare minerals and not in the common things like clay, limestone, coal, and oil. Those are the great sources of the mineral wealth of a country, and pure science finds out their distribution, depth and extent, &c., and you cannot get a short cut to that.

9. *To the Chairman.*] The report of the Efficiency Board deals with what is shown in this publication. That Board has made no other recommendations that I know of in connection with this matter. I think it might be satisfactory if a lump sum were to be granted to the Board, payable in five yearly instalments.

Dr. L. Cockayne, President of the New Zealand Institute, examined. (No. 19.)

Dr. Cockayne gave a sketch of the history of the New Zealand Institute from its foundation in 1868 up to the present time.

1. *To Mr. Luke.*] I subscribe to the policy of this extended system of a Board of Science and Industry. I do so as President of the Institute and as a member of the Board of Governors. I must be loyal to my brethren. Personally I am not in favour of it. I would strengthen the Institute. I think I would favour direct payment for special services in the local area for any special scientific or industrial research. I would like to see, say, a £2,000 grant to any one investigating the terrible disease now existing in flax. Investigators have to give all their time for nothing under these grants. That is one reason why these economic grants have been more or less failures. I favour the Institute having larger powers, and having the power to call in special scientists to make special researches. At present a young man may show himself to be competent for research work, and all he can get to begin with is £100 a year for one or two years from the Education Department. He becomes a research student. For instance, there is

a talented young woman in Dunedin—the most talented, I suppose, that the University has turned out so far as women are concerned—and she gets this £100, but she cannot even pay a hotel bill with any of it. If she is going to Central Otago she gets her railway fare paid, but she cannot get her hotel bill paid. She went home to do some research work in Nelson, and because she lived there they would not pay her fare there.

2. *To Mr. Hornsby.*] I am not against creating a body such as has been referred to. I am rather a believer in the New Zealand Institute. I want to see the New Zealand Institute in a better position in the eyes of the public. I am loyal to what the Institute proposed. I only on pressure gave my private opinion, and my private opinion is rather an objection in regard to detail than that of having any objection to the proposal. I do not think, for instance, it will be very feasible for men to do certain research work. The poet is born, not made, so is the scientific man.

3. *To Dr. A. K. Newman.*] I do not mind how what is proposed is done so long as science benefits. If science benefits, New Zealand benefits. I think the idea in regard to experts or "trade doctors" is good, but whether it will work is another matter.

THOMAS HILL EASTERFIELD, Professor of Chemistry, Victoria College, examined. (No. 20.)

I wish to say a few words about the absolute necessity of doing something whereby the status of science can be improved in the country. There is undoubtedly a lack of appreciation of science. Everybody says he is a believer in science, but if you measure the appreciation of science by the money spent the appreciation is small indeed. The country does not know what it has lost owing to the lack of a spirit of science throughout the country. One cannot help comparing the British Empire with Germany, which undoubtedly has prostituted science, but which has appreciated what science can do. You cannot go to a place the size of Wellington in Germany without finding a number of really expert chemists, and among them you would be able to get really good scientific advice on any branch of chemistry you wanted. The number of scientific chemists in Wellington is exceedingly small, and yet I suppose it is as large as in any other town in New Zealand. That arises from the fact that the people do not know what science can do for them. Some people will say, "No, that is not so. We are always willing to bring scientific men in to give us advice when we get into a corner." The fact that they have got into a corner indicated that they did not appreciate science in the first instance. Science properly applied would have kept them from getting into a corner, and that is what we want. In the scheme for a Board of Science and Industry we urge the desirability of training capable men. If we had been people with an appreciation of science a number of such men would constantly be in training, and something would have been found for them to do, just as we find work and salaries for military men in peace-time. The question will arise as to whether we have the men in New Zealand fit to train. There is no doubt about it. New Zealand's scientific men are known throughout the world—Rutherford, Mellor, Maclaren, Maclaurin, Denham, Robertson, and a number of others. We are losing too many of our best science students. This is largely, if not entirely, due to a lack of appreciation of science. The suggestion has just been made that the Science and Art Board might be allowed to do the work of the proposed Board. It could only do it if the Board were throttled out of existence and reconstituted in a new form, the functions of the old Board to be included in the powers of the new one. The Board of Science and Art only meets, I believe, at the will of a Minister. I contend that the Board we need must be an executive Board dealing with scientific and industrial matters, and dealing with them seriously. The New Zealand Institute is again not the body which should do this work. The New Zealand Institute corresponds roughly to the Royal Society of London, which has for years administered a grant of £3,000 a year, giving £100 or £200 here, and £50 there, to scientific workers to carry on scientific research. It has done this work very well, just as the New Zealand Institute has done its work well, but England has found it necessary to establish a Department of Scientific and Industrial Research. I think Mr. Hudson said that the Cawthron Institute would be doing a certain amount of the work of the proposed Board. That institute will have something like £10,000 per annum, and the probability is that to a large extent it will direct its attention to problems of peculiar interest to Nelson and Marlborough. That is, I believe, the idea of the trustees. Consequently, while we welcome the Cawthron Institute, it cannot be said to be taking over the functions of the Board we recommend. Dr. Newman raised the question of trade specialists. Up to the present it has been very difficult for a trade specialist to make a living. If I were to be taken out of my professorship I suppose I could make a living, because gradually first one branch of industry and then another has come to me, so they must have some confidence in me. But if I had come out here and tried to set up in a special line it would have meant starvation. Men have come out here and tried to set up as specialists. I have said to them, "If you can live here for ten or fifteen years and can manage in that time to obtain the confidence of a large number of the manufacturers you will be all right," but they will not face it, and go away.

1. *To Dr. A. K. Newman.*] I understand the view of a man in business who wants a scientific man to come along to look into the scientific aspect of the business for a few weeks for a payment of £50 or £100. Some of the trades could very well afford it. For instance, there is the flax-milling industry. Before the war we were exporting flax, valued at £750,000 per annum, yet very little scientific research has been carried out in connection with this industry. That trade could very well afford to have scientific experts constantly engaged. If you are asking for specialists who are able to run at a moment's notice to give advice on every subject, I say it is not easy to provide them. There is at present no really good scientific library in New Zealand.

It happens constantly that investigators have to send outside of New Zealand to find out what is in scientific journals which should be available here.

2. *To Mr. Sidey.*] I think the establishment of the Board of Science and Industry is the best thing. Local Advisory Committees would be sufficient, just as there are local branches of the New Zealand Institute. We wish to get an assured finance, and that is one reason why we ask for £100,000. We do not want members of Parliament to get up in the House and say, "We do not think this or that research ought to have been subsidized, and therefore we shall move for a reduction in the estimates." A statutory grant would be satisfactory. I should like either £100,000 or £20,000 a year for five years. The point has been asked, How is the sum arrived at? The answer is, partly by comparison with the British and Australian amounts, and partly because it seemed to us that, considering the importance of the New Zealand industries, it was not a large sum. The treatment of coal-slack is a matter that would come within the purview of the Board, and so would iron and shale deposits, wood-alcohol, and many other matters that have been brought before the Committee. We would be to some extent relieving the Government of an expenditure in undertaking such work. I should not like to see research work on chemical lines taken out of the hands of Dr. Maclaurin or Mr. Aston, who have done excellent work. We might give them assistance to help them in certain classes of work. The testing of woods suitable for pulping for paper would come within the functions of the Board, but I doubt if our timber-supply is sufficient to justify the establishment of a pulp industry. In the first instance it might be necessary to send samples outside the country. Prospecting-work would also come within the purview of the Board.

3. *To Mr. Craigie.*] In the past the tendency has been too much to say, "We will wait and see how research turns out in the Old Country." A large number of our problems can only be investigated here. We must, of course, keep in touch with all that is being done outside, but researches carried out for us elsewhere will be of little benefit to us until we appreciate the necessity of carrying out investigations for ourselves.

4. *To Dr. A. K. Newman.*] The £100,000 ought to be expended by the Board without interference from members of Parliament. It would be applied to definite purposes.

5. *To Mr. Luke.*] I am convinced that the setting-up of the Board, with Local Advisory Committees, will extend the best interests of science throughout the Dominion. I see no better way of doing it.

6. *To the Chairman.*] Various schemes have been put forward on the manufacture of industrial alcohol from waste products. Dr. Maclaurin has reported on the subject. I believe he is right in offering no hope, as far as he has reported. But there are other sources. One of these I only heard of on Saturday: I refer to the Dominion Pressed Yeast Company, of Christchurch. In making yeast they must make alcohol. This they have to turn into vinegar before they can get a sale for it at present. Another source is flax-refuse. When the flax-leaf goes through the stripper about half the weight goes away in the scrapings off the leaf. One mill has over 50 tons of that refuse per day, and no use is made of it at present. If you squeeze it in an hydraulic press you get 60 per cent. of juice. That juice, on fermentation, averages over 3 per cent. of alcohol. The question arises, Will it pay to distil that liquid with only 3 per cent. of alcohol? In Scandinavia it pays to distil the refuse liquor from wood-pulp, or cellulose, with only 0·9 per cent. of alcohol in it, therefore with 3 per cent. it ought to pay well. It is steam-heated. The original stuff with the juice in it is too wet to burn, but after it has been squeezed it will burn, and would provide the whole of the heat they need. It would not pay a small mill to set up a distillery, but the large mill could do so. The scrapings, or vegetation as the mill people call it, must be taken at once, because fermentation begins practically the moment it leaves the stripper. Of course, the ultimate proof is the large-scale test. The company I refer to is satisfied that on a small scale the thing is excellent. What difficulties will turn up when they put down a plant only experience will show. The gum and the dye in the flax-refuse I neglect. I suppose the value of brown dye consumed in New Zealand per annum would not be worth £100 per annum in peace-time. After you burn the flax the ash would be a fertilizer of high grade. It is richer in potash than any other ash we are likely to get in quantity. The amount of ash is about 1½ per cent., and of that about one-third is potash.

7. *To Mr. Sidey.*] In making alcohol from wood the only process which has been a success is that in connection with the paper-making industry. The conversion of sawdust has not yet resulted in any decided economic success, though two firms are said to be manufacturing at a profit in the United States of America. I am bound to say that I see little chance of producing alcohol cheaply, unless it is obtained as a by-product. The recommendation I should make straight off is that full inquiry be made in connection with all the processes attempted in the lumber industry for utilizing wood-waste, but, so far as I know, the only method that has been successful is that in connection with the manufacture of paper from wood-pulp, in which the alcohol is obtained as a by-product. They cannot use up the sawdust in that process. The sawdust-alcohol process was supposed to be a success twenty years ago, but probably on account of the need of very careful supervision it has not proved generally remunerative.

8. *To Mr. Luke.*] In my opinion, it would not be advisable to pursue the matter of producing benzol at the coal-mines. From a ton of coal you would get 12–18 gallons of tar, containing about 1 per cent. of benzol. If all the gasworks in New Zealand recovered their benzol and toluol the amount would be small. [Witness gave particulars of the results of the distillation of coal, quoting from the *Gas Journal* for April, 1918.] In distilling coal-refuse for the sake of the oil, unless we can find a sale for the gas and for the coke it is not likely to be a commercial proposition. The Coalite Company, of Great Britain, unsuccessfully attempted to produce fuel and oils by low-temperature distillation. The financial loss was enormous. I do not think that the crude coal-oil would fetch more than 6d. per gallon even in war-time.

9. *To Mr. Veitch.*] It is true that brown coal is largely distilled in Germany for the making of oils, but these oils are not as good from the point of view of public lighting as are the oils obtained from petroleum-fields. In the case of the coke they obtain in Germany, they are able to get a local sale for it. It burns quite well in the German household stove, but we should have to get our market here. We should have to get the public to persuade themselves that this was the right stuff to use. The cost of production would be the difficulty. If people could get American oil which will burn well in their lamps they would much prefer it to an oil made from the distillation of brown coal. There is another point: In any of these processes of oil-distillation if you want your oil to be presentable it has to undergo a large amount of refining, and one of the substances you require is a considerable quantity of sulphuric acid. The price of sulphuric acid in New Zealand is, I think, something which this Committee would do well to look into. Before the war we got it at ten guineas per ton on the wharf, and that is too high a commercial price for a number of manufactures which depend on the use of it The price is, of course, much higher now.

10. *To Mr. Luke.*] Many branches of chemical-manufacture are dependent upon the use of sulphuric acid. Sulphuric acid as used in English gas companies cost not more than £2 before the war. It was probably not of such a high grade as the ten-guinea acid, but good enough for the purpose. At ten guineas a ton for acid it does not pay to make sulphate of ammonia at the gasworks, and this is a decided loss to the agricultural community.

11. *To Mr. Sidey.*] I hardly like to recommend that the State should establish a sulphuric-acid factory, but it is worth while looking into.

12. *To Mr. Veitch.*] The proposal to make oils from Orepuki shale is, I consider, not so likely to be profitable as boring for oil. I may say that I made careful examination of Orepuki. There was so much sulphur in the shale that the oil was objectionable. The paint on the houses in Orepuki was blackened by the sulphurous gases though the works were a long distance away. The Orepuki works did not attempt to make kerosene; they made a gas-oil for the railways. The oil they made would require a different kind of burner to give satisfaction in an ordinary kerosene-lamp. This is a most important point: If the public buy oil and find it will not burn well in their kerosene-lamps, what will they do? They will keep the lamp and go to the old oil.

13. *To Mr. Sidey.*] The Scotch shale-oil is not highly sulphurous, as the Orepuki product is. The oils from Bovey Tracey, on the other hand, are too sulphurous to find a market in peace-time.

14. *To Mr. Hornsby.*] I have heard all sorts of explanations as to why Orepuki closed down, but do not know anything for certain, except that the working-costs were too high. The sulphuric-acid difficulty was mentioned by the manager as one of the difficulties.

15. *To Mr. Sidey.*] I would not put anything into the shale deposit financially.

16. *To the Chairman.*] As to prospecting the Dominion to ascertain whether oil is available or not, I should say that the Government should do it and protect itself. Opinions differ among geologists themselves as to whether oil is to be found. I know distinguished geologists who say that the evidence is distinctly favourable.

17. *To Dr. A. K. Newman.*] In some cases you can say with tolerable certainty that oil will not be found, and in other places you can say there is a fair prospect of oil being struck.

18. *To the Chairman.*] My feeling is that it is the duty of the State to develop our industries. It should also prospect. There should be a definite policy with regard to improved value by imposing a research-tax on the country where a find is made.

19. *To Dr. A. K. Newman.*] There are considerable deposits of sulphur in the Rotorua district and on White Island. I believe Kempthorne's at one time used a considerable quantity of New Zealand sulphur.

20. *To Mr. Hornsby.*] I cannot say that the bringing-in of the electrical treatment would enable the Parapara iron to be marketed successfully. For smelting you must use good coke or charcoal, even if you have electrical energy, and until you have that the Parapara ore will remain undeveloped. The actual amount of phosphorus in it is too small for a phosphatic ore suitable for the Bessemer treatment and the production of basic slag, but too high to be considered a first-class ore by those who are manufacturing iron with the object of making it into steel, other than by the Bessemer process. With regard to the phosphates which, it is said, exist, though not in payable form, I do not know of any deposits in New Zealand that, with the aid of electrical processes, could be brought into commercial use. In New Zealand we have excellent deposits of fireclay, though I suppose we import much more than we make. We ought to make all our own fireclay goods. There are deposits of phosphates in Otago, but I do not know the extent of them. Some Otago phosphate rock I have analysed has been of good quality.

GEORGE CRAIG, Assistant Comptroller of Customs examined. (No. 21.)

I understand that the Committee desires information in regard to the duty on imported cigarettes. The matter is somewhat complicated. It is not really as simple as it might seem to put the matter in a clear way. The duty is £1 5s. 6d. per thousand, irrespective of quality, if the cigarettes weigh not more than 2½ lb. per thousand; but if they weigh more than that the duty is 10s. 6d. per pound. The idea is to catch the heavy Egyptian and other cigarettes. The duty before the war was 17s. 6d. It has been raised 8s. per thousand. The duty on cigarettes made by machinery in bond really depends upon whether they are made from imported leaf or from New-Zealand-grown leaf. The duty on the imported leaf is 2s. per pound. The excise duty on cigarettes made by machinery is 5s. 6d.; so that the total duty payable on cigarettes made by machinery in bond from imported raw leaf is 7s. 6d. per pound—that is, 18s. 9d. per thousand. So that the protection given to cigarettes made by machinery in bond from imported leaf is 6s. 9d. per thousand, and if the cigarettes are made with machinery in bond from New-

Zealand-grown tobacco the protection is 11s. 9d. per thousand; 1s. 6d. per pound is the difference in the excise duty on cigarettes made by machinery and cigarettes made by hand. The duty on cigarettes made by hand in bond from imported raw leaf, is made up as follows: Import duty, 2s. per pound; excise duty, 4s. per pound: total, 6s. per pound, or 15s. per thousand. Therefore the protection given to cigarettes made by hand in bond is 10s. 6d. per thousand if made from imported leaf, and 15s. 6d. per thousand if made from New-Zealand-grown tobacco.

1. *To Mr. Veitch.*] I understand that the 1s. 6d. was added to encourage hand making as against machine making. I think I am correct in saying that there have been no cigarettes made in bond by hand.

2. *To the Chairman.*] In Auckland there were 466 lb. made by machinery in 1914, and since then there have been no cigarettes made in bond either by hand or by machine. The advantage of making in bond is that the duty is less.

3. *To Mr. Hornsby.*] I think it might assist the Committee if I stated the Australian duties and the New Zealand duties. I am not speaking with the same authority about the Australian tariff as about our own tariff, but the Australian figures are taken from the Australian statistics. The situation in Australia is even more complicated than it is in New Zealand, because in Australia they have two duties on imported tobacco—namely, 4s. 3d. on cut tobacco and 4s. on plug tobacco. The import duty on the raw leaf coming into the country and going into bond to be manufactured into tobacco or cigarettes depends upon whether it is for tobacco or cigarettes on the one hand, or for cigars on the other, and whether it is stemmed or unstemmed. The great bulk of raw-leaf tobacco imported is unstemmed. The duty in Australia on imported raw leaf is practically the same as in New Zealand—2s. per pound; but the excise duty in Australia on cigarettes depends upon whether they are machine or hand-made. The duty on machine-made cigarettes in Australia is 4s. 6d. per pound, and the excise duty on hand-made cigarettes is 4s. 3d.

4. *To the Chairman.*] The protection given to machine-made cigarettes in Australia is less than the protection given to machine-made cigarettes in New Zealand, yet they are manufactured in Australia in very large quantities. In Australia they have a preferential tariff, but the great bulk of cigarettes come from the United Kingdom. In Australia the duty on cigarettes made in the United Kingdom is 8s. 6d. per pound; duty on unstemmed leaf, 2s. per pound; excise duty on machine-made cigarettes, 4s. 6d. per pound: total, 6s. 6d. per pound, as against 8s. 6d. per pound import duty there. To be on the safe side, we will take it at 9s., which is the duty on imported cigarettes not made in the United Kingdom—that is, 2s. 6d. per pound protection. We calculate ours at 2½ lb. per thousand. Two and a half times 2s. 6d. makes 6s. 3d.; and in New Zealand the protection is 6s. 9d. The protection in New Zealand is 6s. 9d., as against that in Australia, which is 6s. 3d. You might say that the machine-made cigarettes made in Australia amounts to a very considerable quantity, and there is slightly less protection than in New Zealand. The import duty on ordinary cigarettes in Australia is 8s. 6d. per pound—that is, manufactured in the United Kingdom. The duty on the leaf is the same in both places—2s.; excise duty on cigarettes manufactured within the country by machinery: Australia, 4s. 6d.; New Zealand, 5s. 6d.; which gives the Australian manufacturer a protection of 2s. and the New Zealand manufacturer has a protection of 2s. 9d. per pound. On the hand-made cigarettes in Australia there is an excise duty of 4s. 3d. per pound, and in New Zealand 4s.; or a protection to the maker in Australia of 2s. 3d., New Zealand 4s. 3d.

5. *To Mr. Veitch.*] The figures I have quoted are from the latest Australian tariff in our possession. They are really approximate figures, but are close to the absolute figures.

6. *The Chairman.*] The next question is as to the tariff on manufactured hats. It was stated by one manufacturer that he wanted further protection—similar to that in Australia?—In the figures I am giving to the Committee I am leaving out the primage duty of 1 per cent. on all goods. The import duty on hats in New Zealand is 25 per cent. on British hats and 37½ per cent. on foreign hats. The latter duty was imposed in 1917. The duty in Australia is: Wool-felt hats, British goods, 15s. per dozen, or 35 per cent. *ad valorem*, whichever is higher; on hats other than from Great Britain, £1 per dozen, or 40 per cent., whichever is higher. Fur-felt hats, £1 4s. per dozen, Great Britain, or 35 per cent., whichever is higher; and foreign, £1 10s. per dozen, or 40 per cent., whichever is higher. The United States tariff is 45 per cent. *ad valorem.*

7. *To Mr. Sidey.*] Hoods for making hats are imported here. The hood is the hat before it is blocked—the material to make the hat. They want to make these hoods in New Zealand from rabbit-fur. As to Stetson hats, the imports of hats from the United States in 1918 amounted to 2,754 dozen; value, £18,413.

8. *To Mr. Craigie.*] If the Government put on the Australian 35 per cent. *ad valorem* duty it would be difficult to say whether it would make hats dearer all round in New Zealand. Felt hoods are free of duty. A great quantity of the material is free of duty. The duty on machinery is 20 per cent. if British-made and 30 per cent. if foreign-made. Leaving out the rabbit-fur, the other articles which would have to be imported for making hats would be ribbons and buckles for hats, and labels and linings and the various materials that are required in the industry. In the year 1918 the value of hats imported into New Zealand was £155,397. That is the imported value, which is the invoice value plus 10 per cent. Felt hats are made both from fur and from wool.

9. *To Mr. Hornsby.*] If a law were passed to that effect a sliding scale could be arranged. As to valuing the goods on importation, that has always been done since we have had *ad valorem* duties; but in these cases we have to determine the fair market selling-values in the country of exportation, and the duty is payable thereon. Of course, those are wholesale prices. In the case of

New Zealand you would have to determine the wholesale selling-price here and fix the rate of duty in accordance with that. There is something like the sliding scale you suggest in existence now in connection with wheat and flour. It might not be difficult if you had only one or two industries to deal with, but it might be difficult if you had more industries to deal with.

10. *To the Chairman.*] The duty on British fancy goods and toys is 20 per cent. *ad valorem*, and on foreign 30 per cent. The value of British and foreign fancy goods and toys imported in 1918 was £163,000. A large percentage was fancy goods. The British fancy goods and toys were valued at £67,000, and the others at £96,000—Japanese, £61,000; and the United States, £23,000. Importations of Japanese and United States fancy goods and toys have gone up enormously since the war.

11. *To Mr. Hudson.*] Raw material was imported for the manufacture of toys. If it was cotton it was admitted free of duty. Woollen material was not admitted free.

12. *To Mr. Veitch.*] If toymakers bought remnants of cloth from shops on which remnants duty had been paid it would be a difficult matter to give a refund of duty on such remnants. It is a difficult matter to separate fancy goods and toys. If the toymakers could show us any way in which the material they import could be cut so that it could not be used for anything else than the manufacture of toys the Department would be prepared to recommend that it be admitted duty-free. We asked the importers to submit to us any scheme that would be practicable, promising that we would consider it, but they said they could not think of anything.

13. *To Mr. Poland.*] If any other manufacture was started and the raw material came in its free admission would be considered, provided the article could not be made in New Zealand. The woollen material that the toymakers used was of a kind that could not be made here.

14. *To Mr. Sidey.*] The Australian tariff did not distinguish between fancy goods and toys.

15. *To Mr. Poland.*] Last year 2,976 hats were imported from Australia, the value being £10,766.

THOMAS WILLIAM KIRK, Director of Horticultural Division, Department of Agriculture, examined. (No. 22.)

In regard to the growing of tobacco, it is well proved that tobacco of decent quality can be grown in many localities in New Zealand. I recollect distributing tobacco-seed thirty-five years ago, when I was Sir James Hector's assistant. Instructions for growing were also issued. Seed was also distributed to children of the Native schools, together with instructions. A very decent tobacco was grown in many localities. In 1901 I recommended that investigations should be made, and the Government commissioned Mr. G. F. Sutherland, who made a report on tobacco-growing in New Zealand. The report was issued as a small bulletin of the Department of Agriculture. Mr. Sutherland had owned tobacco plantations in Fiji. The Government has since distributed seed. We find that tobacco grows well in the North Island on our own clay lands in the Government experimental place near Mercer, and in portions of Hawke's Bay. It also grows on Moutere Hills, in Nelson. [Photograph produced.] Experiments have also been conducted by the Department at the Ruakura Farm. [Photograph produced.] An account of it can be found on page 303 of the *Journal of Agriculture* of 1913. It was a fairly successful experiment. The seed was sown on the 14th October, planted out on the 17th December, and the crop was harvested in the middle of March.

1. *To Mr. Hudson.*] All the attempts at commercial tobacco-growing in New Zealand have been non-successful. We can grow the leaf, and a very decent leaf, but we have not yet grown it profitably. The Hawke's Bay Company was getting along fairly well, but I believe they have sold their drying-houses. The main difficulties are the excise restrictions. There is also an objection to the tax on the imported leaf, which is required for blending. Further, constant care and labour are required during the whole life of the plant. I consider that at present the labour difficulties are too extreme for the profitable cultivation of tobacco.

2. *To Mr. Poland.*] We made experiments at Tauranga, where the soil suited well. A light, friable, deep soil is the most suitable. The growing of tobacco on small farms by families may be carried on financially if there is a factory that will guarantee to buy the stuff if it is up to standard. Tobacco is grown successfully in some parts of Australia. Their climate is much better than ours for drying tobacco.

3. *To Mr. Hornsby.*] I do not claim to be a tobacco expert, but I was surprised to see the site the Hawke's Bay Company had selected. They lost a large quantity of their seedlings owing to a disease. They took some of their seed to the horticultural station at Havelock, where fine seedlings were raised. This indicated that the seed could be grown successfully farther from the sea than the company's site.

4. *To Mr. Sidey.*] The tobacco-plants are 5 in. or 6 in. high when they are planted out. It is still liable to a late frost at that stage. When once well established there is not much fear of frost. We have tried eight or nine varieties. All the places where I have experimented are farther from the sea than the land of the Hawke's Bay Company. The company's land is a few hundred yards from the sea. I think it is too close to the sea. Portions of the company's land are very rich. If farmers are sure of a market it would pay them to grow tobacco. In Nelson there is none too much labour for the fruitgrowing. On tobacco the labour required is between September and March, and at that time there is a demand for labour for the fruit. I do not think we have the labour available at present to grow tobacco.

5. *To the Chairman.*] Returned soldiers who could stoop and do work about the ground would not find the work heavy. If you are going to put soldiers on the work you must arrange for drying-sheds and be sure of a market. It would take about eight years to get the industry properly established, and the Government would have to encourage it at every point. I am not sure how the labour difficulty is overcome in Australia. I cannot say that children are kept at

home from school there to do the work at a certain period of the year. I cannot make the statement of my own knowledge that the alleged Tobacco Trust has been responsible for the strangling of the young industry.

Mr. Hornsby: Mr. Chairman, I wish to read a cable bearing on this tobacco question that appeared in this morning's newspaper. It is as follows: "London, February 9.—The Press urges on the Government in all strikes henceforth a prompt detailed publication of the facts on both sides where the general public is affected. Even the Conservative papers suggest a franker disclosure on the basis of prices and profit. The workers increasingly challenge the huge business returns, and quoted as an example the Imperial Tobacco Company's report, showing the year's trading profit to be £3,825,000, while the poor man's smoke has doubled in price and declined in quality.—United Service."

WEDNESDAY, 12TH FEBRUARY, 1919.

D. CUDDIE, Director of Dairy Division, Department of Agriculture, examined. (No. 23.)

The Chairman: The Committee desire to obtain some information from you in regard to the possibility of increasing the production of butter-fat throughout New Zealand, with a view, of course, to increasing the value of the product exported, and generally to hear from you any suggestions you may have to make in regard to improving all branches of the business under your control. We desire to stimulate the industry in some way if it can be done, and assist it if it is necessary.

Mr. Cuddie: As regards improving the dairy stock for the purpose of increasing the production of butter, cheese, and other products, there appears to be only one proper course to adopt—namely, for the farmers to undertake the testing the cows of their herds for milk and butter-fat production on a systematic basis; also to follow that up by the essential breeding from purebred sires and from dams whose records have been kept officially by the Department. It seems to me that there is an immense field for expansion along those lines; but our difficulty is in persuading the farmers to undertake the testing of their cows generally. It is being carried on at the present time, but only to a very limited extent. In addition to that we can increase the number of small holdings. That will come naturally, I take it, with the development of the country. A great deal of land that is now being used for other purposes is eminently suitable for dairying, and if that land can be made available for closer settlement our exports in butter and cheese would naturally expand.

1. *To the Chairman.*] The average yield of butter-fat per cow is very difficult to arrive at. My assistant, Mr. Singleton, could give the Committee more information in regard to this matter than I can, because he has given more attention to that special branch of the work. An estimate was made by him just about a year ago, and it was found that the approximate average quantity of butter-fat per cow produced in New Zealand was 161 lb.—that is, taking the average of all cows, in milk and dry. We have no information as to how that average compares with other countries, but it is very low indeed. It is understood to be considerably above the Australian production, but it is far too low. It has to be remembered that in New Zealand the yield of some cows goes up to 200 lb. and 250 lb.; some go as high as 300 lb., and in a few instances up to 400 lb. of butter-fat per cow. According to the last returns there were in New Zealand 777,000 dairy cows. The figures compiled by Mr. Singleton for the year 1910–11 indicated that the butter-fat production per cow came to only 142 lb. That was when we started our herd-testing movement. At the end of the 1916–17 season it had risen to 161 lb., as I have previously stated, which is really an increased production per cow of about 13 per cent. in that time. We are satisfied that that result was due to the fact that some of the farmers have gone in for herd-testing. The cost of production per pound of butter-fat depends altogether on the class of cows the farmers keep. The question of the average cost of 161 lb. butter-fat per cow has been gone into fairly well, and it is estimated that it costs about £13 12s. 6d. to keep the average cow per annum—that is, cows supplying butter-factories. If you take a cow as producing 161 lb., or, say, for convenience, 160 lb., of butter-fat, the cost of butter-fat per pound works out at 1s. 7½d. As to how much butter-fat it takes to make a pound of butter, generally speaking you can get an increase of about 18 per cent.—that is called the overrun. The cost of the manufacture depends upon the size of the output of the factory. In the case of a factory of moderate size the overrun just about pays the cost of the manufacture or a little more. The overrun reaches 20 per cent. in some cases. Roughly speaking, the factory pays a little more for a pound of butter-fat in some cases where the working-expenses are low. I might mention that if you take 180 lb. of butter-fat as the average production the cost of butter-fat is cut down to 1s. 5½d. per pound. With a herd producing 250 lb. per annum the cost of butter-fat works out at about 1s. 0½d. per pound. If the production is 300 lb. it amounts to 10⅜d.; that is basing it on the cost of £13 for keeping each cow. In regard to culling dairy herds, the usual practice is to send the discarded animals to the saleyards, but in some cases they are fattened off and sold to the butcher. A wise farmer does not usually buy cows in the saleyard. There are few cows being culled out at the present time. In regard to other farmers buying discarded or culled cows, I think you can leave that to the farmer. The buyer has usually some idea of the value of the animal he buys, or he gets some one who has the knowledge to act on his behalf. In regard to the question of encouraging increased production of butter-fat, I may say that for ten years past we have continued to send out circulars and pamphlets to farmers in respect to the testing of dairy herds, and the question has been constantly discussed at meetings of dairymen. At the present time our testing officers are carrying on that work as time permits, but, unfortunately,

we have not enough men. It is not proposed to increase the number of testing officers at the present time. There are some nine of these officers, but they are not appointed for that special purpose. They are engaged chiefly in the testing of purebred dairy stock, and they deal with ordinary dairy herds as time permits, and they endeavour to persuade farmers to join an association for the purpose. The importance of this matter has been brought prominently before farmers from the North Cape to the Bluff for many years past. I do not know that we can do any more than keep hammering away in regard to the same thing, and we may create an impression by and by. There is quite a development in connection with the preparation of casein at the present time. It is extending throughout the North Island to a considerable extent. Prior to the war the only market for casein from New Zealand was in Germany, but since then there has been a market in England, and there is every likelihood of the latter market continuing. Within the last twelve months one of the officers of the Dairy Division has discovered a process of saving casein from buttermilk, which in the past has been more or less a waste product in many factories. Dairy companies are now manufacturing a considerable quantity, and it is expected that others will take the matter up before long. The value of casein at the present time varies according to quality. I think the present value is in the neighbourhood of £70 per ton. It is believed that the price will be maintained owing to the fact that new uses are being found for the material. There is no difficulty in maintaining the manufacture provided the factory is situated near a drying-station. There are only two stations in the North Island. When the factory is situated a long way away there is difficulty in forwarding the material for drying. We are not in a position to recommend that further drying-factories be established at present, but in time that will come. At present there is not a sufficient quantity being made to warrant the expansion. They might probably extend the system at Taranaki, and I believe that is now under consideration. We have an officer who devotes practically the whole of his time to this question. The Government sent him Home some years ago for the purpose of gaining the necessary experience and information about it. The result has been the production of an article of very high quality—an article which has been favourably spoken of on the market. Prior to the war sugar of milk was selling at from £50 to £60 per ton, but it appeared as if there was not an unlimited demand for it. During war-time the price has risen to over £200, and has even gone up to £300 per ton. Of course, that is a war price. It is very hard to say whether it will go back to £50 a ton; it depends upon the production. It would pay at £56 a ton. A moderate-sized factory would cost about £15,000. A large amount of coal would be required in connection with the manufacture. It could only be established on a payable basis where fuel is obtainable at a reasonable cost. As to the cost, we are not able to give information about that. As a matter of fact, the Government is sending a man away to get full information about sugar of milk and dried milk. I suggested the sending of that officer away to get the information. It may be necessary to bring a man to New Zealand later on, but unless we have one of our own men here who knows the industry we would be altogether in the hands of the imported man, and he might not be the man we want. We are making inquiries, and we expect to get some good information. We expect our officer to leave here in April, and he ought to be back in about six months' time. He is going to the United States and Canada. The information will be available as soon as he returns—about next October or November. In regard to dried milk, they are paying up to 2d. per pound on butter-fat above that paid at cheese-factories. That is the guaranteed price. The price for butter-fat for milk supplied to milk-powder factories is 3d. per pound over butter and 2d. per pound over cheese. It has to be remembered, of course, that the farmer gets nothing back—no skimmed milk or whey. That is the guaranteed price whatever happens. I think there is a minimum price, but there is no maximum; it depends upon the price of butter-fat at the cheese and butter factories. They base their price on the highest price paid. The machines for drying milk are practically all patented. We believe they are purchasable in some cases by paying a royalty or by purchasing the rights for New Zealand. They are American machines; but some are made in Sweden and Denmark, and also in England. Some of the machinery can be manufactured in New Zealand, but not all of it. A dried-milk factory requires large supplies. The consumption of coal is very heavy, for it requires sufficient to dry off all the water from the milk. In regard to rennet, it ought to be a practical proposition to manufacture here the rennet required in New Zealand. We have had in the past a large supply of the raw material—calves' vells. But here again the farmers seem to be very careless about the whole thing. They will not take the necessary trouble in regard to it. Lambs' vells are being used now. They are only experimenting with them. We require about 30,000 gallons of rennet per annum in New Zealand. Before the war the price was £2 10s. per 10-gallon keg, and during the war the price has been £25 per keg. We have just managed to get a sufficient supply to carry on, but a considerable quantity of pepsin has been imported from America to be used in conjunction with rennet. Rennet is manufactured principally in Denmark, also in Sweden, and to some extent in England; our main supplies come from Copenhagen. There are several brands on the market; Hansen's is one of the leading brands. I doubt very much if the price of rennet will revert back to the pre-war level, owing to the fact that so many cattle have been destroyed during war-time. The main supply of vells in the past came from Russia and Austria-Hungary. I think we should endeavour to establish the rennet industry here. The Government is not assisting in the establishment of the industry here except in this way: as the result of action taken by the Government a considerable number of vells have been saved; a pamphlet was issued telling farmers how to save them, and officers of the Live-stock Division gave demonstrations in the saving of vells, but no vote of Parliament was taken or expended for the purpose. The processes of the manufacture of rennet are somewhat intricate, and there are said to be certain secrets in connection with the manufacture, more especially in connection with its standardization. It would be impossible for an officer to go abroad and get the necessary information unless he worked in a factory for some time. I think a thoroughly

competent rennetmaker should be imported from some of the main centres of other countries. The Rennet Company which was formed about two years ago tried time and again to obtain the services of a competent man from Home. I think the dairy companies should take action in this respect; it is quite within their province. I think the failure in this respect was mainly owing to war conditions. I do not see why the Government should not co-operate with the factories in this respect. If the raw material is going to waste we should make every effort to save it. I cannot say definitely whether the utilization of lambs' vells will come out all right; it will have to be tested.

2. *To Mr. Poland.*] I think the dried-milk manufacture has come to stay, but I think it would be very unwise for dairy people to rush into it until they are sure of a market. There are a great many foods on the market quite suitable for rearing calves. I do not think the dried-milk industry is going to extend to a large extent in New Zealand. The present excitement about the matter appears to have arisen owing to the high prices created by the war. A few herds here and there might not be producing an average of 100 lb. butter-fat. An average of 160 lb. does not pay. Feeding is a very important phase of the matter. The £13 12s. 6d. applies to cows supplying butter-factories, after deducting the by-products. Included in the cost there is the cost of the land, cost of labour, interest, and depreciation of buildings and plant, &c.—all charges. We have got a very large number of first-class bulls in New Zealand, the dams of which have been tested. We have got the foundation stock to build on. There is no need for any importation at all. I do not think the present price of butter will be maintained after the contracts expire. We cannot expect to get 181s. per hundredweight for butter all the time. I do not think it will go back to what it was before the war. I do not see how the cost of production is going to be reduced. I think the majority of farmers are doing very well with cheese and butter. The question of the success of lambs' vells depends upon whether the rennet is found suitable for the manufacture of cheese; it is only in its experimental stage at the present time. The average price dairy factories were netting for their butter last year was 1s. 6d. for butter-fat; for the 1916–17 season it was 1s. 6·15d. at butter-factories. We base the calculation of the cost of keeping a cow on land at the value of £90—£90 worth of land to carry a cow. The 161 lb. of butter-fat was worked out on the basis of all the cows in the Dominion—in milk and dry—not only the cows in milk. The dry cows have to be fed, and you have to take them into calculation. Some cows calve and do not milk. An increase of 25 per cent. in the value of butter-fat would have a tendency to increase land-values. There is no doubt the price of land has been forced up as a result of the high price of butter-fat. Farmers find that they can get a much better crop of grass and a better yield of milk as a result of top-dressing their land. They could certainly do more in that direction. I do not think there is any best breed of dairy cattle. Heavy cattle like Friesian do best on rich land, and lighter cattle are more suitable for hilly country. In regard to getting better dairy results, I do not think the Department can do more than follow the policy now adopted; they might extend the policy by devoting more men to the work, and it would be a good investment for the country. There are quite a number of herd-testing associations. We are trying to get the factories to take the matter up and do the testing as part of their ordinary business.

3. *To Mr. Craigie.*] There is no doubt that under better conditions and with more attention being devoted to the matter increased production per cow would result. Speaking generally, it is thought that cattle do better outside than inside in New Zealand so long as they have a reasonable amount of shelter and have plenty of food. Housing cattle has a tendency to spread disease among the animals. There is no country in the world where the live-stock are so healthy as in New Zealand. I believe the average in Denmark is about 200 lb. per cow. In Denmark the testing is voluntary. On account of our climate and good natural conditions I think we can compete with any country in the world.

4. *To Mr. Luke.*] Dried milk will not be a serious competitor in drawing of a city's supply. I do not think that the competition for the supplies will increase the price to the consumer. The dried-milk factory can only operate where there is a large dairying-area. They want at least about three thousand cows to make it a payable proposition. With the great inducement to put milk into butter and cheese the tendency is to make it difficult for a city to obtain its supply. It is a matter, of course, of price. The farmer wishes to sell his product in the best market. Besides, if he sends his milk to a factory the conditions are less exacting than if he sends it to a city supply. By sending his milk to a factory for butter or cheese he is enabled to fit in his domestic arrangements better than if he supplies a local authority. Moreover, he has a spell for three months every year when he is supplying a factory. The town supply has to go on all the year round.

5. *To Mr. Craigie.*] The hydro-electric power will be a great boon to the dairy-farmers and to settlers generally. I understand that the dairy factories and farmers at Tai Tapu are using the power largely. It will save fuel in the factories, and it all helps to increase production.

6. *To Mr. Sidey.*] There is only one preserved-milk factory of any size in New Zealand. There is a small concern in another district in the South. There is a future before the industry for local consumption. We are still importing preserved milk, even against the tariff. Nestlé's Company proposes to establish a factory in New Zealand, and has bought a property close to Palmerston North for it. As to its capital, I think it is doubtful where it comes from. The possibility may be that this company, working on a large scale, will squeeze out the other branches of the industry in New Zealand. The same company has done that to some extent in Australia. To begin with, it undersells, and subsequently it puts up the price. In view of that experience the Government in New Zealand should prevent a similar thing taking place here. Of course, if it is a British company no exception can be taken to it. If it is a foreign company it should

not be allowed to come in and exploit existing concerns, and probably make them close their doors. I have not given any consideration to what steps might be taken. It is a matter for the authorities. We have no records of the return of butter-fat per cow in each district in the Dominion. We have done everything possible to bring under the notice of farmers the necessity of herd-testing. Our experimental farms have endeavoured to interest the farmers in that respect over a number of years. There are no experimental farms in the South Island. I believe that repeated requests have been made for such farms to be established there—in Canterbury or Otago. The use of the milking-machine generally is a drawback in regard to the carrying-out of herd-testing, as it is impossible to get samples from each cow when the releaser system is used. The facilities for obtaining bulls are not as great in the South Island as in the North Island. If there were an experimental farm in the South Island and it went in for breeding cattle there would be some of the animals for sale. If that policy had been followed in the South in the past it would no doubt have been of assistance to farmers.

7. *To Mr. Veitch.*] It is a fact that we have got past the stage when we were dependent on experimental farms for the supply of purebred cattle to the farmers. The purpose of the experimental farm of to-day is to demonstrate rather than to provide live-stock.

8. *To Mr. Hudson.*] It is the intention of the Department to run some sections of the experimental farms on a commercial basis. It cannot be expected that experimental farms will be self-supporting. Experimental farms are a necessity in these times and not a luxury. If properly conducted they must be a source of great value to the farmer. In the North Island there are three experimental farms, and in the South Island none. On the west coast of the South Island the dairy industry is extending, and there is room for expansion. Some of the country there is well suited for dairying. The prospects are worthy of fostering, as there is a future before the West Coast as a dairying district. I should not like to express an opinion as to whether an experimental farm should be placed on the West Coast. I think something will be done shortly to give the farmers assistance, but I cannot say the nature of it. I think each farmer should have a bull of his own. In the case of small farmers who cannot afford to keep a good bull, several farmers in a district might arrange to buy one together. The Government could help in the selection of the animal. It would not be necessary to assist financially.

9. *To the Chairman.*] The average yield of butter-fat per cow in Denmark is 200 lb. Considering the bad climatic conditions in Denmark at certain parts of the year, and the fact that they have to house their stock for a portion of the year, I think the production of butter-fat in New Zealand should be largely in excess of that in Denmark. I have figures showing the exports of butter and cheese from New Zealand, with the value of the same. I also have the figures for casein. I could get the figures for other dairy-products. I will supply them to the Committee. If milking-machines were not available the industry would go back. Electric power can be applied successfully to milking-machines. Quite a number are being run now by electricity. I do not know that farmers are at the present time encouraged to visit the experimental farms by allowing them low railway fares. If a number of farmers desired to visit a farm it would be a fair thing to give them a railway concession.

10. *To Mr. Hornsby.*] In all cases in which it is proposed to establish a dairy factory we send an officer to confer with the settlers as to the building, its equipment, and all details. That officer goes back and forward until the factory is in running-order. If necessary, he will assist the manager to get a good start. No monetary assistance is given. At one time the Government had a system of lending to dairy companies, but it was hedged about by too many restrictions. In the case of returned soldiers farming a settlement, I would recommend that the Department should consider the question of helping them. I think the Government should assist them.

11. *To the Chairman.*] *Pinus insignis* is quite satisfactory for butter-boxes. The trials of this wood have not been on an extensive scale, but so far as they have gone they have been quite satisfactory. We have made successful trials of red-beech timbers for butter-boxes. There was no sign of taint in the produce. There are millions of feet of red-beech in the South Island. We have not tried the white-beech. Red-beech is suitable for both butter-boxes and cheese-crates. Only a limited number of officers is available for the inspection of milking-machines and the inspection of dairy-farm premises. Other officers ought to be engaged in order that a more thorough inspection might be made. In many cases the milking-machines are in a deplorable condition, and as a result the quality of the product suffers. We are doing a fair amount of this inspection work now, and the farmers welcome our men when they go about it in the right way, but we are only touching the fringe of the work. I have recommended that ten additional men be appointed as a start. I think it would require at least twenty to cope with the work. That would, in my opinion, increase the value of the product materially. The inspection could be made to include the housing of the employees on dairy farms.

12. *To Mr. Veitch.*] If a cow is suffering from disease of the udder the disease can be spread by means of the milking-machine right through the herd. The disease is not as common as it was at one time. The farmers are more careful than they used to be.

F. W. MacLean, Chief Engineer, New Zealand Railways, examined. (No. 24.)

On the question of paint I wish to say that in the Maintenance Branch at the present time we are testing locally made paints. It is possible to make laboratory tests, but we have found that these tests are not satisfactory from our point of view. What we require is to test a paint under actual working-conditions as far as possible. In some cases paint is subjected to conditions which hasten the effect that climate might have on it. In other cases it is tested in different latitudes. The Permanent Company's paint is now being tested in Auckland and in Dunedin. I think the Locomotive Branch is also testing it. Under ordinary conditions we can test a paint

in twelve months to enable us to say one way or another whether it will be satisfactory. It is not a full test, but it is sufficiently satisfactory in ninety-nine cases out of a hundred. Some paints show such deterioration in six months that we condemn them at once.

1. *To Mr. Hornsby.*] In many cases the makers of paints bring them under my personal notice or under the notice of officers who have to use them. As far as Jackson's productions are concerned, he has never, so far as I know, brought his paints under the observation of the Maintenance Branch. Whether he has brought them under the notice of the Stores Branch I do not know. As far as hæmatite is concerned, our general experience is that the quality is not now what it was, say, twenty or thirty years ago. We use large quantities of hæmatite. Nelson and Thames hæmatite were used at one time. If Jackson and Co. submit some of their paints to us we will try them. I have never refused a man a test of his paint if he can produce sufficient evidence that his paint is worth a trial. As far as we are concerned, our attitude is that if we can get a satisfactory article at a satisfactory price we prefer the local article. If we cannot get it here we get it as near as possible—in Australia. We take British goods in preference to any foreign article. There is no feeling among Government officials against local industries. If we can get a satisfactory article it is better for us to get it locally than to have to send away for it.

2. *To Mr. Hudson.*] I cannot say what is the cause in the falling-off in the quality of the hæmatite. I think it is a more earthy quality than it was. When I had more to do personally with these matters I was inclined to prefer the Nelson hæmatite to the Thames. It had a slightly richer colour.

T. W. HARGREAVES, Foreman Painter, Petone Railway Workshops, examined. (No. 25.)

As far as I know, the hæmatite we use in our Department comes from the Thames, but I would not be sure as to that. I do not know of any Australian being used. The hæmatite now used is not so good as it used to be; it does not seem to be ground so fine. I have not tested Jackson's hæmatite. Pullman-car colour is used on carriages, and with varnish. It is quite satisfactory. I have not tested any of the local productions.

1. *To Mr. Veitch.*] The branch of the Department I am engaged in does not consume such a large quantity of paint as the Maintenance Branch.

2. *To Mr. Craigie.*] We are using English-made varnish just now. If we were supplied with Nelson hæmatite of the quality supplied many years ago there would be no complaints about it.

3. *To Mr. Hudson.*] I have never tested locally made varnish nor paint. I think the falling-off in the quality of hæmatite is owing to the difference in the grinding of the hæmatite. There seems to be a certain amount of grit in it. I think it would improve it if it were ground finer. The Nelson hæmatite is better than the Thames hæmatite. It is about eighteen years since we used Nelson hæmatite; since then we have been using Thames hæmatite. They use Thames hæmatite at the workshops at Dunedin.

J. S. WILEY, Foreman Painter, Railway Workshops, Kaiwara, examined. (No. 26.)

We have not used Jackson's paints. Several samples of paints have been sent to me to be tested during the last eleven years. I think one sample was made at Wanganui, called Bellona. There was another sample sent from the Wellington Gas Company, called tar-paint. I have also made trials of Restar paint. I reported as follows in regard to the trial of Restar paint: "21/5/18.—Restar paint: This paint covers well, works well, but it takes about four days to dry." I also tested Steelite paint on two occasions, and reported as follows: "2/8/11.—Steelite paint: As compared with oxide, the only difference I have found so far is that it is ground finer. As compared with hæmatite, I consider it is better all round, as it is finer-ground, better body, and dries harder." The other report is: "11/1/17.—Steelite painted on iron appears to last equal to red-lead and red oxide, but I consider that Steelite painted on steel is lasting much better than red-lead or red oxide." I am not certain that Steelite is manufactured in New Zealand, but I believe it is manufactured in Dunedin.

1. *To Mr. Hornsby.*] I had no intimation from headquarters that I was to go on using the paint I reported favourably upon.

2. *To Mr. Sidey.*] I can recommend that a certain material be supplied, but I did not do so in that case. I have had no instructions about locally produced articles being given preference.

3. *To Mr. Hornsby.*] I used some New Zealand hæmatite some twelve months ago. I think it was Nelson hæmatite. We have about half a ton in stock now. I do not know who the manufacturers are, but I understand it comes from Nelson. I have used what I understand to be Thames hæmatite; it is a different colour. I have been using hæmatite on and off for the last thirty years, I suppose—ever since I have been in New Zealand. I had occasion some seventeen or eighteen years ago at New Plymouth to use it; and by grinding it and using it in proper form I found that the hæmatite was a real good thing. Within the last twelve or eighteen months I tried the same material, by grinding and suchlike, but the quality is not there. I have not made any tests of Jackson's hæmatite.

4. *To Mr. Luke.*] I have no prejudice against it. If a locally made article is good I would recommend its adoption.

5. *To Mr. Hornsby.*] The Railway Department used to use hæmatite more than they do now; but it has deteriorated during the last few years.

6. *To Mr. Hudson.*] I cannot tell the reason why hæmatite has fallen off in quality. I have been in the service over twenty years. We used to use hæmatite very considerably on goods and engine sheds and on tanks. I think it was Nelson hæmatite. If the quality now used were as

good as it used to be I feel certain the Department would go back to its use rather than use imported oxide. The trouble with hæmatite at the present time is that you cannot get the good solid body with it.

7. *To Mr. Craigie.*] I do not think there is any objection to the colour. It was used chiefly for roofs of goods-sheds, engine-sheds, and also for tanks. Nelson hæmatite has not got the same bright-red colour as English oxide. I believe Steelite is made from New Zealand products, but I cannot say. If we could get Nelson hæmatite as good as it was formerly I feel sure it would be extensively used.

8. *To the Chairman.*] Hæmatite is a long way cheaper than imported oxide. As far as I know, English oxide is £1 6s. a hundredweight in oil, whereas Nelson hæmatite is quoted at about 14s. dry. The article ground in oil is preferable from many painters' point of view because it is ground finer. I am not prejudiced against ready-made paint as long as it is of good quality.

9. *To Mr. Sidey.*] I could tell in from six to twelve months' time whether a paint is going to stand or not, but one could not give an opinion very well under six months. If you painted the outside of a house you could not give an opinion under six months as to how it is going to last. After six months I would be able to decide whether I could recommend it.

10. *To the Chairman.*] In regard to the Restar test, I am prepared to furnish the Committee with a written report on the test.

JAMES CHRISTOPHER COOPER, Manager of the Wellington Farmers' Meat Company, Masterton, examined. (No. 27.)

I represent the Masterton Chamber of Commerce. I wish to make representations to the Committee in regard to hydro-electric energy in the Masterton district. I may say that our proposition entirely depends on the intentions of the Government in connection with their larger scheme. I know from Mr. Parry's report that the larger scheme is a long way cheaper than any local scheme, but if the big scheme is to take ten years, which may mean twenty years, we have a local scheme which may be put in hand at a much earlier date. It is a scheme that will give us hydro-electric power at a headworks cost of about £30 per horse-power. This is putting 33 per cent. on our engineer's estimate of cost. The engineer shows that the headworks will cost £70, and I am allowing the headworks costing £100. The scheme will give 3,500 horse-power, which is the minimum. There is one matter that is likely to stop us—namely, that it will cost a lot of money; and where are we to get it? There is power under legislation of last session to raise the money, but it is another thing to get it. We want this Committee to further our interests, particularly with regard to getting the necessary cash, if we require it. If the Government are not going to carry out their big scheme we want it to help us and others who are in a similar position to us. I wish also to mention this: In regard to my own company, our coal to-day at the works is costing us £2 2s. 6d. delivered on the site. If we can get it we have to keep a big reserve supply, and every ton of coal is costing us anything from £2 5s. to £2 10s. per ton by the time it reaches the bunker, and the cost is going up. In the face of the present coal outlook, we hesitate before organizing any further departments.

1. *To Mr. Hornsby.*] We burn 8,000 tons of coal per annum, costing us £17,000, in round figures. Quite 5,000 tons are required for power purposes. The total cost of the scheme to give power to all the users—farmers and others—would be about £200,000. When I speak of £30 per horse-power I mean the headworks cost. My estimate of £200,000 covers the headworks, power-house, main lines, transmission, and reticulation throughout the whole of the Wairarapa Valley, not including the hill country. If we could get the money through the Government, under the Loans to Local Bodies Act, the work might be done, but it would be a serious matter to raise the money in the Wairarapa. We can organize the district and make preparations, but if we have to raise £200,000 for this purpose we are up against a very serious stumbling-block. Assuming the money difficulty can be got over, I believe I could manage to get the thing going in about eighteen months. I would cut the whole thing up into a number of contracts, and let them all terminate on a given date. It may be that this work will help us to find work for a large number of the returned soldiers. As far as the power-users are concerned, let me say this: Assuming that it may take twenty years for the Government to give us the power in the district by its scheme the smaller scheme will have more than paid for itself by that time. My own company would be saving thousands a year in the cost of power, and the people would be saving more than the company would. In my remarks I am referring to the Waiohine scheme. In the Tauherenikau scheme there is 1,400 horse-power. It could be cheaply harnessed. When we have developed the 3,500 horse-power from Waiohine we could extend it, if necessary, up to 5,000 by putting in a steam stand-by plant. The cost of the stand-by plant is included in the £200,000. The engineer has provided for it in his scheme in case of a breakdown in the line through perhaps a tree falling on it. It is the present intention of my own board of directors to establish several other contingent industries if we get the power.

2. *To Mr. Poland.*] About 1,500 or 1,600 horse-power would be required in the district, including my own company's demands. A distance of twenty-two miles would be served from the headworks. The engineer estimates the whole cost of the works at £120,000, plus £50,000 for reticulation. I am placing the total at £200,000.

3. *To Dr. A. K. Newman.*] We can get a minimum of 3,500 horse-power at Waiohine, taking an exceptionally dry season, but it is safe to count on 5,000. During the present season we might have got 10,000. I do not know anything about the Makuri power. The figures of our engineer have been checked by Mr. Parry, who has accepted the engineer's report as good. Mr. Parry makes the reservation that the Government can give us cheaper power.

4. *To Mr. Sidey.*] This scheme will fit in with Mr. Parry's scheme as a stand-by. It is too small to be linked up afterwards. That is Mr. Parry's statement.

5. *To the Chairman.*] I want this Committee to ask the Government to find the money to carry out our scheme.

6. *To Mr. Hornsby.*] The haulage charge for coal from the ship's side to the works is about 10s. 6d. per ton.

ARTHUR WOOD MOUAT, Chief Clerk, Head Office, Railway Department, examined. (No. 28.)

Our schedule will disprove the statement that the Department penalizes local industries by charging more freight on the article manufactured here than on the materials imported for that article. The distance to Masterton is sixty-six miles. The freight on 1,000 imported asbestos slates is 14s. 11d., whereas the material for the slates—mostly raw material—is £1 1s. 5½d. Ordinary roofing-slates, which have already been spoken about before the Committee, are classified more favourably for New Zealand than for imported slates. They are in the "cheaper-freight" class. Asbestos slates are separately classified. They are a manufactured article, but not quarried. The quarried New Zealand slate has a preferential rate over the imported. There is no distinction between the manufactured imported slate and the quarried imported slate. In the case of the goods to Masterton there is a discrimination of 6s. 6½d. in favour of the imported manufactured slate. Probably it is an exceptional anomaly. It is a matter of policy. If you take the railway tariff as a whole you will find that the locally manufactured article is given preference in rates over the imported article. The tariff was revised in 1913, although it may not have been altered. It is many years since there was a general revision.

1. *To Mr. Veitch.*] I do not accept the statement that the only tar suitable for roadmaking is not carried at the special rate provided for such tar. Tar for local bodies is carried 100 miles in 5-ton lots at 13s. per ton. Tar is a raw material of low value, and the question of the freight for the manufactured article called "Restar" becomes a matter of policy. It is of higher value than raw tar. When the tar is manufactured and made suitable for roadmaking purposes the charge is £1 0s. 9d. per ton when consigned to a local body.

J. ORCHISTON, Electrical Engineer, examined. (No. 29.)

1. *The Chairman.*] We understand you propose to establish a company with the view of manufacturing nitrogen from the air, at Milford Sound, and that you have had a difficulty in obtaining from the Government the necessary license for the utilization of the water-power?—Yes. I think it would be advisable to give a brief summary of the position and what influenced me to take up this line of work. In this case it is a question of dealing with applied science, not pure science. I have been following up the subject for about twenty years. At that time two scientists discovered nitrogen in the form of nitric acid at the Niagara Falls, but it was found that the power was too costly to carry out their system. They were only working in a small way, and the thing virtually lapsed. Two Norwegian scientists, having read the accounts of the experiments, and knowing that they could get water-power more cheaply harnessed, started experiments at Notodden, Norway, with the result that in 1904 they had so far developed their work as to demonstrate that it would be a commercial success if the operations were carried out on fairly large lines. They ultimately extended their works, and up to 1911 they had reached something like 260,000 horse-power, which was utilized for the extraction of nitrogen from the air, which was converted into calcium nitrates, and delivered it at English ports at £7 15s. per ton c.i.f. The demand was so great that they had at least twelve months' orders ahead, with the result that in 1913 they raised sufficient capital to duplicate their works, which were completed in 1916. The horse-power developed was 260,000 on the Rjukon River, and 60,000 horse-power at Notodden. The material had eight different handlings before it was landed in England. [Witness gave particulars of the different handlings in transhipment.] The reason I give these details is because in our case if we establish works at Milford Sound there will be only 300 yards transit to deep water. They sold at £7 15s. c.i.f. English ports in 1911. At that time Chile nitrates were bringing about £10 per ton, nitrates containing a slightly higher percentage of nitrogen. In 1907 I explored the watershed of the Bowen River, Milford Sound, and came to the conclusion that that was by far the best power available here for the purpose wanted. About a year subsequently I drew the attention of Sir James Allen to the possibilities of the Bowen River for that purpose. He consulted some others, amongst them Mr. G. M. Thomson. Mr. Thomson wrote to Sir William Crooks, in England, and, on his advice, to two scientists in Norway. The question was brought up in Parliament in 1910 by Mr. Thomson, but he got practically no more encouragement than I have got. The application which has been made to the Government has been simply turned down. Many persons say, "What is the use of our entertaining a thing of this sort?" It is said that we have got no market. I say the world is our market. Australia could easily consume all that we could produce. At Milford Sound we could ship our products just as cheaply to Australia as we could to some of the chief ports of New Zealand. There is an unbounded market in India. Nitrogen is the most suitable fertilizer for rice-growing. We do not expect for some time to turn out more than 15,000 tons a year. The Chile nitrate is what we are up against. Chile had a monopoly until this aerial manufacture was established. They have a wide extent of nitrates in Chile, but they have labour troubles. The American demand for nitrates has increased practically threefold in four years.

2. *To the Chairman.*] What has prevented us going ahead in New Zealand has been the fact that the Government has declined to grant us the water-power rights. They gave practically no reason for refusing except that it was too big a thing to give us. The usual term of such a lease as we ask is for forty-two years. If we got one-third of the capital in the Dominion, no doubt we would get the other two-thirds out of it.

3. *To Mr. Sidey.*] I am really speaking on behalf of a private syndicate. The syndicate is prepared to put down as much capital as it can afford. We do not want to exploit the public. The British and French would have been in "queer street" in the late war if they had not been able to obtain Chile nitrates. Without nitrates you cannot make explosives. The right of the State to purchase might be one of the conditions that the State might lay down. If we considered the conditions too onerous we would go no further. If the Government gave us anything like liberal conditions we would go ahead. We would expect at least 10 per cent. on our investment if it were taken over. The minimum capital required would be £200,000, and that would enable us to work 10,000 horse-power. There are other waterfalls there, and if our works were successful we would seek for further electric power. Approximately two million horse-power could be obtained from the Sounds. We only ask for about 1½ per cent. of the total power available.

4. *To Mr. Sidey.*] The establishment of our works would not detract from Milford Sound as a scenic resort. The buildings could be put up so that they would not be unsightly in appearance. The number of hands would depend on the nature of our manufactures. The number of hands employed might vary from forty to a hundred. I think we could have the power developed in about three years. We are going to use the works for the manufacture chiefly of calcium nitrates and some nitrate of soda.

5. *To Mr. Hornsby.*] There is plenty of water-power available for the general hydro-electric scheme of treating low-grade ores at one of the Sounds; but why should we build works to treat Australian ores and neglect our own resources here—using the air and water and a little limestone in the manufacture of a fertilizer which will be for the great good of the country? All we ask is to be allowed to use a power which is now running to waste.

6. *To the Chairman.*] Our idea would be that the company would utilize the whole of the power it generated; in fact, we anticipate that we would ask for additional power the following year. I can send you a copy of my correspondence with the Minister of Public Works.

CHRISTCHURCH.

FRIDAY, 14TH FEBRUARY, 1919.

RONALD S. BADGER, Land and Estate Agent, examined. (No. 30.)

I am also interested in the importing business. I act as secretary of the Industrial Association, but I am not here in that capacity. In the line in which we are interested we are out to encourage (1) local industries, and (2) British products. I desire to bring under the notice of the Committee the position in regard to the importation of furs. At present furs from Great Britain are subject to 25 per cent. *ad valorem*, while the same furs imported direct from the country of origin cost us 25 per cent., plus 12½ per cent. preferential. It will be obvious that Great Britain is not a fur-producing country, and hence the absurdity of the position must be manifest. It means that furs are imported from country of origin, sold by auction in London; the buyer makes them up, makes a handsome profit, exports to New Zealand, and the local importer pays 25 per cent. *ad valorem*. Untanned furs are admitted free, but the tanned unmade article has to pay the full duty, the same as made-up goods. Hence unmade furs direct from Siberia have to pay a higher duty than the same goods made up coming via Great Britain. The fact of untanned furs being imported free is of no advantage, as the tanning of furs is a specialized line, and local manufacturers who have had a few tanned here tell me that these are almost certain to be damaged in the process. That is their experience. I submit that there ought to be a considerable preference in favour of importing the unmade goods, in order to give employment to New Zealand labour. One man has informed me that if this were done he could employ probably twenty-five hands constantly. While this might entail a slight loss of duty on the made-up furs, it has to be remembered that high-grade silk, which is the main item used in making up the furs, has to be imported, and pays a heavy duty. I contend, therefore, that the unmade goods, no matter what the country of origin, should carry a duty of, say, 10 per cent., in view of the fact that practically all the furs are of foreign production. I consider that it is more to our interests to encourage the making-up of the furs here rather than to follow the present method under which the goods are sent to London, made up by cheap labour, and then sent out here, thus paying two freights instead of one and the two intermediate profits before they reach the New Zealand market.

1. *To Mr. Hornsby.*] The made-up goods, such as fur coats, ought to pay 25 per cent. The duty on foreign-made articles might be increased from 37½ to 50 per cent. They are luxuries.

2. *To Mr. Forbes.*] New Zealand rabbit-skins are made up locally into fur coats and other goods.

JAMES B. LAURENSON, Machinery-importer, examined. (No. 31.)

I wish to speak about the necessity of establishing the iron industry in New Zealand, of fostering industries, and of creating new ones. At the present time there is no duty on bar iron, pig iron, or any materials known as raw material in the iron trade. The Government have given no assistance in the establishment of the iron industry. It has been offered, but under conditions that could not be accepted by any one prepared to put up the necessary financial backing. In other countries they have seen the necessity of establishing the iron industry, and have offered and paid large bonuses for the establishment of it, recognizing that it is the prime mover in most of the industries in any country. Canada paid over a series of years an average

of £235,000 per annum in bounties. The bonus per ton was about 10s. for pig iron. If they were manufacturing from the pig iron to barbed wire or wire nails the bonus rose considerably higher. The price of the production of pig iron in New Zealand has been referred to before the Committee, and I wish to refer to it. Dr. Bell, when Government Geologist, sent a report to the Government showing that the cost would run to £2 1s. 9d. per ton at Parapara. The report is dated the 13th March, 1909. I have a report from Messrs. Harrison, Sons, and Jobson, of Sheffield, who went into the question. They calculated that pig iron could be produced from Parapara iron-ore at £1 13s. 11d. per ton. I will supply the details to the Committee. A report on pig iron from the Lake Superior ores, by an accountant in New York, allowing for an output of 10,000,000 tons per annum, shows that, taking the whole cost of the pig iron and delivering the iron complete at New York, the cost is £3 1s. 2d. per ton. I give these figures because the statement has been made that we cannot produce pig iron in New Zealand to compete with other centres of manufacture. If it costs £3 to produce at the rate of 10,000,000 tons it would cost a great deal more to produce a lesser quantity in America. I have figures, too, by Mr. Hubert Chamberlain, who went into the Parapara project. Calculating on 36,000 tons of pig iron per annum, and allowing 6d. per ton of royalty to the Government, he calculates that it would cost £1 19s. 7d. per ton. That was in 1907. I am unable to give the cost of production of pig iron in Australia. We have a valuable report that we received from the Broken Hill people a little while ago, but they are not prepared to divulge any of their costs. Alongside of those returns you will find from the Government returns year by year the pig iron on the average costs £5 per ton. This is the pre-war price. During the war it has run up to £22. My contention is that the position offers facilities for the development of the industry if the Government would be sympathetic. We in the iron trade recognize the importance of the development of the industry, because we are at the mercy of any manufacturing centre in the world. The amount of labour involved in the production of pig iron is 70 per cent. of its cost, therefore it is a large employer of labour. I wish to stress that point, for the reason that the Government have largely assisted the fruit industry in Nelson, where the difficulty is labour. If the industry was established in Collingwood the overplus of labour—women and children—would be available for the fruit industry. The deposit at Parapara is almost unique in character. There are no engineering difficulties. There are harbour facilities. The lime is within a stone's throw. The necessary coal is there of good quality. I have a report from the Government Mines Department dealing with the Pakawau mines. I will submit it to the Committee. It is by Dr. Maclaurin, who has another report on Mataura coal.

1. *To. Mr. Hornsby.*] The date of Professor Maclaurin's report is the 2nd February, 1909. I do not know that he has reported since. I have not seen by the evidence before the Committee that that report has been contradicted by Government officials. The quality of the Parapara ore is on the average 50 per cent. of hæmatite iron, and properly smelted it would produce first-class pig iron.

2. *To Mr. Luke.*] I think it would be well for the Government to establish a bonus system in respect to the industry, and also to become a partner in the venture, under somewhat similar conditions to those put forward by the Ethelburga Syndicate. I favour the Government getting a thoroughly reliable expert to go into the whole question of Parapara instead of taking the opinions of different people who have no fixed knowledge of the question. The Parapara Company has written to the Broken Hill Company to know if it can get Mr. Delprat's services. His word would stand in any part of the world. Unfortunately, his services cannot be obtained. We then made representations to the Government to know if they would take steps to get a reliable man to advise not only as to the quality of the ore, but as to the machinery and the probable results. There is conflict between the scientists and the people carrying on the iron-manufacture. The scientists are not sympathetic towards the development of Parapara, but practical men are distinctly of opinion that something could be profitably developed there. The trade can get pig iron from Bengal, largely made with Native labour, and we can, I think, produce pig iron at Parapara that would compete against the conditions either in Bengal or in China. In support of that I wish to read part of a report from Messrs. Harrison, Sons, and Jobson, who say, "We are sending pig iron to China and Japan. The freight from your ports should be much less than from here. The price of our pig iron is £2 9s., against your cost of £1 14s., which allows for a good deal of contingencies, as well as a handsome profit." These people are consulting engineers. I do not think they are brokers. I think there is a possibility of an export trade from New Zealand, and that we would be able to convert the pig iron into steel blooms at a better profit to the manufacturer than raw pig iron. We could ship the steel blooms to the Old Country. As to the prospect of keeping rolling-mills going if we established them at Parapara I wish to say this: New Zealand uses about 100,000 tons of raw iron per annum, and that would keep fair-sized mills going, without saying anything about our plain wire. The consumption of iron must go up in New Zealand. Take the position of our telegraph-poles. The hardwood piles from Australia are very expensive, and even before the war it was admitted that the price was nearly that of iron girders. Then the question of reinforced concrete is pressing on the Government and on local bodies, and, seeing that we have facilities unlimited for manufacturing cement and iron, I am satisfied that the iron-production will go up by leaps and bounds. Further, the Railway Department are relaying practically the whole system with heavier rails. Along the sea-coast a rail becomes second-class in seven years, and in the centre of the Island in fourteen years. Taking a period of forty years, I find that we will want in rails alone 850,000 tons, allowing for the rate at which we are putting our railways down at fifty miles per year. That would be a big output from rolling-mills in New Zealand. I contend that the State should, either on its own initiative or by the encouragement of other capital, establish works at Parapara

for the production of pig iron and for rolling-mills for rails, as a first measure. Bars and plates would be a development of the undertaking.

3. *To Mr. Craigie.*] If works were established at Parapara we would not aim at anything like the plant in Australia, which cost a million and a quarter. Probably a plant costing £250,000 would do all that was required at present. The consumption in New Zealand would not keep a large plant going, but we are in a good position to export. In addition to places already named, South America might import. We use from 11,000 to 15,000 tons per year, and we would want works to turn out that amount. Failing its development as a private industry, I am in favour of the Government taking it up and running it as a national industry.

4. *To Mr. Sidey.*] I have other reports on Parapara by Professor Park, Mr. J. Hayes, Mr. H. E. Hooper, Mr. G. J. Shelus, Mr. R. Price Williams, Sir F. Siemens, Mr. H. Allen, Mr. W. Dunstan, and Sir F. Abel. These reports were furnished years ago, but that does not affect the value of the ore. I am not aware of reports furnished by Mr. Morgan, the present geological expert. If coal had to be taken to Parapara from Greymouth it would have a bearing on the cost of production. The question as to whether a blast furnace could be kept going in New Zealand all the year round would depend upon the size of the furnace. There is a minimum below which it would be dangerous to go. The consumption of pig iron in New Zealand is from 9,000 to 12,000 tons a year. That would keep a decent-sized blast furnace going. In addition to pig iron, iron of other classes runs into over 100,000 tons a year. I favour obtaining another report from a distinguished iron expert who could be brought from the Old Country or from America. Most of the machinery in Australia used in their works came from America. A considerable sum of money has been expended at Taranaki. The extraordinary thing is that during the syndicate stage we produced pig iron which was smelted at the Crown Works and there was turned out some of the finest castings you ever saw. When they got to the larger company there arose a difficulty. According to the last report the works have been stopped in order to get Government assistance. It has all the elements of success in it. I am quite sure of that.

5. *To Mr. Hudson.*] The total requirements of iron for the Dominion would be about 100,000 tons a year. As to producing the different varieties required, the difficulty would be in connection with the different rolls and sizes required. There are broad lines on which you can deal in iron; probably 60 per cent. represents the established merchants' requirements—in use all over the country. I think 50,000 tons would be quite sufficient to make it a success. I would not be afraid to go into such a company. I would not be afraid of the labour difficulty.

6. *To Mr. Poland.*] The only offer of Government assistance was contained in the Bill providing for the bonus—an offer of £150,000 spread over a period of years; £75,000 of that was to be paid for pig iron. The bonus was to be paid at the rate of £30,000 a year. The company had to produce 30,000 tons of pig iron to be entitled to the bonus; 12s. for pig iron and £1 4s. for steel. I think the bonus in Canada is 10s. In Australia I think it is £1 8s. on manufactured stuff. I will supply the Committee with the Australian and Canadian figures in regard to the bonus given in those countries.

7. *To Mr. Poland.*] Even if the supply of coal ran out we have still a wonderful asset in water-power for electrically producing the pig iron.

8. *To Mr. Veitch.*] Dr. Maclaurin's report was furnished to Mr. William Wood, of Christchurch, chairman of the Parapara Company.

9. *To Mr. Forbes.*] The company has a right of renewal of its lease as long as it carries out the conditions. They had to expend so-much money every year. The provisions of the Bill were not considered such as would induce capital to come into the venture. We have not tried to get capital really at all beyond the Ethelburga people; their proposal was not accepted.

10. *To the Chairman.*] I am not connected with the Parapara Company; I am not a shareholder. I think the production of basic slag from the Parapara deposits is feasible. Parapara ore is suitable for the production of basic slag. Mr. Chamberlain's estimate of the cost of production—£1 19s. 7d.—was based on a production of 36,000 tons a year; the cost of £1 13s. 11d. is on a turnover of 52,000 tons a year. A furnace with an output of 10,000 or 12,000 tons a year could be run continuously and profitably, but you are only dealing with the turnover of pig iron. I would not suggest that works should be put up at Parapara for the purpose of producing pig iron only. The estimate of £125,000 does not include the rolling-works. A blast furnace with the necessary equipment would cost £125,000. These are pre-war estimates. A rolling-mill would probably cost £50,000. As to what we want the Committee to do, we want to get your sympathy. We want you in your report to say you recognize the importance of establishing our industry. A concrete scheme would, I think, be this: to ask the Government to get a thoroughly qualified man out to New Zealand to report on the whole question, and, if the Government is satisfied on his report, to take such steps as they deem fit to establish ironworks, either by giving assistance by means of debentures or by a partnership. The owners of the leases have either got to raise the money or forfeit the leases.

11. *To Mr. Hudson.*] Parapara ore is a hæmatite ore and contains phosphorus, and the experience throughout the world is that the by-product of a steel blast furnace produces the best basic slag. In some cases where the percentage of phosphorus is low it is introduced extraneously to make the basic slag. Dr. Bell's report is based on getting the coal on the site, and the reports from the Old Country are on the same basis. They had a report on Parapara coal, and it was said to be a good coking-coal.

12. *To Mr. Luke.*] I think it would be a good thing to send Home a shipment for trial, but I think a first-class man can be obtained from Home to grasp the whole position on the site.

13. *To Mr. Veitch.*] The company has already expended £35,000 in developing the property, and they hold a lease—that is their equity. They will find half the capital in New Zealand if the Government will find the other half.

CHARLES A. MYHRE, President, Christchurch Wholesale Clothing Manufacturers' Association, examined. (No. 32.)

Leaving out the war period, during which time conditions were abnormal, following is the number of hands employed at the end of each census period in the clothing-manufacturing industry: 1896, 2,151; 1901, 2,626; 1906, 1,914; 1911, 2,947. The clothing manufactured in 1911 was valued at £507,125. The clothing imported in 1911 was, at landed value, £1,378,855; and we wish to point out that if this amount had been manufactured in the Dominion it would have given employment to an additional number of 8,012 hands, and this number again would be equivalent to an increase in population of 30,589. During the war period the importation of clothing nearly stopped, and the demand fell upon the Dominion producers. The result was entirely satisfactory to the purchasers, and we believe the public has now become so accustomed to our goods and the better value of the same we feel sure they will prefer our clothing in times to come. It follows, however, that it will be necessary to materially increase the output to cope with the anticipated additional demand, and also in order to prevent business houses—that is, the merchant—reverting to the importing of large quantities of clothing which we are satisfied can and should be manufactured in the Dominion. Scarcity of female labour: The manufacturers during the war period were unable to promptly meet the demands, the chief drawback being the scarcity of female labour. This state of affairs was general all over the Dominion, and in considering this question we feel there is little hope of ever obtaining sufficient journeywomen in this Dominion through the usual channel. We base this assumption chiefly on the fact that very few apprentices are available, and it looks as if there were more attractive avenues opening up for young girls. *Re* immigration: Having come to the above conclusions, we venture to suggest that the Government should seriously consider immigration, not necessarily of single girls, but of families; and if this course was adopted we feel sure that a considerable improvement would be manifested in a comparatively short period. *Re* tariff: To prevent the industry falling back to pre-war conditions, and in order to maintain the comparatively high standard of living here, protection is, of course, necessary, especially as it can only be looked for that outside competition will become more and more aggressive, due to every country having to do its best to meet extraordinary taxation; and we think the amount of protection should be revised from time to time so that it should be at least quite equal to the difference between wages in other countries and our own. Cheap shoddy clothing: In order to prevent the importation of large quantities of inferior and shoddy clothing we would suggest that in addition to the present *ad valorem* duty the impost of a fixed sum per garment would not only be beneficial to the industry, but would also be in the interests of the Dominion.

1. *To Mr. Forbes.*] The price of the Dominion clothing has not advanced to a very great degree. An ordinary ready-made suit of clothes has advanced about 20 per cent. or 25 per cent., but English clothing has advanced possibly two or three times the previous cost. A suit costing £9 would not be a New Zealand tweed, but would probably be an English tweed. That is a point to find out. You can at the present time obtain a suit of colonial tweed at quite a reasonable price. I refer to a suit made by a tailor. You could obtain a suit of wearable material at from £4 to £6. Under the heading of clothing-manufacture I include suits—coats, vests, and trousers—and overcoats. What the manufacturer wants now is more hands. I should say that the average wage of a journeywoman would be £1 15s. a week, and hundreds, I think, are getting more like £2 a week. The minimum wage is £1 7s. 6d., plus 10 per cent. war bonus; the working-hours are forty-five a week.

2. *To Mr. Veitch.*] Of the hands employed in the factory I think there would be 25 per cent. males and 75 per cent. females.

3. *To Mr. Poland.*] Since the war we have been able to manufacture all the clothing required in New Zealand, but inadequately. We have orders untouched at the present time that have been in hand for eight months. A good deal of work was done, and a good deal more would have been done if the labour had been available. The stocks held by retailers have been at the lowest margin. The wages paid here are high compared with what they were before the war. The wholesale and the retail man between them would make 40 per cent., and it might go up to 50 per cent. In the majority of cases the article goes direct from the manufacturer to the retail house. If it goes direct from the manufacturer to the retailer there is still one profit, and that would vary from 20 per cent. to 50 per cent. As to the necessity for a warehouse, if you did not call it a warehouse there would have to be a distributing business.

4. *To Mr. Hudson.*] I want to keep out the lower class of goods. A shoddy tweed could be made up here. If shoddy is going to come in in garments it may as well be made up here. The impost duty might not keep out the garments altogether. If the garments can be kept out, keep out the tweed also. The tweeds manufactured in New Zealand only start at a certain price, which is considerably above the shoddy tweed.

5. *To the Chairman.*] A man can buy a suit of New Zealand clothes for £3 10s. or £4 out of a shop. The shoddy suit would cost from £1 5s. to £1 10s. It would be no hardship to make him do without the shoddy.

6. *To Mr. Hornsby.*] A prohibitive duty ought to be put on all shoddy goods. It would be a protection to the wearer as well as to the industry. It is the cheap goods we declaim against, which claim to be woollen and are not woollen.

7. *To Mr. Luke.*] The word "shoddy" should never be applied to a bad article. It was really yarn which was manufactured from cuttings, and not from wool straight off the sheep's back. Shearers, for instance, required something that would do for three or four weeks, and was then thrown away. There is nothing to prevent a fairly good trade being done in that line by still importing cheap English tweeds and manufacturing them here.

8. *To Mr. Craigie.*] The two grievances I have are (1) the cheap rubbish that is coming in, on which the tariff should be raised, and (2) labour. The constitution of the rubbishy goods has to be stated in the invoices. I do not favour the Government advertising for tailoresses at Home and giving them cheap passages. If a tradesman or agricultural labourer at Home comes out here with his wife and family it will have the effect of bracing up the position in the labour market in the Dominion. Figures show that wherever there is one hand employed others follow. There has been some prejudice against colonial tweed. I feel that that prejudice, which was very marked before the war, will be lost now. Retailers who used to stock large quantities of imported material say that, whatever the price, they will not stock it now. From the point of view of economy it is better to buy a good suit of clothes and have them cleaned up and worn out than to buy a cheap suit. It is cheaper in the end for the poor man to buy a good suit. After all, the colonial article is not an expensive one. It would be a bold policy and to the advantage of the people to put on a tariff that would not allow any Home goods to come into the country at all. The wool is grown here, and our tweeds are beyond reproach; but you want labour, and that is where you come to the sticking-point. We want labour and a higher tariff—a dual tariff.

9. *To Mr. Sidey.*] I cannot say how much shoddy came into the country before the war. If we place no restriction on the importation of shoddy goods it is not likely to bring about in this country the production of a lower quality of article, because apparently the woollen-mills are able to make a tweed down to a certain point.

10. *To the Chairman.*] The cuttings from New Zealand tweed could be worked up in New Zealand. It requires special machinery. Other people beside the mill-owners could take up the work. I think it would take a large amount of capital and a large manufactory to deal with it on its own. As our union is only a Christchurch union we did not suggest any maximum duty on a man's suit per garment. It is a question for the association to discuss.

11. *To Mr. Veitch.*] My firm turns its goods over two or two and a half times a year.

SIDNEY R. COWLEY, Manager, Dominion Compressed Yeast Company (Limited), examined. (No. 33.)

We are engaged in the manufacture of pressed yeast, which is used, in the first place, for fermenting bakers' dough. We would like a cheaper and better means of transit throughout the country for our product. In England the average cost of carriage is one-eighth of a penny per pound; in New Zealand it is 2½d. per pound. We make use of the parcels-post. Pressed yeast is something of the consistency of putty, and is generally put in hessian bags or moulded in bars like butter. We send all over New Zealand, and have cool stores in Wellington, Auckland, and other places. There is a big demand for the product. We estimate that 37 per cent. of the people in the Dominion are eating bread made with pressed yeast. About thirty hands are employed in the factory in Christchurch. My request to the Committee is for quicker and cheaper means of transit for the perishable productions of the Dominion. We do not suggest that the postage-rate should be reduced. We prefer to get the railway and steamer freights reduced. At present we must send our consignments by passenger-train. The difficulty lies in the fact that the present arrangements compel us to send the yeast either by goods-train or by a slow passenger-train. It is only in very rare cases that we can get the Railway Department to accept parcels to be sent by Main Trunk trains. That has compelled us to adopt the parcels-post system. Parcels sent by parcels-post always get through before parcels sent by the train. When we send goods across Cook Strait we have to adopt the parcels-post system. We could not have reached our present position if it had not been for the parcels-post system.

1. *To Mr. Craigie.*] The value of the article is 1s. 6d. per pound. We employ thirty men at present. It is a growing business.

2. *To the Chairman.*] In regard to the production of commercial alcohol, at present we are throwing away some thousands of gallons of worts, or the liquors that are specially suitable for the production of alcohol or ordinary industrial spirits, and it is of a very high quality too. We threw away last year a sufficient quantity of worts as would have met the whole of the present industrial requirements in regard to this article. At present we are making vinegar of a portion of this waste liquor—pure malt vinegar. 106,568 gallons of industrial spirits were imported into New Zealand last year. With a plant costing £5,000, with a 500-gallon continuous still, you could make about 4,000 gallons a week. We do not ask for a monopoly, but at the same time two or three distillery plants should be the limit for New Zealand at the start.

3. *To Mr. Craigie.*] We use electric power; it is a splendid thing.

4. *To the Chairman.*] The present price of denatured alcohol—that is, wholesale—is 8s. 6d. The Customs Department said that if the plant were in accordance with their ideas they would grant us a license. I think the machinery could be manufactured in New Zealand. There is no patent in connection with this particular style of still I am going to recommend the directors to adopt. In regard to wheat that is milled into flour for breadmaking, I have had considerable experience as to that. I recommend that the Government should recognize the research work which has been carried on at Lincoln Agricultural College. They have produced a superior strain of wheat for breadmaking. By growing larger quantities of this wheat an improvement in the quality of the bread can be brought about. Our wheat is too soft for that purpose. If my suggestion were adopted it would do away with the importation of wheat from Australia. The estimated production averages up to 20 bushels less to the acre, or an equivalent of 2d. per bushel. Our suggestions are—(*a*) That the Government shall so recognize the research of such eminent scientists as at Lincoln Agricultural College in particular as to subsidize a number of prominent agriculturists to grow, over a period of years, some of the strains of wheat that the College authorities have produced, and which, without fear of contradiction, can be shown to be

better suited for breadmaking than much of the wheat that millers are at present compelled to mill into flour for the baking trade; (*b*) that very substantially increased grants be given to agricultural colleges for research upon the lines indicated; (*c*) that popular lectures to farmers be inaugurated throughout the country on the growth of wheat, to be addressed by capable scientists.

5. *To Mr. Sidey.*] It is recommended that domestic science be taught on a broader and more comprehensive scale. I recognize that at Otago University they are taking up that matter in a very thorough manner; but I am speaking with respect to the Dominion as a whole.

JAMES A. BLACK, representing the Christchurch Furniture-manufacturers' Association, examined. (No. 34.)

At a special meeting of the Furniture Union three delegates were appointed to draw up what they thought would be sufficient to bring before the Committee. They reported to the association this week, and all the points were confirmed. The following are the first five recommendations: "(1.) That we regard the present duties as applied to furniture made in the British dominions to be sufficient. (2.) That 12½ per cent. preferential tariff be imposed on furniture made in European and American allied countries. (3.) That further restriction be placed on the importation of furniture from those countries where the rate of wages and standard of living is lower than that of New Zealand. (4.) That goods made in countries which were enemies during the late war be prohibited for the next ten years. (5.) That the Committee be strongly urged to inquire into the manufacture of three-ply veneer from the most suitable New Zealand timber." Our men work forty-four hours per week, and the minimum pay is £3 13s.; they are asking for a further increase. It is not thought to be fair that we should have to compete with a country where the rate of wages and the standard of living are lower than they are here. I have seen in this town a folding-chair selling retail for 10s. 6d. It could not be made wholesale here for less than 14s. There is Japan and China also, and there may be other countries. The position in regard to the trade is likely to be serious. Here is another instance: Japanese oak, the freight on 450 ft. of timber was £6 10s., and the price of the timber in Japan is £1 9s. 6d. per 100 ft. I will give another instance. I have seen in this town a roller-top desk sold at £5 12s. 6d.; it was in oak. We are the largest makers of roller-top desks. The timber costs just about £5. The wholesale price of a desk is £13. I think the last instance occurred about four years ago. That could not happen at the present moment, but it would cut under our present prices. Large numbers of desks are bought, and the average person does not know the difference in regard to quality; we are competing against an inferior article at a very low price. As to the tariff that should be fixed, that is a matter for inquiry through the Consuls in the different countries as to the conditions there—as to the rate of living and the rate of wages. The 12½-per-cent. tariff is against all foreign countries; our suggestion is in regard to allied countries in Europe and America. A further restriction might be put on all foreign countries. Under the conditions I have indicated our trade would suffer severely; in fact, a large number in the wholesale trade would be put out of business altogether even under the present 37½ per cent. Our sixth recommendation is: "(6.) That the manufacture of raw spirit for industrial purposes be encouraged to commence at once." I understand that the present price is 8s. 6d. per gallon; before the war it was 2s. 5d. and 2s. 7d.; 4s. 9d. was the cost about six or eight months ago. With regard to our recommendation that inquiries be made into the question of the manufacture of three-ply veneer from the most suitable New Zealand timber, I would like to show the members of the Committee some samples which I have here of different woods. The New Zealand beech is very similar to the Russian beech. We consider that one or more suitable persons should be sent to America, where they make these three-ply veneers, and samples of our New Zealand timber should be taken over there and made into three-ply veneers, and the samples should be sent back for examination by builders and cabinetmakers in the Dominion. I believe the New Zealand beech is equal to the Venesta veneer, which is practically imperishable. [Samples of veneer produced.] I am convinced that neither white-pine nor black-pine are as good as other timbers for three-ply veneer. The point I wish to make is that it has not been tried out sufficiently. They have tried only two or three timbers, which are not suitable. Experts ought to be appointed to look into the position—that is, to test the suitability of New Zealand timbers for three-ply veneering.

To Mr. Craigie.] Japanese workmen receive from 2s. to 2s. 4d. per day, against over 13s. per day here. We work forty-four hours per week; I do not know how long they work. It is a delicate question to put a differential tariff on Japan. We are aware, however, that if we are to meet the competition openly we must go down.

To Mr. Sidey.] America does not enter into competition with us as Japan does.

To Mr. Forbes.] The furniture trade in New Zealand is progressing over, say, the last ten years. It is the most progressive trade there is in timber—in output and number of men employed. Employers are putting in more machines.

R. A. BEVERIDGE (Furniture Trade) examined. (No. 35.)

I represent A. J. White (Limited). I wish to make special representations respecting the tariff. We are asking for the removal of the duty on furniture-coverings which cannot be produced in New Zealand, such as velvet, moquette, tapestry, plush, upholsterers' twine for springs, sewing, and mattress-work, and the like. We feel that if these things came in free we would have a better chance in competition with foreign countries. Within the last twelve months I saw a six-piece suite of furniture in oak and covered with hide which was sold wholesale at £4 10s,

It could not have been produced in New Zealand for double that money. If we could get hides manufactured here it would be a great industry. We get hides from Australia.

To the Chairman.] Utrecht velvet and furniture-plush could not be used for any other purpose than for furniture; they could not be used for dress materials.

G. C. Rich, of Strange and Co. (Limited), examined. (No. 36.)

The recommendation I wish to place before the Committee is that raw material used for the manufacture of furniture, such as locks, hinges, handles, glass movements, screws, and tiles, which it is quite impossible for many years to come to manufacture in this country, should be allowed, if of British manufacture, into this country free.

Archibald Smellie, General Manager, Otago Iron-rolling Mills (Limited), examined. (No. 37.)

Mr. Ringland and myself are on our way to America and the Old Country to get information about up-to-date machinery for our plant. Our company was formed in 1886. The business consists of iron and steel rolling. Our raw material consists of iron and steel scrap and hæmatite pig iron. We get no protection whatever on our finished product, consequently we submit that we should be entitled to get all rolling-mill machinery into the country free of duty. At present we have to pay 20 per cent. on British and 30 per cent. on foreign. Recently we imported electrical equipment for a steel plant, and although we made strong representations to get a drawback on the duty we had paid our application was turned down. During the war period our industry was taxed to the utmost to supply the wants of New Zealand, and during the last eighteen months we have been practically the only source of supply. During this period our prices were £5 or £6 per ton less than the English prices, showing what a benefit our industry has been to the Dominion. We had to purchase ships to carry our goods, which meant the diverting of capital which should have gone to the development of our industries. What we ask is that all rolling-mill machinery should come into the country free of duty, and that we should have a preferential railway tariff on locally manufactured goods.

To Mr. Luke.] There is not enough scrap iron in the country to keep one mill going. Assuming that we cannot obtain sufficient scrap we hope to get pig iron to make up the deficiency. If the Parapara iron industry were brought into being I do not think it would produce suitable iron for our purpose. We have seen an analysis of the ore. We import scrap.

John Ringland, Manager, Iron and Steel Company of New Zealand (Limited), examined. (No. 38.)

I am interested in an iron and steel company which is a subsidiary company of the Otago Iron-rolling Mills Company. We take the products of the mills and distribute them. We are mainly interested in selling, and also assist largely in bringing over certain classes of raw material. At the present time there is a great shortage of steel. Recently we made arrangements to get steel billets from Sydney. We tried to get them over, but could not do so, and had to send the steamer "Stella" across. She is a small vessel and brought only 140 tons. We have to depend on Australia and America for steel billets. We would also like your Committee to give us assistance to get semi-finished materials here. There are a number of articles that could come in in a semi-finished state and which could be put together here if the duty were remitted. For instance, there is an article in the form of a water-heater, which is of great use to dairy-farmers. A firm in Sydney manufacture these heaters. Our company got over a number of the parts unassembled, and we had to pay the same duty on them as on the finished article, and therefore instead of selling it at the same price as in Sydney we had to put £2 on to the Sydney price. We get a concession in the tariff on the railway. There is a preference on 4-ton lots and over on certain sections of the railway. That, however, does not benefit the small purchaser. The preference ought to apply to any quantity. A man has to be in a big way to buy 4 tons of bar at the present time. We ask the Committee for (1) a concession in the way of a remission of duty on machinery we import in connection with iron-rolling, (2) a preference on iron produced in New Zealand as far as railway freights are concerned, and (3) assistance in getting a recommendation from the Minister of Munitions for freight space. There is also the matter of the semi-finished articles. I have already referred to the water-heater. It is sold in Australia for £3, and the duty here is 20 per cent. If we bring that article over in its unassembled parts we can fit it up here. It cannot be manufactured here. The duty ought to be removed to allow that work to be done here.

C. M. Ollivier, representing Canterbury Progress League, and Woolston Tanneries (Limited), examined. (No. 39.)

There was a meeting of the executive of the Canterbury Progress League, and I was asked to represent it before the Committee and suggest one or two matters. The first is that the Government should have a separate Department for industry and commerce, with a new Minister who has some capacity for the work. As far as industry in Canterbury is concerned, the conditions are extremely favourable, because of our electric-power supply. As a result, if we have a sympathetic Government, industries will follow in due course. Another suggestion is that the Government should make advances to industrial enterprise, provided they are satisfied of the *bona fides*, as they make advances on the land. It is submitted that money employed in industry will employ more men than money invested in land. The third point the league wishes me to bring forward is that of devoting an adequate sum of money towards scientific research work in connection with industries.

To Mr. Sidey.] I am not aware of the recommendation of the Efficiency Board that there should be a Board of Science and Industry in order to bring the two into line. We want to see a business man in charge of the Industries Department. He ought to be a man with special knowledge. If we could put as much life into our industries in New Zealand as is put into the Department of Agriculture it would be very helpful to the industries. The proposed Minister should give all his time to industries and commerce, and should not have half a dozen other Departments to attend to. Further, he should be in touch with the Minister of Customs and with the Minister of Labour. If the necessary up-to-date machinery is secured there is no reason why we should not increase our manufactures here, provided we go on right lines and suitable industries are started; there is no reason why we should not do as well as any other place. You talk about labour troubles, but that does not concern us in the slightest. The object to strive for is efficiency, and the biggest curse in this country is the inefficient employer. In regard to particular industries, I may say, as to the Woolston Tanneries, that we are trying to help boot-making in every possible way. Some time ago we thought of going in for making tanning-extracts. We wrote to the Government on the subject, and asked them if they could give us any information. I got a reply referring me to another Department, to whom I wrote, and was referred to Kirk's book on New Zealand trees. A careful perusal of that work disclosed only one reference to tanning-bark—a reference to the bark of a tree called the towhai. That book was written some thirty years ago. I think, however, that the difficulties to be contended against are not insurmountable. We are willing to go in for it. Last Saturday I was talking to Mr. Young, one of the gardeners here, and he recommended the planting of wattle on the sandhills at New Brighton, and he said that in five years we would be able to get wattle-bark for tanning. I am aware of the Government experiments in the North Island. Then, with respect to sodium sulphide: If the war had continued much longer the freezing-works would probably have been hung up for want of sodium sulphide. That is a depillatory, and is used in taking wool off the skins. As to sulphuric acid, the freezing companies were depending on supplies from Australia. Then there is clay in New Zealand which will make very good alum; and we can also make hydrochloric acid here. We have bought some land at Woolston, and are going to erect up-to-date scouring-works there for scouring wool. It must be better to send the wool Home scoured than to send it away unscoured. Then there is glove-making. At present large quantities of gloves are imported into New Zealand. We are sending a man to America to make inquiries into this industry. If we do not get sympathy from the authorities in New Zealand we will go over to Australia. Good felt can be made out of hair in this country.

To the Chairman.] As to encouraging industries, suggestions have been made in connection with the Canterbury Progress League. If you get a good man—it all hinges on that.

To Mr. Sidey.] I do not think the tanning industry near Dunedin has experienced the same difficulties as we have in connection with the Government and certain officials. We have had special treatment. There is wattle-bark coming from Australia; at present we are buying from Natal, where the wattle is now being grown from seed obtained from Australia. Turkey and the Argentine also export it.

To Mr. Luke.] Lanoline is the principal by-product from wool-scouring works. I am not quite certain, but I think there is also a fertilizer of some value.

To Mr. Forbes.] Last January we started to turn out leather which gives promise of being better than anything ever turned out in New Zealand. We sent some sole-leather to America—sole-leather that could not be sold here—and it was sold there. If that leather is considered good in America I do not know what they will say about our new leather. People have written to us telling us that they are satisfied with this leather. It is one of the best discoveries that have ever been made. We have knocked the Australians "kite high" as far as the manufacture of box calf is concerned; the box calf has now a beautiful finish. The best hides we get come from Italy; but the New Zealand hides are much better than the Australian for same work. The Australian is much spoiled by branding—a large portion of the hide is destroyed by branding. I think the cattle should be branded either by earmarking or by being branded on not so important a part of hide as is now done.

H. J. MARRINER, representing the Canterbury Chamber of Commerce, examined. (No. 40.)

I have come before the Committee to go into the matter of railway accommodation as regards Canterbury. I come on behalf of the Chamber of Commerce, as I am chairman of the Railway Committee. We are up against a very unfortunate problem here, and we wish, if we can, with your help to get that remedied. The position is this: there is not adequate accommodation for imports and exports—there is not sufficient accommodation at the railway-station at Christchurch to deal with the incoming and outgoing goods. The accommodation which we have at the present time has been little altered for forty years The fact that we have our goods delayed places us at a disadvantage with the rest of the Dominion. Sometimes we have to deal with goods that have been lying in the trucks for a week or a fortnight. Therefore we ask you to urge the Government to take into consideration immediately the enlargement of the yards, and also of the railway-station, as outlined in Mr. Hiley's report. Another drawback is that owing to the port being six miles and a half away we have not the means of getting goods to the steamer in time to be shipped on the same day. If a merchant receives a letter at 9 a.m. for goods for Wellington he cannot get them away on that day. We ask, then, for greater facilities and quicker transit to get the goods alongside the steamers. We also request a duplication of the tunnel, as the traffic is more than the single tunnel can do. Further, we are anxious that the East and West Coast Railway should be pushed on to completion. This linking-up would benefit the whole Dominion. It would open up the dairying-lands of the West Coast, where the rearing of cattle is

also carried on. It would give a wonderful impetus to the Dominion. So much money has been spent on the West Coast line that it is expedient to get it completed, and then we can throw our energies into the completion of the South Island Main Trunk line. Goods consigned to Lyttelton have to be sent on to Christchurch and then sent back, and the consignee has to pay the two railages.

SATURDAY, 15TH FEBRUARY, 1919.

CHARLES HORACE GILBY, representing the Automatic Stamping-machine Company (Limited), examined. (No. 41.)

I wish to introduce to the Committee the automatic stamping-machine which is in use largely, and to ask the co-operation of the Committee in bringing the matter prominently before the Government with a view to its adoption in the same way that the Government have adopted the telephone. About £20,000 has been sunk in the development of the machine up to its present stage. If the machine were adopted by the Government it is probable that other countries would follow suit. At present the machine is under the control of the company, subject to certain limitations imposed by the Post Office Act. All possible safeguards have been introduced from time to time as points have arisen during the last ten or twelve years, and every direction in which the machine could be defrauded has been provided against and the trouble eliminated. The machine as we see it to-day has had about two years of practical trial throughout the Dominion in Government offices and elsewhere, and is absolutely perfect in its mechanism, and cannot be defrauded. The point I wish to bring before the Committee is this: At present the machine is controlled by the company; we put the machines in on the application of users, but we cannot afterwards get access to a machine unless we are accompanied by a Postal official. If anything goes wrong we have to go to the Postal officials and get one of them to proceed with our repairer to put the machine in order. This is a serious loss to the Department. It should not be necessary for two men to go and put perhaps a trifling thing right. If a telephone goes wrong some one is sent over from the Department and a defect is remedied at once. In the case of this machine the repairer is accompanied by an official to see that the repairer does not manipulate the dials fraudulently. If the Government had the thing in their own control this loss of time would not take place. My recommendation is that the Government should do with this machine as they do with regard to the telephone—that they should purchase the machines from the company and lease them out to holders. If the Government wish us to manufacture machines and supply them at a certain price we shall be happy to do so. If they wish to take over the manufacturing and the factory they are at liberty to do so. The company want the Government to have the benefit of the machine and to take it under conditions fair to them, and leave the company a free hand to deal with other countries with regard to the machine. The machines are in use only in New Zealand. The price is £32 10s. on installation. The promoters of the company are Canterbury men. They have sunk about £20,000 in the machine, and, in view of that expenditure, they will expect to get something in the way of a royalty from New Zealand. We do not expect to get the £20,000, because we have the whole world before us. Our factory is at Dallington, near Christchurch. The Government has been approached to take the machine over, but never formally. The thing has had ten or twelve years of proof throughout New Zealand, and we are selling more machines to-day than ever before. We are not prepared to submit to the Committee the price at which we are prepared to sell.

ERNEST MOSS, Manager of the Automatic Stamping-machine Company (Limited), examined. (No. 42.)

There would be a saving in the cost of manufacture if the Government took over the factory, because of the larger manufacture. The Government would have a large output, and could turn out 1,000 at the same cost as 250. The machines can be used in any town, large or small, wherever there is a post-office. Considerable saving results to the Government in the use of the machine, because they do not have to print the stamps.

CHARLES HORACE GILBY, representing the Efficiency Implement Company, examined. (No. 43.)

Another matter upon which I wish to speak is the production of improved agricultural appliances and the difficulty a patentee experiences in bringing an improvement before the users and getting it properly tried out and proved. I have here a model of an improvement on a lift for a plough which enables even a boy or girl of fourteen years to manipulate a three-furrow or four-furrow plough with the same ease as a strong man. The appliance was shown at the last show in Christchurch, and gained the silver medal. It would have had the gold medal, but that medal was awarded to an imported tractor. I wish to point out that at the present time inventors get little encouragement from anybody. Generally, the inventions fall into the hands of somebody who has a few pounds and who pays a man so-much for his patent rights and exploits it, and if it turns out a success he gets everything, and the inventor gets nothing. I suggest to the Committee that a recommendation might be made by it to the Government that it should set up what I call a Board of Inventions, to whom should be submitted every new invention considered to be worthy of patenting, or that had been patented. The Board in its turn would appoint experts to thoroughly test the inventions and give a verdict thereupon. That is what they do in the United States. In this country the man who invents is not encouraged. I speak from experience. With regard to this appliance for ploughs, a girl of fourteen in this city drove a six-horse team with a three-furrow plough and the appliance attached, and drove it for a con-

siderable time. A moving picture was taken on the occasion, which will be shown at a special exhibition to the Committee at any time to suit it. A lame man took his seat on the plough and manipulated it as easily as a man with his sound limbs. An invention of this sort is one that the Government essentially should assist. It is patented in all countries where agriculture is carried out, but you cannot get behind vested interests. The people who make ploughs say, "We do not want yours; we have one of our own." It does not matter that their plough is not so good; they are not going to bother about it. The proposed Board would examine into these things and have them tried at the Government expense. If it is a failure that is the end of it, and if it is a success the country would get the benefit. The difficulty I have experienced in this matter is considerable. I have been to the Minister of Agriculture and tried to get him to come and see the thing going, but he has not come. The Director of Agriculture is very much impressed with it, but that is as far as I can get with him. I asked for the assistance of the Lincoln College agricultural department, and they were as lukewarm as any one else. Manufacturers have their own patents, and will not look at this one. This invention can be attached to any plough that is made. We know the merits of it, and are prepared to prove them. We will supply it to the Government to test it. All we want is to have a Board to go to and say, "Test this machine, and if it is right give us a certificate." The Government ought to make some provision for matters of this sort, so that inventors can get a fair chance.

CHARLES JOHN MORRISON, of Morrison and Morrison, Ink-manufacturers, examined. (No. 44.)

We manufacture printers' ink, printers' varnish, and printers' roller-composition, and I take this opportunity of bringing before your notice the handicap imposed on the development of the industry in New Zealand. The printing-ink industry is practically unprotected. The present tariff imposes a duty of 10 per cent. on foreign printing-ink. This duty is too small to afford adequate protection against foreign competitors. The bulk of the dry colours used in the manufacture of printing-ink is of foreign manufacture, and British and Australian manufacturers using the same have their manufactured inks admitted free of duty to the Dominion, while we are forced to pay duty on the dry colours we use for printing-ink purposes. As Australian manufacturers are heavily protected we are forced to depend solely upon New Zealand for our livelihood, while they are permitted to overrun this market and develop their industries at our expense. One writing-ink manufacturer (Meek's) is well protected. I do not wish to see black newspaper-ink made dutiable, because we do not manufacture it. The plant required for such ink would not be justified by the New Zealand consumption of the article. We employ seven hands to produce our ink, but we should be employing twelve hands. We make lithographic and letterpress inks. We use thousands of tins per annum, which gives employment to tinsmiths. We manufacture the whole range of jobbing-inks, and have supplied practically the whole of the requirements of New Zealand for the last three years of the war period. If we get the protection we ask for it would enable us to hold the trade we have now got. In Australia there is a general tariff on printing-ink of 10d. per pound, or 35 per cent., and a preferential tariff of 8d. per pound, or 30 per cent. Goods invoiced at 6d. and under per pound, in packages containing not less than 1 cwt., are subject to a general tariff of 35 per cent. or a preferential tariff of 30 per cent. I suggest to the Committee that the tariff in New Zealand should be on the Australian lines. If protection were given to us it would be our policy to maintain our present prices and hold the market with those prices, with which we are satisfied. As a result of the protection in Australia three new firms started, to my knowledge. I am agreeable that the Government should regulate the prices. With regard to printers' roller-composition, which is admitted free, the main ingredients of it are gelatine and glycerine. We use locally made gelatine. On glycerine we pay a duty of 20 per cent. on British manufacture, while roller-composition of outside manufacture is admitted free of duty. In Australia there is a general tariff of 45 per cent. and a preferential tariff of 35 per cent. In New Zealand the duty should be 20 per cent., with a preferential duty of 10 per cent. We have been left at the mercy of outside manufacturers for the past twelve years, and nevertheless have succeeded in establishing our industry in the Dominion. Our brand is "Flexo." I know that glycerine is largely used for purposes other than that for which we use it. Artists' dry colour has a duty in New Zealand, and I am prepared to recommend that it should stand as at present.

G. L. POMFRET-DODD, representing Hutchinson's Scales Australasia (Limited), examined. (No. 45.)

I wish to explain that the industry in which we are concerned has been in operation for ten years. We manufacture at our Christchurch works springless automatic scales for industries and trades. During all the time we have been in existence the expansion of the company's operations has been severely hampered owing to the keen competition emanating from the importation of scales of foreign origin. Particularly has this been so in regard to the importation and sale of dairy weighing-appliances, which under the present tariff are imported free of duty, and counter-scales of American manufacture, especially all classes of spring scales. We recommend as a protection to the industry, which is capable of fulfilling from a highly scientific point of view the whole of the Dominion's requirements in this respect, an increased tariff calculated to place the local industry in a position to meet, preferentially, overseas competition in respect of all classes of weighing-appliances imported. We suggest that in order to establish improved public safety the New Zealand Government should fall into line with other Governments by placing on the statute-book legislation abolishing all types of spring scales for public use.

To the Chairman.] The tariff on counter-scales is 20 per cent., with 10 per cent. preferential, and even with a duty of 30 per cent. against the foreign article we want more. We had a case

here with regard to the micrometer scale, in which it was shown that that scale could be imported here for £11, and it was sold for £30. I make that statement without reservation, and can prove it. We cannot make scales for £11. Australia has a 40-per-cent. tariff. The micrometer is not a spring scale, but the Dayton is, and so are many others of English and American make. Another matter I wish to mention is this: At the present time there is a good deal of work allowed with regard to the adjustment and rectification of scales by people who are altogther unqualified, and as additional safeguards to public interest we suggest as follows: (1.) That only registered persons or firms possessing the necessary qualifications be permitted to overhaul and adjust any weighbridge or weighing-machine deemed to affect public interest. Under existing conditions any "meddler" is allowed to effect so-called adjustment, and to replace into public commission the weighing-appliance without inspection by the Government Weights and Measures Inspector. (2.) That all hardware importers and merchants handling weighing-machines of any description for the purpose of resale should be compelled to submit to the Government Weights and Measures Inspector, for comparison with Government weights and stamped approval, any type of weighing-machine which it is proposed to deliver to a purchaser. At present there is no obligation on the part of any scale importer or retailer to ensure that the scale sold for public use is accurate, with the result that in many cases scales indicating especially short weights remain in everyday use for years, and it is a common occurrence to receive scales for repair which are almost in the last stages of dilapidation, and have never been submitted to a Government test. (3.) That all persons being in possession of any weighing-appliance of whatever make, or for whatever public use, shall be compelled at least annually to have the same inspected and thereupon registered by the Government Weights and Measures Department. The Railway Department claim to have their experts and not to come under the Act, and yet in many cases their weighing-appliances are inaccurate. With regard to annual inspection and registration by the Government Weights and Measures Department, a registration fee, according to the capacity of the weighing-appliance, could with advantage to the Government revenue be levied if necessary. My remarks apply particularly with regard to the scales of coal-merchants and public weighbridges. Our experience shows that in quite a number of cases—in fact, the majority of cases—scales are most unreliable. Any weight may be given to the consumer, and he has no means of checking. We also suggest that legislation should be brought in making all coal and so forth saleable by weight only.

To Mr. Luke.] We have eighteen employees in our factory. It is a growing industry in spite of disabilities. The principal objection to the spring scales is that they are subject to variation on account of atmospheric influences. No two springs can be made mathematically the same.

To Mr. Hudson.] The Government Weights and Measures Department is under the direction of the Health Department, which knows nothing of weights and measures. The New Zealand law should be similar to that of Great Britain.

G. W. Skellerup, of Para Rubber Company, examined. (No. 46.)

The first essential for a new industry is a market. Motor tires worth £92,000 were imported into the Dominion in January last, and £99,000 worth in June last year. The total importations for the year amounted to nearly £700,000—tires alone. Motor-cycle tires is another big item; probably £60,000 or £70,000 worth per annum are imported, but it is difficult to get the returns of these goods separately. The importations of garden-hose and other such articles would be in the vicinity of £100,000 a year, judging from our own turnover. Then there is rubber footwear. Gum boots come in free, and goloshes pay 33⅓ per cent. duty. Why the difference is made I do not know. In Australia one company employs 1,500 hands. There are one or two other fairly large firms there. The wages paid are good. The average wage of a tire-builder in America is generally about 5 dollars a day. It is a new industry. The plant needed is large. A plant with less than £70,000 capacity would be too restricted to be successful. At present the Customs tariff is only the 1-per-cent. primage duty. Nine-tenths of the rubber now comes from the Malay States—that is, the rubber is grown there. Rubber is the only article that has not increased in price during the war.

To Mr. Luke.] In regard to our own consumption, we are in quite as good a position as Australia. The duty in New Zealand is just the 1-per-cent. primage; there is no duty—that is, on motor-car tires.

To Mr. Sidey.] I do not think there is a company here ready to start work. I do not think anybody would invest money in it with that tariff. An alteration in the tariff has been mooted, but the tariff is rather difficult to alter on motor-car tires.

To Mr. Veitch.] A good deal of power is required. We employ about eleven or twelve men in our workshop.

To Mr. Hornsby.] A company starting would be under very heavy expenditure. They would have to import their foreman and superintendent, also a manufacturing chemist, and machinery would be a big item. I would suggest giving them a straight-out bonus of £1 for £1 in accordance with the plant they put up.

To Mr. Sidey.] I think one company should have a monopoly for three years. I think it would be fatal if more than one company were started. I think there should also be some alteration in the tariff.

To Mr. Sidey.] I would suggest that if any bonus were given it should be given to a purely New Zealand company—the shares should be owned in New Zealand.

To Mr. Veitch.] We ourselves sell probably £500 worth of hot-water bags, and they come in as druggists' sundries. Probably the chemists' sales of hot-water bags would amount to

£10,000 worth. The work in this industry is suitable for returned men. The industry would start under new conditions; there would be no old-fashioned trade customs to contend against.

To Mr. Hornsby.] About a month after peace was declared the American manufacturers took off their advance in price, but the English manufacturers put up their price about Christmas-time.

To Mr. Hudson.] The English manufacturers, I suppose, have done so well during war-time that they thought they would continue it for some time longer, and they have lost the motor-car-tire business.

A. W. PURVES, Canterbury Freezing-works and Related Trades Employees' Industrial Union of Workers, examined. (No. 47.)

As a member of the Canterbury Freezing-works and Related Trades Employees' Industrial Union of Workers, and as a worker in the industry, I wish to draw your attention to the fact that the wool-scouring industry with the assistance of a little legislation in the right direction can and should be developed into one of the most important in the Dominion, and instead of employing the handful of men as at present it can be made to employ hundreds more, and so give healthy and congenial occupation to a great number of our returning soldiers. The custom in the past has been to export all classes of wool irrespective of quality or condition. Probably those engaged in the exportation of wool had legitimate reasons for starving the industry, as they had to contend with obstacles, such as lack of machinery, unsuitable and uncertain weather for drying purposes; but with the modern machinery now used for scouring and drying purposes these obstacles are completely swept away. All the machinery required to scour and dry wool is made in New Zealand. The position as it exists at present is most unsatisfactory, as these figures will show: Wool exported in grease per year, 428,957 bales; wool exported scoured per year, 49,503 bales; amount of wool exported suitable for scouring, 100,000 bales; saving on freight charges on that amount if grease and dirt were removed—which is estimated at 40 per cent.—£200,000. The freight charges are based on the rates prevailing when private firms were last allowed to ship wool. Another strong reason why our wool should be scoured locally is to prevent deterioration. Sometimes it is not convenient or wise to place certain wools on the market, as there is little or no demand for same, which naturally makes it necessary to store; and if the wool is stored containing a large percentage of foreign matter it has a tendency to deteriorate; on the other hand, if the wool is free from foreign matter when shipped it will keep for years without any danger of depreciation. This point should not be lost sight of, the importance of which is made manifest when you realize the loss sustained on millions of pounds' worth of wool owing to fall in value due to deterioration. Another reason why wool should be scoured locally is that if more wool were scoured more grease would be obtainable, which fact would offer inducement to create another industry by the manufacture of lanoline from the grease which is now wasted. In my opinion, the lanoline industry has not developed because the methods adopted to deal with collecting and refining the grease are far from perfect, but with assistance from the Government by way of subsidy to those making genuine efforts to develop the industry, and more grease offering, valuable results would be obtained, though I would suggest that lanoline is a matter that scientific research could be applied to. There are no obstacles to overcome to develop the wool-scouring industry, as everything required is produced in the Dominion, and with the improvements in the modern drying-machine the old prejudice against artificially dried wool is fast disappearing, and with a standard drying-machine of a certain type the danger of damage to the wool by overheating can be completely removed. I would suggest that the quickest and surest method to adopt to give this important industry the required stimulus would be the prohibition of exportation of all wools suitable for scouring. The Gisborne Woolbrokers' Association in January last forwarded a protest to the Minister of Imperial Government Supplies against the shipment from Gisborne of a thousand bales of scouring-wool, which it was contended could be easily handled locally. Its shipment elsewhere represented a loss to the Imperial authorities of 10s. per bale.

F. C. ELLIS, Canterbury Freezing-works Union of Workers, examined. (No. 48.)

In connection with the machinery used for wool-scouring and treating wool, I desire to say that a few years ago it was very out of date. Now they have much improved machinery. There is objection in some quarters to artificial drying. By putting on too great heat it deteriorates the wool; but satisfactory results are obtained by applying lesser heat and letting the wool stay in the proper time. The industry of wool treating or scouring can be extended, and very little training is needed. I may point out that the technical schools are training large numbers of persons in the classing of wool. The work can be carried on all the year. It is, in fact, being worked for about nine months in the year under the present system; it ceases for a couple of months before the shearing-season. A by-product of wool-scouring is lanoline, which is worth £16 a ton. There is sufficient output to establish a fresh industry in this country, and thus save the cost of importing lanoline. Lanoline is an extremely expensive article.

MONDAY, 17TH FEBRUARY, 1919.

FRANK COOPER, representing the Engineering and Agricultural-implement-making Industries, examined. (No. 49.)

In representing the engineering and agricultural-implement manufacturers to-day I am doing so by the instruction of the local association, which I represent, entirely from a Dominion aspect. We wish to bring before you five proposals, as follows: (1) To ensure that all articles which have been demonstrated can be made in the Dominion should be made in the Dominion; (2) to enable and ensure that these articles shall be made to the best advantage and reach the consumer at the minimum cost; (3) to give opportunity to manufacturers to study methods in more advanced countries; (4) that there be a Department of Industries in effect, instead of in name only as at present; (5) that there be a checking-system for parcels throughout the Dominion under control of Railway to cover rail, boat, or coach. In regard to No. 1, we suggest the only rational and practical method. Statistics show that where New Zealand industries are adequately protected they will advance with the population, and that where inadequately protected they do not keep pace with population. The engineering trade has practically no protection. On engineering imports the duty collected in 1911 represented only 3 per cent. on the value imported. Three per cent. on the value imported represents about 1½ per cent. on the sale price. In many cases a 25-per-cent. duty would be inadequate to balance the difference in wages rates of the country of origin with New Zealand. The average wage per hand in New Zealand is 28 per cent. higher than in the same industry in the United States and 100 per cent. higher than in Great Britain. Except for revenue considerations, Customs duty if inadequate only adds to the cost to the consumer, as it fails to encourage investment of capital and specialization in manufacture. If there is adequate protection it results in specialization and reduced cost to the consumer. As an instance, ranges and farm-drays have proved this. In 1882 the Customs tariff on carts was 15 per cent. In 1888 this was raised to 20 per cent. While the tariff was 15 per cent. that amount was added to the cost of the drays, which were at that time imported from New South Wales. When the tariff was altered to 20 per cent. the addition was sufficient to warrant capital being put into the manufacture of drays, and in a few years they were sold at less money than they had been under the 15 per cent., with the result that Australian drays were completely knocked out, and here they became a regular article of manufacture. The agricultural-implement-making industry is unique in the treatment accorded it through the tariff. Most industries have some tariff assistance, but this industry has none whatever. During the period 1896–1911 the area under cultivation increased by 12,000,000 acres, but the number of hands making implements by only sixty-five. Imports in the same period increased by 156 per cent. The importance of the engineering and agricultural-implement industry does not appear to be realized. The war has demonstrated that had not Great Britain's engineering industry been such as could be developed quickly war demands for arms, munitions, motor vehicles, aeroplanes, tanks, war-vessels, &c., could not have been adequately met. The engineering industry furnishes machinery for all other industries. It also trains the most skilled operatives for them. A marine engineer is not possible without the training of an engineer's shop. Operatives trained in engineers' shops are essential in New Zealand to many industries. According to the Labour Department's report for 1913 there were twenty-one at tram-car building, forty-four at sugar-refining, fifty-seven at meat-freezing, sixty-eight at gas-manufacturing, thirty-three at gas-manufacturing (machinists), twelve at shipwrighting, twenty-six at sawmilling, and thirty-four at printing establishments; whilst coal-mines, gold-mines, boot-factories, furniture-factories, tanneries, woollen-mills, motor-garages, electrical works, pumping-stations, electric-power stations, tramway services, and public works are dependent upon them. If the industry was developed to the extent sought there could be five hundred more youths than at present converted into skilled artisans and producers annually. Under present conditions many youths have no opportunity but to become unskilled workers, and probably dissatisfied citizens. The shortage of female operatives in clothing-factories, boot-factories, and woollen-mills, and of domestic servants is attributable to industries employing males, such as engineering, being undeveloped sufficiently. The present position of the engineering industry in the Dominion, although far from satisfactory, is creditable to all engaged in it under present conditions. As shown, it has held on despite the lack of protection, and despite the disparity mentioned in wages in larger countries. It can be demonstrated that dealing with machinery already being manufactured and which the Dominion is equipped for making there are of this class of goods alone sufficient being imported to find employment for thirteen hundred operatives, representing support for a population of over five thousand souls, whilst articles other than machines would increase this materially. Articles for which Christchurch factories are equipped and are making are appended in Table A and Table B. In laying this aspect before you, and before defining what is thought to be essential, it is necessary to mention that engineers throughout the Dominion have drawn the attention of Parliament to the necessity for protection so many times without avail that it was only upon the grounds of the Dominion's interests in connection with post-war conditions that engineers now consent to representations being made. Nearly all engineering establishments, whilst doing as much manufacturing as conditions will permit, have in self-defence had to become importers also, and in specifying articles which should have protective duties there is hardly a manufacturer who will individually not be a loser instead of a gainer by the proposals. Manufacturers believe that from a Dominion aspect the Dominion should profit considerably by some such tariff as that proposed. It is worth emphasizing that in the case of Dominion manufactures the cost of the article and the article itself remains in the Dominion. In the case of importation the article remains and the cost emigrates. Some years ago two sprinklers were required for the city

tramways. Tenders were called. Americans tendered and a local firm tendered. The tenders were so close that the Tramways Board decided that one should be made locally and the other in America. Now, all the time the local one was being made men were working on it and receiving wages and spending money on tram fares. The sum of £800 was paid in wages, and is still going round. Further, about £200 was spent in material, which money would remain in Christchurch. Altogether about £1,000 of the £1,400 was floating round Christchurch as a result of the local manufacture. In the case of the imported article the order was sent to America, the thing was shipped over, and £1,400 had to be sent back, and that was all about it. That is an illustration of what happens. In the one case we got £1,000 and the sprinkler. In the other we got the sprinkler, but America got the money. As regards the quality, Mr. Beaven might be asked the question.

Mr. Beaven: The imported one has required about twice the repairs that the other one has, and is no better.

Mr. Cooper continued: The Dominion's primary production available for taxation is the return from the produce exported minus the cost of the products imported, hence the less products imported if the requirements are manufactured here and the greater the production of the Dominion. The proposals are submitted based on the realization of the necessity for returned soldiers being speedily brought into productive occupations, the knowledge that heavy taxation due to the war can only be met by production, and the further knowledge that only by having an assured market can manufacturing be carried on at its best. It is also an important factor that an assured market will effect considerable saving in selling-costs. It is common knowledge that larger countries are realizing the importance of extending their activities in order to meet war costs, and competition must become far more aggressive than in the past. It is feared that without some extra provision to meet these conditions on the part of the Dominion the position of manufacturers will speedily become worse than before the war. The following are the proposals submitted to meet the foregoing conditions, and are essential to ensure capital and effort for immediate increased production in the Dominion: The levying as early as circumstances will permit of a protective tariff of 25 per cent. on those imports which are the product of Great Britain and of 50 per cent. on those imports from all other sources than Great Britain on such goods only as are now being manufactured in New Zealand, provided that the makers thereof can guarantee to produce sufficient quantity for the Dominion's requirements. It is important to manufacturers that the provisions as to refund of duty under section 154 of the Customs Act, 1913, should be perpetuated. Resting upon some such protection, then, the industries of the Dominion can be further encouraged and benefited by our No. 3 proposal. Mr. Booth will make representations to the Committee in connection with proposals No. 3 and No. 4, and as regards proposal No. 5 Mr. Beaven will speak. I place before the Committee the following exhibits: (A) List of Canterbury engineering manufacturers; (B) list of Canterbury agricultural-implement manufacturers coming within the scope of these proposals; (C) list of present engineering and agricultural implements imported upon which calculation as to labour represented is made; (D) extracts from journals *re* activities in Great Britain and the United States, suppliers of these importations; (E) illustrations of comparative costs in small and large quantities; (F) combined statistical figures showing progress of Dominion industries at census periods from 1896, and deductions therefrom classified under present tariff conditions; (G) details of conditions of important industries.

To the Chairman.] There were proposals at one time for a special tariff arrangement with regard to agricultural implements, but they only resulted in the importers being more active in American lines in opposition. The Government brought in the Monopolies Prevention Act, which prevented dumping and made other provisions. The provisions were of no value, however. In the event of our getting protection we are prepared to submit ourselves to control in regard to local prices. For myself, I think it is the duty of the Government, if they afford protection to a manufacturer, to afford protection to the consumer. There is no desire on our part to exploit. The matter has been considered by the association, and there would be no objection to prices being reasonably regulated in the event of our getting protection. The manufacturers fully realize that protection to the industry will warrant protection to the consumer, and that the consumer should not be exploited. If there is a Department of Industries the matter could be regulated by it.

To Mr. Luke.] I favour a universal tariff—a duty on all machinery. While we are putting a duty on other people's goods we ought to be subject to duty ourselves. There again, however, you have to consider the consumer. If you put a duty on the machinery necessary to start specialization it will in all probability cramp the industry at the outset.

To Mr. Sidey.] There is protection in Australia where it is required. All the articles I have referred to are protected in Australia. The position in New Zealand is deplorable when you see the position in Australia. Australia has a very effective tariff, but it is a country with five million people, and it can specialize to a larger extent than we can, with or without a tariff. With one million people we want more protection than Australia, and in effect we have less.

To Mr. Luke.] Water-tube boilers are the principal import in the boiler line at present. Many large concerns are putting in water-tube boilers. It is practicable to make the boilers here. I will confer with the other members of the association, and, if possible, prepare a scheme to enable this work to be acquired for the Dominion. Internal competition keeps down the price. Immediately protection is given other manufacturers start in business. Internal competition will generally regulate the prices, and there would be no need for the Government to have the controlling authority.

To the Chairman.] I admit that combination must be guarded against.

To Mr. Luke.] My personal experience is that there is no prejudice from the Government and county and other engineers against the locally manufactured article. If an article is manufactured in the Dominion preference is given to it by these officials. The proportion of wages in the higher class machinery to the total cost of the article is one-third of the sale value. It would be right to say it is about 60 per cent. in large engines. Taking engineering generally, the demands of the Dominion require considerable expenditure in wages. There was no particular difficulty in obtaining skilled men before the war. It could not be said there was a surplusage, but that was accounted for by the fact that apprentices were not being brought on. We have found that apprentices want to learn the engineering irrespective of the other branches, such as blacksmithing and moulding. The general trend is to engineering in itself. Generally speaking, employers are not favourable to allowing youths off in working-hours to attend technical schools.

To Mr. Veitch.] It is not possible to make the moulding branch more attractive to youths. If we pay more money, money is, after all, only comparative, and one department would pull the others up with it. You cannot pay a moulder apprentice more money without paying the engineer apprentice more. It would raise them both in wages, and you would be where you were before. The Arbitration Court says it is a crime to attach an apprentice to more than two branches. It was a diabolical thing to do. Trades outside the engineering have the same difficulty with regard to apprentices. Even to-day there is a chance for an apprentice in an engineering establishment to develop into a first-class engineer, but with the advancement of specialization that will be slipping away.

To Mr. Poland.] The attitude of the majority of the engineers with regard to the apprentices is that as the hours in New Zealand are forty-seven per week, against fifty-six or fifty-seven in other countries, they are opposed to apprentices being allowed off to go to technical schools during the forty-seven hours. An apprentice cannot learn better than when he is in the shop. As far as theory is concerned, it is admitted that the young fellows can learn more at the technical college than in the shop. He can do the theoretical part in the evening.

To Mr. Sidey.] The matter of our third suggestion has been considered collectively, and it is thought it would be better for manufacturers to go to other countries in order to study advanced methods. We have made representations to the Government, and have been joined in them by the employees. We were told that the Cabinet would sooner do anything than tackle a tariff. When the tariff was last under revision we were told that only foodstuffs were to be dealt with. The Farmers' Union was very active against us, but I believe they are now sympathetic. In regard to improved or advanced methods, as it is a Dominion matter we think the Government should appoint a Commission. It would be in the best interests of the Dominion to do so.

GEORGE T. BOOTH, representing Booth, Macdonald, and Co. (Limited), examined. (No. 50.)

A previous witness has informed the Committee that disk harrows are made to a considerable extent by the local factories, but some thirteen hundred are imported from abroad, mostly from the United States and Canada. My company has paid special attention to disk harrows. In the very early years of their development they originated in the United States; but the harrows made in the United States were not suitable for New Zealand conditions, and we set to work to try and develop a type suitable to New Zealand conditions. I think we might say that we have succeeded tolerably well. The result was that first one and then another American manufacturer copied our harrow. The International Harvester and the Massey-Harris Companies have now harrows in the market almost identical with ours; and at least two, I think, of the manufacturers in Great Britain have also copied them, and they are on the market also to a smaller extent. So far as manufacturing-facilities are concerned, we can with our present plant make the thirteen hundred harrows which are imported. We should, however, have to import the disks. They are of steel, and have to have a special carbon compound to give the necessary cutting-edge with durability and without undue hardness. There is no plant in the Dominion which can make them, nor is there likely to be for many years to come. We import them duty-free from England and America; most of them, I think, come from Sheffield. I think I am right in saying that every other part of the harrow is made here—that is, from the raw material. There are several points to which I was supposed to draw your special attention. One was the desirability that the Government should establish a Department of Industries. I believe there is a sort of Department of Industries connected with the Department of Agriculture now. There is no doubt that the State has up to the present done little or nothing to encourage or provide for the requirements of our secondary industries—that is, the manufacturing as distinguished from the primary industries. I think the time has arrived—and I do not think that feeling is confined to myself—when the State should recognize that it has a duty with respect to the manufacturing industries of the country. They employ a large and increasing number of workers; they help to an important degree in developing the nation's resources; and they contribute very largely to its production of wealth. I have here a very recent book written by Ellis Barker, a well-known writer on economical subjects. He gives the value of production in 1909–10, giving the details of the following industries: manufacturing, agriculture, mining, forestry, and fisheries. The total is thirty-two million dollars, and two-thirds of that total is contributed by the manufacturing industries. I quote that to show you that where manufacturing industries can be developed they are a tremendously important element in the development of a nation's resources and in the production of wealth. New Zealand at the present time is mainly a farming country. The United States was mainly farming up to the middle of last century, and now, mainly because of the development of its manufacturing industries, it is the greatest and richest industrial country in the world. A similar remark is applicable to Germany. Up to the time Germany adopted a protectionist policy they were almost purely primary producers;

but they have had the same experience as the United States, and have become a very rich and powerful nation. That leads up to the point of the necessity for a State Department whose special duty it should be to take care of and encourage the secondary and manufacturing industries of the country. The principle has been admitted already in New Zealand. We have a Department of Agriculture which is doing remarkably good work; it covers a considerable range of activities—field-work, experimental work, training of farmers, seed-testing, stock-breeding, dairy and flax grading. The Department employs some hundreds of officials. They must expend a considerable amount of money yearly, but I do not think any citizen of New Zealand grudges a penny of it, because we recognize that the Department is doing good and useful work, and benefits everybody directly or indirectly. So that the principle that the State is interested in the production of the wealth of the country has already been admitted, and it is only necessary that the State should extend the application of that principle by taking in the secondary industries. I am not referring at the moment to the engineering industry in particular, but to secondary industries in general. I may make some suggestions as to how I think this Department of the State, if properly established and given sufficient means and authority for carrying on its work, may do good. In the first place, in respect to new and struggling industries, I do not see why the State should not help financially. So far as I know, there is no reason why the State should not furnish direct financial assistance in the inauguration of new industries. Private capital is naturally very cautious, and it is almost impossible to get private capital to subscribe in trying to establish an industry the success of which is by no means a certainty. I do not see why the State should not step in, and if the prospects are sufficiently encouraging give direct or indirect financial assistance in that direction. If direct assistance is not considered desirable it might offer inducements to private investors, perhaps by guaranteeing dividends for a certain number of years. The Government do a great deal in the way of consuming supplies of raw materials. Private individuals in having to get their raw materials in small quantities are at a great disadvantage as compared with the larger quantities that the Government could buy. There is no reason why this Department of Industries should not have as one branch a general buying agency. The Government Departments are already large users of certain materials—I allude to the Railways, the Post and Telegraph, and other Departments.

The Chairman.] The Government purchases of wheat: does that encourage you to go on?—Perhaps that was more political. I do not know whether that is altogether a fair example of what the State might do. I am suggesting that a Department be set up similar to the Department of Agriculture—a Department which should be self-contained, in the sense that it would have its own managers—men knowing their business. This Department would be a business Department absolutely—with as little interference as possible from politics or Ministers. I imagine the Department of Agriculture is like that. They know the lines they work upon, and everybody is satisfied. Nobody complains about the Department of Agriculture. I do not see why we should not have an Industries Department, which should be self-contained and self-directing to a very large extent. If such a Department were set up it might set up a general buying department. It seems to me a business proposition that is sound. The Railway Department and the Post and Telegraph Department now buy their own goods. The buying agency might very well be a department of the Department of Industries, and help private businesses as well as secure supplies for Government Departments. The Department of Industries, I think, might do a great deal to assist industries in connection with new processes and discoveries of science as applied to industries. I think the State might go even a little further than that, and might make itself a partner in manufacturing industries, or take them more or less under its wing. We have had during the last four years an experience of the efficiency of manufacturing industries in Great Britain, for instance, for the purposes of the war. We know very well that, although one would have thought that the engineering industries of Great Britain would have been capable of rising to almost any emergency, it was found that they were quite incapable of supplying the requirements of the nation in war. So the State stepped in and took these factories under their wing; they established new ones; they co-ordinated existing organizations; they took men from one factory and put them into another; they standardized and specialized, and extended the system of manufactures to an extent that was never dreamed of in England before. The result was an increase in the manufacturing industries of the United Kingdom for war purposes to an extent that would have seemed impossible previously. If the State can do that for the nation in time of war I do not see why they should not do a great deal for the nation in time of peace. I would like to hand to the Committee a little book containing an address which I recently delivered in Christchurch recently—an address in which I have rather developed this subject. As to how the Department is going to help New Zealand industries, I may state that Mr. J. Ellis Barker in his book says, "The United States owe their industrial supremacy to the energetic activity of the American Government and people. America's manufacturing success is due mainly to two reasons: to the technical policy pursued by both employers and employed, and to the economic policy pursued by the American Government and people." I may here say that there is no uniform system of costing in this country. That is a most important thing in any business. If there is one thing of more importance in manufacturing business than almost any other it is that there should be a proper system of costing, otherwise one is never sure whether the margin is sure to cover the cost of distribution and whether you have sufficient profit. I have found that a real thorough system of costing is rare in New Zealand. Very few manufacturers or business people realize how absolutely essential it is. All sorts of contingencies and conditions may raise prices. You cannot foresee what the wages, the freights, or the cost of material may be; or the cost of distribution may rise or fall. A great number of conditions

have to be taken into account, so that it is a very difficult matter to arrive at a definite conclusion in regard to the fixing of prices. What we want is to increase the output. We are not asking for increased prices. The only hope we have of this Committee doing us good is in the direction of enabling us to make more goods. With regard to the engineering industry, I suggest that the State might help us by assisting us to acquire from abroad the latest information as to modern methods, appliances, and processes, and all that sort of thing. I do not think that can be got by importing experts; I doubt it very much. My own company has tried that without success; but we have got some success by sending our own young men abroad—men who were familiar with the work here—men who will be quick to see what can be picked up, what can be adapted to New Zealand conditions, and then who come back and make their report. We have carried that out ourselves for some years past. With State assistance that system might be very considerably extended and applied. I think that is a matter in which the Department might very well furnish financial assistance. There is another thing: the cost of distribution of goods throughout New Zealand is tremendously high, and not only is it tremendously high, but it is so uncertain that it hampers business to a very considerable extent. Christchurch is, I suppose, the largest manufacturing-centre in the Dominion. We have to send our goods all over New Zealand in competition with imported goods. The importer can land his goods at Auckland or Dunedin or elsewhere, but we have to manufacture them here at a central point and distribute them to all parts of New Zealand. We have to send them by rail and then by ship, and then sometimes they have to be taken by rail again, hampering business very seriously. I think this new Department might establish a distributing-system on the lines of the parcels-post. Such a system if adopted would save an enormous amount of annoyance, and under proper arrangements it might be carried out just as efficiently as the parcels-post. Finally, I suggest, and I think it is a very reasonable suggestion, that so far as local requirements are concerned, the Railways, Post Office, and other Departments should buy locally made goods in preference to imported goods. So far as I know, there is no prejudice against locally made goods; but they do buy through importers a great deal of stuff that might be made here, and I think they should offer inducements, if necessary, for the manufacture of local goods.

Mr. Hornsby: Some Departments are antagonistic.

Mr. Booth: I am not prepared to make that statement. I will conclude by drawing attention to a statement made by Mr. Gerard in the book "My Four Years in Germany," where he says that much of the success of the Germans was due to the fact that each manufacturer knew that he had the whole weight and power of the Government behind him in his efforts to increase his business. That is what we want. If we get that I think the engineering business in New Zealand ought to go ahead all right.

To Mr. Hudson.] The question of the production of iron-ore, I think, is a matter for highly trained specialists. I cannot give an opinion about that. I do not see why the guaranteeing of dividends should not be feasible. There should be as small interference as possible with existing industries, but you can assist without interfering. We are all very much afraid of State interference, and that is largely because it is political; but if such a Department as I have suggested were set up we should not have much fear of it.

To Mr. Poland.] Specialization cannot be carried out here to anything like the extent that it is in the United States—for many years to come; but every step in the direction of specialization reduces cost, and ultimately it must reduce prices.

To Mr. Veitch.] Labour has already a Court of its own that defines its conditions. It has all the assistance that the State can give it practically. The State has set up a Court to which labour can appeal to remedy all its grievances. That has not settled the problem; it never will. I do not believe in low wages. I think the more a man earns the more happier he works.

To Mr. Luke.] It is a rather curious thing that the powerful trade combinations in America exist side by side with a number of small individual shops. I do not think the powerful combinations deserve the criticisms which have been levelled at them. They have reduced the cost of goods to the consumer enormously, because they are able to conduct their operations on a large scale, and even though their profits may be large that does not matter very much so long as the consumer benefits. I do not suggest that the State should hold stocks; it would take more the place of an indent agent. There is no reason why the system should not apply to the finished article as well as raw products—that is, if the finished article is not produced in New Zealand.

To Mr. Veitch.] I would like the Industries Department to be on the same basis as the Department of Agriculture. I am not prepared to support the State undertaking the industries itself. The history and development of manufactures has been that they depend more upon individual initiative than anything else, and I think you might probably lose some of that individual initiative if you made it a State business. I think there is a possibility of State help without State interference. State interference has very great objections. I think State help is free of those objections. I do not see why there should not be direct State contributions.

To the Chairman.] I suggest that any tariff alterations be made on the recommendation of the Industries Board. I do not know that I said anything condemning political control. I want the officers to be specially trained in their business. The manufacturers would soon "kick" if the goods ordered were badly bought. I think it is rather straining the point to suggest that the Government might buy badly in the sense that they might be unable to place a very large order to advantage as compared with a small order placed by an individual. It is true that it is impossible for any buyer to accurately estimate how the markets will go. Orders given to the Department would be the same as orders given to an agent.

JAMES KEIR, representing Messrs. P. and D. Duncan (Limited), examined. (No. 51.)

Of all the secondary industries none are more essential to New Zealand than that of engineering. All the other industries, both primary and secondary, depend on the engineers for their tools of trade and repairs to same. This is especially true of the agricultural and pastoral industries. The agricultural implements necessary in New Zealand are of extraordinary diversity in size and design. Owing to the great variation in our soils and climate, and the diversity of crops and grasses that are grown, there are more different machines required in cultivating the soil and in planting and gathering crops than in any other country in the world. In support of this I have to state that the firm with which I am connected, though we do not attempt to make every sort of machine or implement required, list seventy-five different sorts and sizes of ploughs, 120 sorts and sizes of disk harrows, eleven sorts and sizes of spring-tined cultivators, eleven sorts and weights of tine harrows, fifty-four different sorts and sizes of tripod harrows, 108 different weights and sizes of chain harrows, fifteen different sorts and sizes of cambridge rollers, fifty different sorts and sizes of drills, two sizes of lime-sowers, two sizes of slag-sowers, six sorts and sizes of broadcast sowers, two sorts of windmills, and three or four sizes of each. It is manifestly impossible for any importer to stock such a variety. The importing firms content themselves with about one sort and three or four sizes of the lines in most demand, leaving to the local manufacturers the peculiar lines and the special sizes that may be required. The best agricultural implements in the world are those manufactured in New Zealand. This is largely due to the difficult nature of much of the country to be worked. In South Canterbury and North Otago there is a great extent of down lands more or less steep but of splendid quality. In this class of country American implements are not strong enough, and nothing suitable is made in England. Then along the foothills of Canterbury there is a wide strip of boulder and stony land, much of it literally paved with boulders from 3 in. or 4 in. to 6 in. or 9 in. across. In this country every implement must be special and of extraordinary weight and strength, and nothing suitable is procurable either in England or North America. In the North Island, especially in Auckland, there exists hundreds of thousands of acres of swamp and scrub land waiting to be ploughed and grassed. There is no implement in the world competent to deal with this other than the New Zealand swamp-plough. The importing-houses have now mostly given up the hope of getting into the plough trade, and one of the largest foreign companies, after spending years in endeavouring to make a plough suitable to New Zealand, is now selling a line of ploughs made in Christchurch. In the method of ploughing in the South Island the farmers for fifty years have had the best double-furrow plough in the world, and for the last fifteen years the three-furrow riding-plough and the six-horse team, three in front of three, has become the standard plant. The system of yoking horses in pulley-yokes has been universal in New Zealand since the perfection of the double-furrow plough about forty-eight years ago. This system of yoking is absolutely the best, and is quite unknown in either Britain or America. In Britain they have never got past the single-furrow walking-plough stage—one man, two horses, and one furrow; and on the small and medium-sized farms of North America they have not yet got past that stage either, as is evidenced by the fact that Mr. Henry Ford in making his oil-tractor pinned his faith to a machine to pull two furrows only. In agriculture the plough is by far the most important implement; next to it comes the drill. Though large numbers of American and Canadian drills are imported into New Zealand the turnip and rape sowers for them are made in New Zealand. Turnip and rape are not sown in America or Canada, and they have not, therefore, developed an attachment for the purpose. My contention is that as we make the best implements in New Zealand, more especially the best for the local conditions, why should the local makers not have the advantage of duties such as are imposed in the United States, in Canada and in Australia? If these great nations find duties good for their industries, why should they not be good for us? We are constantly urged to improve our methods; to specialize; to go in for scientific methods and modern plants. If the people of this country want the implement makers and engineers to do these things, then they should see that we get a fair chance. If our competitors are allowed to use the "mustard-gas" of a tariff, how can we be expected to defeat them if we are disallowed the same weapon? For my part, I am ready for free trade with every country that will give free trade to us; but I cannot agree that free trade for the Canadian, the American, and the Australian is a fair thing when they have duties of from 25 to 40 per cent. against our products going into their countries. I want New-Zealanders for New Zealand, and not Americans, Canadians, or even Australians. The free-trade doctrines include this one: that the greater the competition the lower will be the price of any commodity. I want to show you what the result of the advent of the Canadian and American combinations with their own men and their own money in the agricultural-implement line in New Zealand has been. Down till about 1900 the system of selling implements was that the farmer requiring an implement ordered it in most cases direct from the maker, or from his local blacksmith or storekeeper. The various implement-makers fixed prices to return them their required profit on this basis of selling. The American and Canadian firms regarded this as an antediluvian system, and from twenty years ago and since then they set out to show us what modern scientific efficiency amounted to in this department of commerce. This system consists, firstly, in personally canvassing every customer; and in these days it calls for an army of mounted men, the motor-bike "cavalry brigade," to scour New Zealand from end to end every day of the week selling implements. These gentlemen are supposed to be experts, and after they have sold a farmer an implement, and it is delivered, they again mount their "fiery steeds" and set out to see it turn the first sod, and get the farmer—unfortunate or otherwise—to sign what is known as a starting-ticket, certifying that the "contraption" of steel and iron did its work satisfactorily for five minutes, and that the farmer is satisfied with his bargain. When this system was first started

many of the local makers thought that the day of judgment for them had come. Most of them still survive; but we have all had to adopt this modern "scientific efficiency" system. We, too, had set up the motor-bike "cavalry" man, or have had to pay other people to do it for us, with the following results on the selling-cost:—

	Agency Commissions.		Retail Prices.	
	1919.	1901.	1919.	1901.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Double-furrow medium-weight plough, fitted with cast-iron shares and revolving skeiths	5 4 3	1 15 0	34 15 0	17 10 0
Heavy-weight swamp-plough, fitted with swivel skeith and 16 in. steel share	7 2 6	2 0 0	47 10 0	20 0 0
Fifteen-coulter Star drill (combined pattern) for grain, small seed, and manure, fitted with canvas cover, turnip and hoe coulters	12 9 0	4 10 0	83 0 0	45 0 0
9 ft. 18-in.-disk harrow with wooden frame ..	4 4 0	1 10 0	28 0 0	15 0 0
7 ft. (11 tine) spring tine cultivator, ordinary weight	5 4 3	1 19 0	34 15 0	19 10 0
Three-furrow medium-weight walking-pattern plough, fitted with cast-iron shares and revolving skeiths	7 7 9	2 8 0	49 5 0	24 0 0
One set 4-leaf medium-weight tine harrows and tree	1 11 6	0 12 0	10 10 0	6 0 0
One 9 ft. 24-in.-field-roller	5 12 6	1 19 0	37 10 0	19 10 0
One $2\frac{3}{4}$-in.-axle farm-dray, without frame or brake	5 14 9	2 2 0	38 5 0	21 0 0
Total, nine machines	54 10 6	18 15 0	..	..

What we want for the future is 50-per-cent. duties against all such lines of agricultural implements as are now being made successfully in New Zealand, and for which the local makers can guarantee sufficient supply for the Dominion; 25 per cent. preference to implements and machines manufactured in the British Islands; a reduction of 5 per cent. per annum to be made on these duties until they are reduced to the Canadian or the Australian level, whichever happens to be the higher, and the British duties to 15 per cent. These duties would give us the trade we are able to do for several years, and enable us to fully employ all our returning soldiers. We want all raw materials free. If these duties are imposed, for my own part I would have no objection to prices and selling-systems being fixed either by the Board of Trade or any other body set up by the Government for the purpose, and the retail prices to farmers would certainly be reduced. What is wanted if all suitable secondary industries are to be developed to the utmost is a Minister of Industries and Commerce, so that the secondary industries shall have something like the attention the primary industries have had. Experts should be imported from abroad on short engagements to inspect the industries and advise those engaged in them, and report upon them, so that the country should know exactly how they compare with those in other countries. Selected men for different industries should be sent abroad wholly or partly at the Government's expense to look up the latest methods employed, and advise how far these are applicable to the conditions existing in New Zealand. Then the Government should take up the shipping business. It is quite as good a monopoly as railways, and New Zealand can never become the Britain of the South without a national steamship service. What is more immediately required, however, is the taking-over of the ferry service, so that manufacturers in both Islands shall be able to get prompt supplies of raw materials and prompt shipping of their finished products. The Government should also undertake the through delivery of goods from any part of the Dominion to the customer. The importing-houses in the agricultural-implement business can land their goods at the same price at any port. The New Zealand maker must manufacture at one spot, and one of his troubles under the present conditions is to get his goods forwarded to his customer in time.

To Mr. Luke.] As to the suggestion that the State should be a national buyer, I may say that I am not in favour of any more State control than is absolutely necessary. I am in favour of the State controlling essential monopolies, such as shipping and railways. I think the less State control of business the better.

To the Chairman.] The amount expended in exhibiting at local shows is only a bagatelle. We were persuaded by some American people to do that, but they did not tell us that they were going to introduce a system that would cost five hundred times as much as to exhibit at shows; personal canvas and exhibits at shows are not necessary.

F. C. PRICE, representing W. H. Price and Sons (Limitedj), examined. (No. 52.)

We are chiefly engaged in brasswork, mechanical engineering, and in the smaller lines. There are many lines that carry no tariff whatever. I may mention mining and dairying. They can be made in New Zealand as easily as the other things we are making. The duty on brasswork from England is 20 per cent., and 10 per cent. additional against America. The local factories could be very largely extended were we encouraged by a sufficient tariff being imposed. There are many lines that are not made in New Zealand. I think the tariff should be increased to 40 per cent. British and 50 per cent. foreign. There is another matter that interests the trade

as a whole, and that is an export duty on scrap metal. Scrap zinc is exported to China, and galvanizers have to compete against that. A similar remark may be made with regard to brass. We have to pay far more for scrap owing to the export. I suggest that the export of scrap should be prohibited, or an export duty should be put on scrap metal.

THOMAS WADDELL, of T. Waddell, Sons, and Co. (Limited), examined. (No. 53.)

I think the speakers who have gone before me have probably convinced the Committee that a protective tariff is necessary for New Zealand—in a great many cases, at any rate. In regard to manganese castings, I may say that they were never made here until we made them. We made the first ever manufactured in the Dominion. These castings have given every satisfaction. We manufacture something like six hundred dozen ploughshares every year. At present they are duty-free; we want a duty of 25 per cent. as against Great Britain and 50 per cent. against foreign countries. A great many of the castings of agricultural machinery could be made here. With the increased duty I have suggested we could increase by three or four times our output during the year. I include in this reference to increased duty, a duty being put on semi-steel chilled wheels—electric tram-car wheels, but-truck wheels, &c. Now I come to the materials we have to import for the manufacture of our steel castings. We have to import electroids; also the acid and basic lining for the furnace-lining. They are now charged for at the rate of 20 per cent. A great many castings come in free, and we have to pay duty on the materials to make the finished article. We ask that the materials I have referred to should be made free. I do not think it would be fair that the billets should come in free. When we start we intend making steel ingots and give the colonial people a chance of rolling those ingots, provided we get a fair share of the profit. If we cannot come to terms we will have to put up an up-to-date plant electrically driven, but we do not want to do that if we can get the ingots rolled. Then there is the question of refractors. I will furnish the Committee with a written statement. As to the scrap-steel business, I should say that there are approximately 250 tons of scrap steel in Dunedin, which the department concerned cannot handle. About four or five months ago I wrote to the Government offering to buy their wrought iron, cast iron, and steel turnings and borings and take delivery at the works at £1 per ton, but I have not received a reply. The Government are dumping the material at Chaney's at present into a swamp.

To Mr. Luke.] The Government have manufactured a considerable amount of steel with more or less success. They are not holding stocks of scrap for the purpose of resuming the steel industry. We could use the steel turnings and borings they are now throwing away. Our manganese steel is quite equal to the Hadfield steel. We are now supplying the Tramway Company with this steel for the jaws of the crusher. With encouragement we could make the crossings, too, quite equal to the imported article. We have made castings up to 33 cwt. in one piece, and lately we made seventeen sets of bogey castings for the Tramway Company which have turned out satisfactorily. These are the first made in New Zealand.

To the Chairman.] It will be four or five months before we get the electric furnace installed. Four months ago we sent an application to the Government for a siding at Sockburn, but have not received an answer yet. If we can get the siding all our material will be sent direct to the works there. The stuff would oxidize to a certain extent, but not sufficiently to make it useless. I have done all in my power to help Parapara along. If the electrical process cannot deal with the Parapara ironsand no other process will. The whole thing turns on the cost of the electric current. If the current can be obtained for one-sixth of a penny it would be equal to £2 per ton for coke. As far as we are concerned, we are asking for extra protection to enable us to carry on.

ARTHUR W. BEAVEN, representing Andrews and Beaven (Limited), Agricultural-implement Manufacturers, examined. (No. 54.)

I am speaking as an agricultural-implement manufacturer, and what I want to make as emphatic as I can is that for many years we have been suffering under a great injustice. Clothing-manufacturers, boot-manufacturers, and others are protected, whereas we as an industry have been absolutely unprotected. Australia could come in and largely swamp our agricultural implements. They have a free tariff here, but we have a stiff wall to get over in Australia. We consider that we have a fair claim that a duty should be placed on implements as on other lines made here. We ask you to take particular note of the Monopolies Prevention Act, which we regard as a most valuable thing. We take advantage of it, though not to the extent we might. I think it is a first-rate Act to have upon the statute-book. We specialize in seed-cleaning machinery, celery-cylinders, and other articles. There are other firms here who specialize in particular lines. In 1908, when we approached the Government on tariff reform, we gave guarantees that would have effectually protected the public, and if anything is wanted in that way now we are willing to submit certain formulæ which will, we think, meet your views. Further, I wish to say that the carriage of goods is a fairly expensive thing. We think the distribution could be much improved, and we ask you to recommend that the Government shall take goods of all kinds from any one station in New Zealand to any other station.

To the Chairman.] We do not manufacture mowers or reapers-and-binders. We do not think they can be made in New Zealand.

To Mr. Hornsby.] I will provide the Committee with a list of things that are not manufactured in New Zealand and that we do not ask to be protected. The fact that firms are specializing more and more every day is a proof of its success. If the tariff is altered in the direction of greater encouragement to local industries it will bring about still more specialization. We will then be able to install special machinery. It would be right, in the event of a substantial tariff being put on, that the Government should be in a position to act in the interests of the customer.

GEORGE SCOTT, representing Scott Bros. (Limited), Engineers, examined. (No. 55.)

My reason for appearing before the Committee is to show the difficulty we have in securing efficient tradesmen to enable us to carry on the engineering industry. At present the industry is short of tradesmen; in fact, in a few years there will be no moulders in New Zealand except those who come from England. I do not think there are three apprentices in Christchurch—at any rate, there is no bound apprentice—and any boy we get remains for only a short time, perhaps twelve or eighteen months. Therefore we are not making tradesmen, and for that reason we cannot look to the engineering industry to flourish and increase. My firm is now employing fifty hands, and we had at one time three hundred. We have advertised for tradesmen and cannot get them. I think the remedy is that employers should give time off to their apprentices to receive instruction at the technical school or the School of Engineering. I know that employers in New Zealand are against this step, but the employers in England are in favour of it. The matter has been taken up in England, where it is looked on as one of the great reconstructive works to be carried out there. If we in New Zealand are to be successful with our industries the apprentices must have time off in the daytime to receive instruction. At present the time is not given in the workshop to instruct an apprentice. If time was allowed off in working-hours the cost to the employer would be £19 14s. over a period of three years, and the employer himself would get the benefit of it, because he would get a well-trained workman. Yet there is not an employer in Canterbury who approves of the apprentice getting time off to attend the school. I approve of it myself. It must be made compulsory to give time off. That was found necessary in England. There is hardly an engineering firm in New Zealand to-day employing the number of men he employed seven or eight years ago.

To the Chairman.] Attendance at a technical school should be made compulsory by law. We should feel our way carefully, because we have not the necessary instructors at present. My experience is that pupils from the local Technical School have been satisfactory. A boy should spend two or three years at the Technical School before going to Canterbury College.

To Mr. Sidey.] I think that employers ought to allow their apprentices to attend the Technical School two afternoons every week. As a compromise, I suggested to the Technical School and to the employers that apprentices should commence at 4 p.m. and end at 6 p.m.

To Mr. Luke.] The workmen are indifferent to the apprentices. In the fitting-shop a certain amount of time is given to the apprentices, but not the time that was given in the early days. If the foreman was specially asked to give the details of the technical side, apart from the manual work, he would not do it, because he has not the time. If apprentices went to the school in working-hours it would raise the general standard of labour, and eventually all the employers would benefit.

CHARLES CHILTON, Professor of Biology, Canterbury College, examined. (No. 56.)

The principal point I wish to stress is that of greater scientific knowledge and of pure science. At Wellington representatives of the New Zealand Institute explained what has been done in recent years—(1) to encourage investigation in pure science, or pure knowledge, apart from its application to industry; and (2) the connection between that knowledge and industry. In practically every country in the British Empire there has been established a Board of Science and Industry, and New Zealand is the only part of the Empire where a Board of the kind has not been established. The scheme set forth by the National Efficiency Board is on right lines. I suggest that you could also utilize the machinery of the New Zealand Institute more directly. The Institute represents scientific knowledge throughout the Dominion, and although the members of the Board of Governors are not those best qualified in particular branches of science they are in touch with those who are. I hope you will be able to do something to further the establishment of the scientific Board, which will be able to advise the Government on matters of a scientific nature. I also wish to put in a plea for what is called pure science—that is, the science that has not been applied. All the industries have developed from pure science. The question is, how are you going to promote greater scientific knowledge? It seems to me that you must begin at the primary schools, and follow it through the secondary schools, and so on. The great difficulty we have at present is the lack of workers who are qualified to carry out scientific research. Owing to the grants that have been made by Parliament through the Institute many scientific investigations have been started, but we have not a sufficient number of workers. We must keep our own students about the University colleges. In the meantime they go through their University course, but it has not been leading to anything, and if you can recommend some way that a greater amount of money should be given to colleges to employ a larger number of assistants to the various professors or lecturers it would be a matter of great value.

To Mr. Sidey.] I think the Government should make direct grants for research, but not for individual questions of research. That is not the best way to get at it, as it ties down the research person too much. We should make use as far as possible of the existing laboratories, which are capable of doing more work than they are doing at present. If the Government give a grant of £20,000 a year for five years it would meet the requirements of the colleges for the time being.

W. P. EVANS, Professor of Chemistry, Canterbury College, examined. (No. 57.)

I may say that Professor Easterfield and Professor Chilton have already dealt with a number of matters upon which I might have touched, and I agree with what they have said. As to the iron-ores of the Dominion, I think that in working the Taranaki ironsands we are not working at the best material. I consider it would be better to work at Parapara. I think the Committee should insist on a survey being made of the Taranaki ironsands, both in regard to quantity and quality. A thorough survey is necessary before people can be expected to put large sums of money

into the work. Another point is this: The Committee would be well advised to take into account the comparatively small quantity of coal that we possess in Australia and New Zealand. If we take the world's reserves, Australia and New Zealand contain only a little over 2 per cent. of the total. For domestic purposes we waste as much as any country I have ever been in. There are three ways in which that loss may be made considerably smaller. There ought to be (1) a much greater use of gaseous fuel, (2) a greater use made of electric power, and (3) coal ought to be economized by sending coal to the consumer not in the form of coal, but in the form of partially carbonized coal or in the form of oil.

To Mr. Sidey.] The State is testing coals more or less. It gave a grant of £500, and £200 of the amount was given to me to carry on experiments with brown coal. We are experimenting on the general distillation products of brown coal, especially with reference to fuel for internal-combustion engines, and also for chemicals. I take it that the Board of Science and Industry would supervise work of that kind. In regard to gaseous fuel, I think that on the West Coast they might gassify a great deal. The State coal-mine might deliver gas to industries in the neighbourhood, and instead of sending coal send partly carbonized coal. The lignite coals could be treated in that way with advantage. I think the Government ought to experiment for the purpose of ascertaining whether lignite coals can be so treated. I think we shall be dependent on lignite coals before many years have passed. I suggest that the Government might well assist various chairs in our colleges. It ought to give £500 a year to each chair of chemistry. I think that each chair of chemistry is worth £500 a year, simply and solely for a research assistant who shall be there to take up various technical problems and who shall be quite under the University authorities. The £500 would be earmarked specially as the salary of the assistant in that department. Probably he would find it to his advantage to give £100 of the amount to a young fellow to assist him. I make that recommendation apart from any money found by the Board it is proposed to set up. The money should come through the Board or direct from the Government. It will probably be part of the £20,000.

C. Coleridge Farr, Professor of Physics, Canterbury College, examined. (No. 58.)

There is not very much that I can add to what has been said by my colleagues. I do not disagree with them in any respect. Their evidence covers a very wide range. With some of the subjects I am familiar, and I do not express any opinion upon those parts of subjects with which I am unfamiliar, but where I am familiar with them I totally agree with my colleagues. Dr. Chilton advocated the claims of pure science; I would also like to advocate that very strongly from a physics point of view. One can point from time to time to tiny little, apparently unimportant, discoveries which have revolutionized the world. With regard to the existence of an Advisory Board that has been mentioned, I am strongly in favour of that. I am also rather strongly in favour of it being associated with the New Zealand Institute. I think the New Zealand Institute should have some representatives on the Board. I want the New Zealand Institute to become to New Zealand the same as the Royal Society is in England. With regard to what has been said regarding research in laboratories, I am of opinion that Dr. Evans is quite right that a research assistant should be appointed, or some money should be set aside for that purpose. Physics has not such a direct bearing upon commerce problems as chemistry has; but perhaps I might point to quite a little investigation which was carried out in my laboratory lately which may turn out important and play some part in connection with works in this country. The Lake Coleridge insulators were breaking down. The ordinary tests for porosity had failed. We subjected them to some extraordinary tests, and applied very heavy pressure to the square inch and squeezed a die into them, showing that they were porous; their porosity was the reason of their breaking down. We hope by tests to be able to reject the bad ones, but we have not got to that yet. I support my colleagues in what they have said.

W. Nicholls, Chairman of the Wool-scourers' Association of New Zealand, examined. (No. 59.)

There are thirteen hundred employees in New Zealand working in the wool-scouring and fellmongering business. There is about £200,000 a year spent in wages. We contend that there ought to be more wool scoured in New Zealand. If that were done it would cause a great many more men to be employed. A lot of our wool that ought to be scoured is shipped to foreign countries, such as France and America—shipped in the grease. We suggest that any amount of that wool ought to be scoured before leaving the country. I do not say that there ought to be a duty put on, because individually I do not agree with a duty being put on exports, but at the same time I suggest that wool that loses more than 35 per cent. should be scoured in New Zealand. I do not see how it is to be done unless it is made compulsory. Experts could tell beforehand how the wool should be dealt with by examining it, and it could be put on one side. Our firm employs ninety men all the year round. We pay in wages from £12,000 to £13,000 a year; we also pay in railway charges from £10,000 to £11,000 a year.

To the Chairman.] Wool does not deteriorate after being scoured. We dry our wool outside in the open air. We find that the sun bleaches the wool and also keeps the nature in the wool. I do not believe in machine drying; it takes the nature out of the wool. Since the Government commandeered the wool we have not attempted to save any of the by-products in the way of lanoline. I was just starting the business of saving the grease when the Government commandeered the wool. It is now wasted. It is a pity to waste it; its value was from £12 to £16 a ton. As soon as the commandeer is ended no doubt the utilization of the by-products will be started.

Thomas T. Robson, Member of Wool-scourers' Association, examined.

Mr. Nicholls has told the Committee about the amount of wages paid by the employers of the Dominion. Our firm employs from sixty to sixty-five men, and the amount of wages we paid

last year was £10,329. We expend large sums annually in railages and in materials. I may mention that a local firm made a scouring-machine for us two years ago, and that machine is doing good work to-day, and that firm has received further orders from us. We did not give them the design. We showed them what we wanted, and they designed and fixed it up. The same with the drying-machine. We dry part of the wool in the machine and part in the open. I agree with Mr. Nicholls that sun drying is the best process. There are times when you cannot dry the wool outside, and the machine then can be used. We reckon to keep our machine going all the year round. Prior to the war large quantities of wool were bought by Germans and Japanese. A lot of that wool ought to have been scoured here, and could have been scoured here. Scouring the wool here means providing work for our own men, and means benefiting the country. There is still a large quantity of wool that could be advantageously scoured here.

To Mr. Veitch.] The Government could prohibit the export of wool that was fit for scouring.

To the Chairman.] The advantage to the State would be that considerably more men would be employed. The work would be suitable for returned soldiers; we have returned soldiers working for us. All of our men who went to the war and who have come back have been given jobs.

To Mr. Hudson.] After wool is scoured it will not deteriorate, but if there is a lot of dirt in it it will deteriorate.

C. C. DAVIS, Managing Director, New Zealand Glue Company (Limited), examined.

Our industry is one that perhaps is very little known; we are engaged in the manufacture of gelatine. The industry was started probably thirty years ago. The manufacture of glue was started first. The manufacture of gelatine was started in 1913. At that time the imports of gelatine into New Zealand amounted approximately to 1,200 tons, of a value of from £12,000 to £15,000. There was then no gelatine manufactured in New Zealand. The imports came principally from Germany, Austria, France, and Great Britain. In 1918 we have changed the position in this way: that we are manufacturing the whole of the requirements for New Zealand, and in addition New Zealand is an exporting country to the extent of 74 tons, of a value of nearly £20,000. We send it to Australia and Canada. We have invested in this industry in New Zealand about £27,000. We have recently established works in Australia, where we have invested over £80,000. What we are asking for is a better protective duty than what is at present in force. The present duty is only 1½d. per pound on gelatine and an equal amount on glue, plus $\frac{3}{10}$d. preferential. On the basis of value that amounts to only 15 per cent. on glue and between 5 per cent. and 6 per cent. on gelatine. The duty was in force before there was any gelatine made here, and I think the industry is of sufficient importance for the Government to give us a little more protection than we have at present. There is no doubt about it that the position we have reached has been brought about mainly by the war conditions. When we get back to keen competition again I am very doubtful whether we can stand up unless we get better protection. I suggest protection from 20 to 25 per cent. and the preferential duty. We employ between seventy and eighty hands, and this is the only industry of the kind in New Zealand.

To Mr. Sidey.] The tariff in Australia at present is the same. But the position is that the Australian Government appointed a Commission to go into the question of the duties on glue and gelatine, and their recommendation is for a very substantial increase. It was on the strength of that increase that we have invested this money in Australia. As the pioneer of this new industry we think we should get consideration to the extent of a refund of the duty on the necessary machinery. To start many of these new industries a man needs to have a pretty good heart, and generally he has a pretty good fight. Very often it is impossible to get the machinery in New Zealand; and in many cases where the machinery is not in use in New Zealand it is protected by patents, and is not procurable here.

To the Chairman.] Wherever we can get machinery in New Zealand we get it. We have had to expend many thousands of pounds in Australia, and we have got no refund there. The launching of the gelatine-manufacture was a very big hurdle, and if it had not been for the war conditions we might have been in a very bad position. We do not want protection with regard to the glue. With regard to the raw material for the gelatine, the difficulty lies in getting the local people to supply it. New Zealand keeps us going for about nine months out of the year; the rest of the time we have to depend upon imports. The total value of the products we make here is between £70,000 and £100,000 a year, and that is all a distinct gain to this country; it comes from waste product which prior to our using it was practically waste.

C. H. HEWLETT, Canterbury Seed Company, examined.

I wish to refer specially to the manufacture of pearl barley and split peas. The duties are different. I will deal with pearl barley first. The duty on the manufactured article coming into New Zealand is £1 per ton. The duty in Australia is £4 13s. 4d. a ton—2½d. per pound. At the present moment, owing to the cost of the raw material, I think there will be hardly any pearl barley manufactured this year. They can put it into New Zealand far quicker than we can manufacture it. In the past during two different years we were the only pearl-barley manufacturers that kept going. We managed to struggle through, but others had to close up. I see no prospect of manufacturing at all this year on account of the scarcity of the raw material. All grain crops are a very high price this year; a very small area of grain crops has been put in. It has been a very favourable season, but the acreage is small.

To the Chairman.] I have approached the Minister of Customs several times during the past eight years, but he has said that we must wait until there is a revision of the tariff. The duty on the manufactured article is a quarter of what it is on the raw material. I think New Zealand should increase the tariff to the level of Australia; and I think in fairness they ought to reduce

theirs to our level, so that when we have a surplus we could export to them, but that we have never been able to do. Split peas is in the same category; the duty is £2 a ton. The Australians have captured a certain part of our trade, but we can never capture theirs. It is difficult to state the total investment in machinery in New Zealand; we use it in making many other things. I should say, from £4,000 to £6,000, but that is only an estimate; it is nearly all labour-employing machinery.

D. REDPATH, Dominion Porcelain and Tile Industries (Limited), examined.

This company was floated some two years ago with the object of exploiting the Kakahu clay deposits and the manufacture of roofing-tiles, insulators, white ware, and Bristol ware. The first tiles were put on the market about twelve months ago, and the experiments in connection with this branch of the industry cost us a great deal of money. The tiles are a very high quality indeed, and the porosity compares favourably with any other tile in the world. It is quite possible for New Zealand to supply the whole of its own roofing-material. The company had attained the position of a large output in August of last year, but, unfortunately, the works were burnt down, and we have had to start all over again. We have now laid ourselves out for an output of thirty thousand tiles a week, and we are at the producing-stage again now, when the output should steadily go up. Roofing-tiles come into this country free. The machinery we have had to import to manufacture our tiles stands a duty of 20 per cent. In Australia they have become practically self-supporting, and there are tile-factories in New South Wales, Victoria, and South Australia. The duty on tiles being imported into Australia is 30 per cent. I contend that there should be a duty on imported tiles into this country, providing the Government can satisfy themselves that the country can produce tiles. The duty on iron is £2 per ton, thus the poor man's roof is being taxed, whilst the rich man's roof is let in free. Under the old French bounty system sailing-freights were obtainable from France to this country at a very low rate, and millions of tiles were dumped into this country at a very low rate. We commenced the manufacture of insulators some eighteen months ago, and they have been on the market ever since. Practically all the Government bodies have used the insulators, and they have stood tests which go to prove that they are, if not superior, at least the equal of any imported goods. It costs this company a great deal of money experimenting to get the necessary mixtures to obtain the standard goods we are now turning out. Electrical engineers in all parts of New Zealand are practically unanimously agreed that the class of goods cannot very well be beaten, and that the insulators are up to all their requirements. You will clearly understand that when I say this it refers to the low-tension insulators, as we have not yet had the time to experiment on the high voltage. This will have our attention later on. In regard to the experimenting both for tiles and insulators, this is a very costly business, as, although you can get chemists' analyses that will give you the basis to go upon, it is the actual experimenting in turning out the goods from the kiln that costs the money, and is absolutely necessary in this class of work. The Kakahu clay deposits which we own contain some fourteen different varieties of clay, all of which are valuable for different classes of clayware. We have had to confine our attention so far to the roofing-tiles and insulators, the manufacture of grate-backs and suchlike ware, as we have not had the trained staff to enable us to go ahead in the other branches. Our staff comprises thirty-three men at the present time. When we are going in full swing the works would employ some fifty-five hands all told. This, of course, would be increased as the output goes up. This business is practically a new one for the Dominion, and we are practically the first company that has been successful in turning out roofing-tiles of high grade and insulators of such quality. [Samples of the company's tiles and insulators exhibited to the Committee.] In any industry such as this, where the experimenting costs so much money we consider the Government should subsidize the experiment. The details in connection with the proper supervision of experiments could be gone into thoroughly, and I take it this Committee would not have to go into these details. We find there is a great difference of opinion amongst electrical engineers in their choice of insulators for certain work, and we think that the Government now that it has taken over the water-power schemes for electricity should standardize and set out what insulators are required, so that greater efficiency could be obtained in production. For instance, there are probably six different sorts of insulators being used at the present time for only one branch of the electrical work. One would do, thus assuring economy in production. Each insulator requires a different die and a different mode of burning. This, of course, adds to the cost of production of each article. We understand that the Government's experts are fully alive to the necessity of standardizing insulators. The greatest trouble in the variety is more particularly private firms, who require some special shape. This new clay industry can be made a very valuable one to the country, but it will require the utmost assistance from the Government on the lines that we have mentioned. I might state that the higher officials of the Government Departments—that is, the Post and Telegraph Department and the Public Works Department—have endeavoured to help us in every way possible by their advice and the placing of orders with us. The main points I wish to emphasize to you are tariff protection and subsidizing the experiments.

To the Chairman.] In regard to the duty to be put on tiles, I would suggest nothing less than the Australian duty, which is 30 per cent. *ad valorem*. The price of our tiles per square fixed on roof in Christchurch is £4 4s. If we had fifty thousand a week we could not supply all orders now. Our output will not be more than thirty thousand tiles per week; that would be our maximum output, and we have got to develop up to that.

To Mr. Hudson.] The demand is greater than we can supply.

To the Chairman.] The insulators have already got a duty, and I think we can compete with the foreign article.

To Mr. Hornsby.] At Kakahu experts tell me we can make anything, from a roof-tile to vase-ware. It is a wonderful deposit.

TUESDAY, 18TH FEBRUARY, 1919.

L. E. GUNNER, Post Office Official, examined.

I have come before you to make a suggestion that may be of practical value to those engaged in the sawmilling industry—namely, the utilization of sawdust waste. Some time ago Professor Maclaurin, of Wellington, had samples submitted to him from the Auckland gumfields of pieces of trees which had been lying in bogs for many years. From this material he extracted a percentage of product of good value. In the second place, the residue may be used as a fertilizer. The fluid is extracted, and the material that is left may be utilized. In the third place, the material might be used for making compressed bricks, or in the manufacture of tars, or to mix with sand. It is a material that does not deteriorate.

Rev. ANDREW CAMERON, Chancellor of Otago University, examined.

I wish to bring before you the claims of the University colleges in relation to the work of scientific research. I speak chiefly for the University of Otago, but much of what I say applies also to the other colleges.

I. In the scheme presented to you by the Efficiency Board for the encouragement of scientific research it is provided that the Research Board should seek the help of the colleges in the work of research. So far as it goes that is good, but it is not sufficient. Under this proposal the several colleges would probably receive temporary grants-in-aid to enable them to prosecute some particular research, but in all other respects they would remain poverty-stricken and understaffed. Not so are we likely to secure the best results from scientific research. To-day we have in our University colleges men fully qualified to undertake researches which if successful would multiply the wealth of the Dominion, but though they are eager to face these problems and to help in their solution they find their hands so full of the teaching-work of their departments that they can scarcely hope to enter on the work of research. To remedy this, each of the colleges should receive from the Government such an increase in its income as would enable it to provide its professors with well-paid assistants who could help them with their class-work, and also in the prosecution of important researches. This point is emphasized in the report of the Privy Council for Science and Industry Research for the year 1917–18. Sir Joseph Thomson's Committee pointed out that although "one cannot hope to get great discoveries simply by paying for them, *yet* the most hopeful way of promoting them is to ensure that the laboratories are as efficient as possible, and that the professors and other teachers who work in them have enough free time for original research." Here, then, we have high authority for saying that the most hopeful way of securing successful research is to properly staff our University colleges, so that the teachers may not continue to be overburdened with routine work, but may have free time for original research. Again, the Committee of the Privy Council says, "Unless access for all well-qualified students to our universities and technical institutions is made easier than it is at present, and unless they are generously supplied with the large funds which are necessary for their work, our efforts are foredoomed to failure." Thus it seems to me that temporary grants to the University colleges from the Research Board with a view to special researches is not enough. In the interest of industrial research and in the interest of higher education as a whole the University colleges should receive from the Government such an increase of income as would enable them to provide well-paid assistants for those of the professors who are prepared to undertake such research as is likely to be of value to the whole community. Another reason why we should do all that is possible to free the hands of our professors for research work is the recognized shortage in the Dominion of persons capable of research. If capable investigators are few, then surely the right thing to do is to press into the service of research, as far as possible, the teachers in our colleges, who are best qualified for this important and hopeful work. This reform can be secured not by annual doles from the Research Board, but by the permanent increase of the income of the colleges. In support of this view let me quote the resolution passed by the New Zealand Institute at its annual meeting in January, 1917, as follows: "That as a definite step towards the endowment of research adequate provision be made for the appointment of fully qualified assistants to the Professors of Science in the four colleges." The better staffing of our University colleges would not only set free the professors for part of their time for the work of research, it would also result in the training of a larger number of expert investigators. The professors engaged in research would gather round them eager and capable students, who would become in turn ardent researchers. At present there is little or no encouragement for a student to undertake research. A scholarship of £100 per annum is offered him for two years. This enables him to take his higher degree, then leaves him to seek a school, or to turn his back on science for something more profitable. The multiplication of well-paid assistantships in our colleges would do much to encourage our best students of science to become expert workers in class-room and in laboratory, and so help us to secure an ever-increasing band of expert investigators.

II. In the past there has been much talk about research, which talk has led nowhere. We have been talking at large. On behalf of the University of Otago let me say that we are prepared to undertake specific researches at once, provided the Government comes to our help with such an increased annual grant as will enable us to provide the necessary assistance for teachers and additional laboratory equipment.

(1.) In the Medical School: The health of the worker is of supreme importance not only for his own comfort, but also for his industrial efficiency, and so questions of health may well come under the consideration of this Committee.

(*a.*) During the recent epidemic, while the staff and students of the Medical School rendered invaluable help to the whole community, some of the staff devoted their whole time to the investiga-

tion of the nature and cause of the disease. The result of this preliminary research has been published, but the further investigation of the problem can scarcely be undertaken unless the Council is provided with the money needed for the payment of more trained assistants.

(*b.*) Another problem has been exercising the mind of Dr. Drennan, Professor of Pathology. He has noted the large proportion of different forms of goitre in this Dominion, and is anxious, with the help of other members of the teaching staff, to investigate the problem of the cause and cure of this disease, which is wasting the strength of so many among us. The professor has been asked to prepare an estimate of the annual cost for additional assistance and for laboratory requirements which would enable him and his assistant with a reasonable hope of success to investigate the problem of the cause and cure of goitre.

(*c.*) The food value of New Zealand fishes: This is an important question in relation to an all-too-much-neglected but promising industry. At Home the food value of fishes has been carefully ascertained, but nothing has been done here to find out the food value of our New Zealand fishes. The problem has for a long time been exercising the thoughts of Dr. Malcolm, Professor of Physiology in the Otago Medical School, but so far little or nothing has been possible because of his large classes and lack of assistance. Here again we are prepared at once to undertake definite research on this question of the food value of New Zealand fishes if the Government will help us with an increased grant. These are but a few of the problems which the Medical School is prepared to face at once if their hands are strengthened as required.

(2.) The Mining School: The development of the mining industry is one of supreme importance to the Dominion, and here the Otago School of Mines may render valuable help. In the past we have trained men as mining experts who have obtained important positions in many parts of the world. We are proud of the men who have graduated from our School of Mines. But I feel sure we can do more than train mining experts. We can carry on research work which may prove of incalculable value in the development of our mining industry if only the opportunity is given to the staff of the Mining School to prosecute research.

(3.) Science Professors: From conversation with some of our Science Professors I know that they are ready to undertake the task of trying to solve some of the problems which immediately affect a number of the industries of the Dominion. By all means let us have the Board of Research recommended by the Efficiency Board, but let us not forget that the most hopeful way of securing successful research is by first of all properly equipping the University colleges.

To Mr. Sidey.] The Government might make a grant of £500 per annum for the assistant of the Professor of Chemistry, as recommended by Professor Evans. The assistance, however, should extend not only to science but to the medical and mining branches. I want more adequate equipment by the payment of trained assistants. I am in favour of the establishment of the Board, though I think it is probably too slavish an imitation of other countries where the circumstances are not the same. If you are to have proper development in any country you ought to consider the circumstances of the country and proceed accordingly.

To Mr. Craigie.] Each college should be supplied with a grant to increase the staff, to begin with. That would be better than having a Board of Research in Wellington. Each college should go to the industries in their own district and say, "What are the problems?" or make suggestions to the manufacturers that they are prepared to face certain problems.

To Mr. Veitch.] In the colleges at present we have probably the men best qualified for research work in our professors and senior assistants, but these men have their hands so full that they can only do their class-work. If the Government would increase the assistance the University Councils would set the professors free part of their time to do scientific investigation. Take advantage of the investigators you have and give them the assistance necessary in the way of trained assistants.

To the Chairman.] The proposals as to the Board are the proposals of the New Zealand Institute, and approved by the Efficiency Board. Our Professors of Physics and Chemistry have been in direct conference with the Chamber of Commerce in Dunedin as to ways in which they might help. I hope the Committee will not think I am opposed to the Board. I want first of all to see the colleges strengthened, and then, if the Government have the money, let us have the Board. The University Councils could co-operate in any investigation that was being made in the way of research. Provided a sufficient grant is made to the universities there would be no objection to the Board of Science.

ALBERT OCKENDEN, representing the British Permanent Paint Company, examined.

We are making the purest oxide known to science, not only in red but in brown. Iron-oxide paints will last three or four times longer than lead paints. The Government should support us by purchasing, because they are the largest users of this class of paint for their railway rolling-stock, bridges, and stations. This morning, after two years of "barracking," we got an order from the Addington shops for 10 gallons. If we received large orders from the Government we could improve the product and turn it out cheaper. There are only four of us in the concern, and we all work with our hands to turn the thing out profitably. So far it has not been profitable. If the Government use our paint it will be a recommendation to others to use it. We have good testimonials from the Christchurch City Council. The paint is the discovery of a New-Zealander, Mr. Sidney Frye. The manufacture is only made possible by the cheap current from Lake Coleridge. At present there is a small duty on oxide paints, and a heavier duty would help us. If we get support from the Government, however, we can go ahead without the duty. Later on we may start to crush our own linseed. Plenty of linseed of a good class is grown in New Zealand. At present most of it is grown in India, and some in Ireland.

To the Chairman.] Over two years ago we sent samples to Addington, and the users expressed satisfaction with them. The Railway Department has never refused to test our paints.

To Mr. Craigie.] We collect old tins and reduce them to oxide. There are only four hands employed, but with proper support we could double the number. We could not run the place if we had to pay a big price for current.

To the Chairman.] Our chief request is that the Government should support our output. The Government should give us their whole-hearted support. Two years ago the Government had samples. That has given them plenty of time to make a test of the paint.

M. P. MURRAY, representing the Textile Bag and Sack Company (Limited), examined.

Our head office is in Christchurch. We also have factories in Dunedin and Auckland, and are opening a factory in Wellington next month. The goods we are selling are being made in India, and many of them could be made in New Zealand. They are made in Australia, and used to be made here. The duty, however, was removed on the last revision of the tariff. At present all hessian and jute goods are admitted free; all other bags are dutiable. We are doing the business, however: we buy them made in India. A little protection is wanted—say, 10 or 15 per cent.—to allow all the bags, hessian and jute, to be made in New Zealand. We do not ask for corn-sacks or wool-sacks to be taxed. We could not compete with India; besides, they are too heavy for girls here to handle.

To the Chairman.] We want 10 or 15 per cent. on cement-bags, lime-bags, manure-bags, potato-bags, and onion-bags. That about covers the lot. If the bags now imported were made up in New Zealand it would mean an expenditure of £10,000 in wages. Besides the hands it would employ it would mean work to others, such as the printing on the bags.

To Mr. Craigie.] We make flour-bags, and there is protection on them at present. If a duty of 10 or 15 per cent. were allowed we would open two or three other factories, and other people would no doubt come into the business.

To the Chairman.] The duty might mean a slight increase in the price, but it is a problematical question. There would be competition, and in the long-run the companies would not pay more for their bags.

To Mr. Forbes.] The 10 or 15 per cent. would be warranted to pay for the labour. It might add that much to the cost of the article.

To Mr. Craigie.] We have thirty-five or forty hands in Christchurch, thirty or thirty-five in Dunedin, and fifteen or twenty in Auckland. If we got protection we would double the number. We have no difficulty in getting labour. We have twenty-five girls and ten or twelve men in Christchurch.

To Mr. Sidey.] The State ought to have power to regulate the prices. We also make beef-wraps, which are free but ought to be protected. The company is a New Zealand one. The principal shareholders are Australians who are interested in factories there.

A. JOYCE, Manager of the Canterbury Petroleum Prospecting Company (Limited), examined.

We are putting down a well at Chertsey. The company has a nominal capital of £30,000. The well is now down 1,870 ft., and we have good indications of both oil and gas. We are now in a position geographically similar to the position of practically the whole of the other oilfields of the world—that is, we are on a plane parallel with the mountain-range. I consider that our prospects of obtaining oil in payable quantity are extremely good. The company has already spent about £12,000, and we have applied to the Government for a subsidy. Our prospects are sufficiently good to justify our going on as far as we can, and also sufficiently good, considering what the company as a private company has expended on what will be a national benefit, for the Government to give us some support.

To Mr. Poland.] Mr. Morgan, Director of Geological Survey, has been there, and I think he has reported. The Hon. Mr. MacDonald, Minister of Mines, said he had had a favourable report from Mr. Morgan. The ground is saturated with oil, and there is gas in the pumpings that we bring up. We asked for a Government subsidy of £1,000, and our request was declined. Afterwards we had an interview with Mr. MacDonald, who was favourable. We have not had any further reply, but Mr. Morgan was at the works at the beginning of last week.

To Mr. Forbes.] At present we are down to a layer of clay. We can put the pipes down to 2,000 ft. or 2,500 ft. Even if we get broken strata we can do down to 2,000 ft. With a subsidy of £1,000 from the Government I could depend on getting down to 2,500 ft. I am more than hopeful: I am sanguine. If we are successful it will mean that other wells will be put down on the plains between Temuka and Rangiora. If we could have put down ten or twelve wells the plains would have had a good test.

S. M. MOLE, representing the Christchurch Mechanical Works, examined.

I want to bring before the Committee the main point in regard to which we specialize in our industry. We specialize in spraying-machines. Spraying is a necessity in New Zealand. In 1914 we took up the manufacture of hand and bucket spray-pumps, and we manufactured for that year 116 pumps. In 1905 we were approached by the local hardware merchants to manufacture the American-pattern pump. We turned out our pump "C.M.W. No. 6," and it has earned a name from Auckland to the Bluff. In 1914 we launched this pump against the American and English imported article, and in 1915 we turned out 455, and in the next year our output increased very considerably. Then the Government refused to help us to get tubes from abroad, and we gave up making No. 6; so we sold off our stocks, which were 327, and we decided to close down until after the war, and then get capital into the industry and specialize in No. 6 pump. Orders are on the way for plant and material from Home. I estimate that under special conditions, when we start, we shall have an output of about six thousand pumps. We have had

inquiries from Australia for agencies, but we can only supply them with surplus stocks. My difficulties are that we have to pay interest on capital. With a plant and plenty of materials our output will increase from two thousand to about six thousand. The demand in New Zealand is limited, and unless we are going to have pumps left on the shelf we want protection to keep out the imported article for a little while until we build up the industry. There is no duty on pumps at present.

To Mr. Craigie.] At present we employ from nine to twelve hands. We use electric power, and it is a great advantage.

To Mr. Sidey.] In regard to duty, we ask that we should be put on a footing with Tasmania—say, 25 per cent.

To Mr. Poland.] Large numbers of pumps are imported from England and America.

To the Chairman.] The pumps are retailed at 14s. 9d.

To Mr. Hudson.] The pumps are bucket pumps. We have not reached the stage of large pumps for commercial orchards; but if we get protection we shall do so.

RICHARD EVANS, Kaiapoi, examined.

I am a farmer. Mr. Jones, president of the Farmers' Union, has asked me to appear in his place to-day in connection with wheat-growing. I am a miller as well; but I am a farmer really—that is my occupation. We consider, as farmers, we ought to be treated the same as the Australians treat us—that the same tariff ought to be put on all cereals as the Australians put against us. We do not want to be selfish wheat-growers; we consider, in reference to butter, cheese, and bacon, that the same tariff ought to be put against the Australian goods as they put against us. There is a great misunderstanding, I think, between the public and the wheat-grower. We have had three exceedingly bad years. We have entirely to depend upon the weather. But we must admit that this year those who have kept on—most of them as a matter of patriotism—they are going to get a good crop, and the crops will pay this year. I can assure you that the three years that have gone by have been most disastrous. I am not speaking on behalf of the large farmer, but the small farmer. The small farmer cannot carry sheep, and in our opinion he ought to be protected. There is a great misunderstanding of the public about the profit that is to be got out of wheat at the big price the Government has promised us this year—6s. 6d.—but I hope the Committee in making their report will remember that it has taken us fully double to produce the wheat since the war started to what it used to do before. A cast-iron shear which formerly cost 1s. 3d. now costs as much as 5s. 3d. The labour on the farm now costs twice as much as before the war. The men you used to pay £1 10s. and food, you have now to pay for a reasonably good man from £2 15s. to £3 5s. Twine, which was 3¾d. per pound, is now 11d. To show you how Australia is interfering with us: they are landing this class of wheat in Auckland at 6s. a bushel. [Sample shown to Committee.] I am not sure whether there is any duty charged on that. There was a line of 3,000 sacks—it is supposed to be fowl-wheat. You can buy flour from that quality of wheat to-day in Sydney and Melbourne at £3 per ton less than the price we are charging in New Zealand. The Government supplies wheat to the miller there at 4s. 9d. a bushel, and they have risen up to 5s. They make the miller take a large quantity of wheat to reduce the price of their flour: we have to compete with that. Our soldiers are coming back from the war, and there is a lot of land in Canterbury that is suitable for this sort of industry and work. If we are to protect these men I think it is only reasonable that Parliament should impose the same duty upon the Australian products that come to this country as we have to pay for sending ours over there. I am not speaking my own views only, but the views of the Farmers' Union of North Canterbury.

To the Chairman.] We want the same protection as they have in Australia. We are getting a higher price from the Government than the Australian growers are getting; but there is no comparison between growing wheat in Australia and growing it here. In New Zealand the Government is promising 6s. 6d. f.o.b. We wanted more. The reason we wanted more was this: the Committee led us to believe that a tariff was going to be put on equal to that the Australians put against us. Wheat would be sold cheaper if there was more encouragement given to grow it.

To Mr. Veitch.] I speak on behalf of North Canterbury wheat-growing farmers, and especially for men farming 100 and 200 acres of land. The big man is able to get on all right when he runs a lot of sheep. I think there has been very little difference in land-values in the North Canterbury district since the war began. New Zealand does not export much wheat to Australia, but we have exported a lot to Great Britain and other places. Our wheat is not hard enough to send to Australia. I think to increase the duty on Australian flour would increase the price of flour here to the consumer by £1 10s. per ton.

To Mr. Forbes.] The Australians generally do not take our wheat because it is not good enough; but they would have gladly taken it in 1915 if the Government had allowed us to export it; but generally speaking they will not take our wheat unless they want it very badly.

To Mr. Luke.] In regard to milling-cost during recent years, coal and wages have increased and interest on money. I should think that the increased milling-charges are reflected upon the price of flour to the consumer to the extent of 10s. a ton.

To Mr. Sidey.] We want to protect the small man who has to make a living by working his own farm. As to the small man who eats the flour—as to protecting him, he is paying better than we are: he has doubled his wages. If the market were thrown open it would cost a million and a half to import the stuff into this country. You must have a rotation of crops. My own personal views are that it is necessary to grow wheat if we are to keep the population in this country.

To Mr. Hornsby.] As to our being up against the proposition of increasing the price of the food of the people, why should not the men who work the land be protected?

To the Chairman.] The tariff on outside wheat is only a small one: it is 5½d. a bushed. The Australian tariff is 2s. a cental: that is about 1s. a bushel. We only want to be put on the same level.

To Mr. Veitch.] As to the suggestion that there may be undue profits between the farmer and the consumer, it goes in labour—entirely in labour. Labour has its rights, but it goes in labour. I am referring to the cost of distribution.

J. B. Laurenson, representing the Industrial Exhibition Executive, examined.

On behalf of the proposed industrial exhibition, I would like to say that we expected to be in a position to be able to present details—figures and plans—to the Committee. We are not in a position to do that now. We hope before the Committee has finished its sittings to meet you in some other place; in the meantime I would like to say, on behalf of the Industrial Association, that we hope, if the Committee think the industrial exhibition would benefit the industries of New Zealand, it will give the matter favourable consideration.

The Chairman.] Do you propose to hold an exhibition in Christchurch?—Yes. The date has not been fixed yet. We thought first of all that it would be held at the end of the present year; but thinking over the matter more in detail we think it will take longer. We would like the Committee to give an expression of opinion whether it would be beneficial to the industries of the Dominion to hold such an exhibition.

The Chairman: We will give the matter our careful consideration.

J. L. Ower, Cycle Woven Wire, Fence, and Gate Company, examined.

I particularly wish to give evidence in connection with wire netting, staples, and that sort of material. Some years ago barbed wire was made in New Zealand; then the duty was taken off, and the industry closed up, simply because barbed wire was dumped in here cheaper than we could get it made for. Three thousand tons of barbed wire are imported every year, and a large quantity of staples. There is no reason why it should not be made here. We could make it here even without the duty if it were not for the dumping. America dumps wire here. Some years ago there was no duty in Australia. To-day eleven firms are making the wire. The duty in Australia is 5s. the hundredweight. Staples come under the same heading as wire here. Staples mostly come from America.

To Mr. Forbes.] I suggest a similar duty here to that in Australia—namely, 5s. It would not cost the farmer any more. We get our wire mostly from America and Canada; it comes in free at present. The raw material for the manufacture should also come in free. I would charge the same price as the farmer was paying prior to the war.

To Mr. Craigie.] We employ thirty-two hands, and if the 3,000 tons referred to were manufactured in this country we would employ about ten additional hands. In addition there is the indirect benefit to be considered. Our works are in Christchurch, and electricity is an important factor in our production; it is very much cheaper.

To the Chairman.] The machines for manufacturing the barbed wire come in duty-free; the machines used in connection with wire netting also come in free. With regard to wire netting, we have been manufacturing that here for ten years, and we got on very well for a considerable time. It is duty-free from England, and 10 per cent. from America. Australia would be the same as from England. We make a netting to compete with the ordinary sheep-netting. We did very well for a while. Suddenly a ship arrived with very much the same material. We heard that a shipment was coming, and I advised the Customs of it. The Minister in charge classified it as manufactured metals—30-per-cent. duty. A week or so afterwards there was a change of Government, and the new Minister classified it as wire netting. That article has been coming in here ever since, and it has reduced our trade very considerably. The same steamer brought this electric-welded stuff. They also brought it to Australia, where it was classified as manufactured metals, and there has never been any shipment to Australia since. That was invoiced at nearly double the discount that I could buy it here. In consequence of my request the Customs made a regulation providing that the invoice should be the same as for domestic use. That did a certain amount of good, but it does not go far enough. We want more than that to check the declarations. If they made a small charge of 2s. 6d. a hundred, that would pay expenses and bring in a considerable amount of revenue to the Government. In Australia the duty is 33⅓ per cent.; and we ask for the same duty here. In regard to wire netting, we could supply the whole demand of New Zealand. It would cost a considerable sum of money, but there is plenty of money to put into manufactures. I am referring to sheep-netting, especially the welded netting that is now coming in. Rabbit-proof fences could also be made here. All we ask is a fair profit, and the Government can examine our books if they want to. People buy the welded stuff because it is cheaper. The electric-welded stuff is also largely used for reinforcing concrete; for that purpose it is classified as manufactured metals. In regard to railage: at pre-war rates it cost 15s. 11d. to rail a ton of oats from here to Dunedin, whereas it costs £1 19s. to rail a ton of netting. In Australia they have a permanent Commission to deal with the tariff. I think a similar body should be set up here. That Commission interprets the tariff and makes representations to the Government from time to time.

I. Woolf, Managing Director, Bunting and Co., examined.

I wish to speak about the hair curling and drafting industries. Considerable quantities of curled hair were imported to this Dominion before 1914, and no doubt so soon as matters

adjust themselves the importation will again be very large. The imports of curled hair from Australia for 1916–17 were 19,122 lb. During the same period there was also imported prepared hair for brush-manufacturing, termed "brush drafts," to the extent of 22,558 lb., or a total of 41,680 lb. A fair average price for that quantity would be 2s. 3d. per pound, which would equal £4,600. During the same period New Zealand exported to Australia 60,701 lb. of raw hair, of a value of £2,197. On that transaction there was a loss to the Dominion of about £2,300, and there were still 19,000 lb. of raw hair left in Australia for further profit. This process is also going on with Britain during normal times. Australia has a tariff of 30 per cent. on imports of curled hair and brushmakers' drafts. In this Dominion both these articles are duty-free. We suggest that a tariff similar to that of Australia be placed on the two items in New Zealand, but we recommend that white hair be duty-free, on account of the very small quantity in the Dominion being insufficient for the brush trade. We estimate that about fifty adults would be required to work up all the New Zealand hair into the finished article, instead of the raw material being exported to England and Australia and then returned in the finished state. Considerable quantities of curled hair, which is used chiefly in the manufacture of furniture and bedding, are imported from Australia and Britain. In Australia the tariff has led to the industry being firmly established. One factory in Melbourne employed thirty-eight hands. That New-Zealand-manufactured curled hair is as good as what could be imported is evidenced by the fact that the New Zealand Railway Department is using the locally made article, which is apparently giving satisfaction. It has used a considerable amount in the last three years. It uses it for cushions for seats. A weakness in our tariff is the fact that no encouragement is offered to the establishment of new industries in the present rapidly changing times. There is no legislative machinery, as in Australia, permitting a duty being placed on any article to enable a new industry being established between the periodical revisions of the tariff.

With regard to the brushware industry, we suggest that all woodenware for the trade be dutiable. Our own experience—and we are the largest users in the Dominion—is that New Zealand timbers can be used for all purposes of brush-manufacture. In our own factory we have five lathes at work. We ask that a duty be placed upon bristles that have already been manipulated in other countries. As the tariff stands at present there is nothing to prevent any manufacturer from having bristles-knots, ready for the brush, made by cheap labour, and all that has to be done is to simply put them together, thus displacing a considerable amount of New Zealand highly paid labour. We consider that the time has arrived when the industry in New Zealand should be placed on the same footing as recommended in Australia—namely, 40 per cent. tariff against foreign countries and 30 per cent. tariff on British goods. The Japanese are now starting the paint-brush industry, and under our present tariff any foreign country can make brushes up to a certain stage and send them here free. Some of these countries have cheap labour, while we employ a man preparing bristles who gets £6 per week. Faced with the unequal competition with Japan, we do not see how the brush industry is going to hold its own in New Zealand unless the wages and hours in Japan are raised to the same level as in New Zealand, or a prohibitive tariff is imposed. The only other alternative is to give up the manufacture of certain lines and import those goods from Japan, acting as merchants instead of manufacturers. We manufacture artists' brushware, but are considerably hampered by the fact that such brushes are free of duty. We ask for a duty of 40 per cent. and 30 per cent.

To the Chairman.] Unprepared bristles are now free, and we ask for a duty of 25 per cent. The duty on ordinary paint-brushes is 25 per cent., and that is sufficient, unless the goods come from Japan. The duty on the foreign brush is 37½ per cent., but even that does not keep the Japanese goods out. The duty against Japan should be 50 per cent. We have ninety hands in our factory.

E. E. STARK, City Electrical Engineer, Christchurch, examined.

I represent the City Council, which is the principal purveyor of the hydro-electric energy from Lake Coleridge. From that standpoint we are finding ourselves hampered in respect to the selling of electricity for purposes that will displace the use of petrol and of fuel. At present the whole of the electrical industry is dependent on the use of imported materials from England and the States that are charged a fairly high duty. The Government, in installing its plant at Lake Coleridge, had the advantage of any other purveyor of electricity by importing its materials for the plant free of duty. The City Council, in importing the machinery, motors, transformers, electric vehicles, or anything else, has to pay a fairly high duty. We could sell our electricity quicker and cheaper if we could have the duty removed from this very important enterprise. We want to be on the same footing as the Government—not only the Christchurch City Council, but all Municipal Boards, Power Boards, or the like. If the duty is removed we shall be able to sell current cheaper than at present.

J. A. FROSTICK, Boot-manufacturer, examined.

In 1915 and 1916 the Commonwealth Government had a Commission sitting. It presented about 360-odd reports; these were summarized in one volume, copy of which I have here. About two years ago a copy of each report was obtained. These were bound, and are now the property of the Canterbury Industrial Association. If after looking at the summary of these reports you desire to know the full text the association will, I feel sure, be pleased to lend you the volumes. I propose to give a few figures with regard to our industries. I know most about the shoe trade, and propose to show the progress of that industry during the last thirty years. I want to disabuse the minds of the members of the Committee, should they entertain the idea, that the industry is behind the times. The industry compares favourably with the same industry in other countries where

the conditions of life are much about the same as New Zealand. All the figures I shall give were presented by me to the Arbitration Court in 1916, and the Court specially adjourned for a day to allow a thorough investigation. They were fully investigated, and not one figure disturbed. In 1890 the industry employed 1,475 males, and produced goods to the wholesale value of £403,736. In 1916—the last figures available—the number of males employed was 1,455, or 20 less; but that number produced goods to the value of £801,572. In 1890 there were 468 females employed to provide work for 1,475 males, whereas in 1916, owing to the introduction of machinery, it took 802 women to find the work required by 1,455 males. On the question of remuneration, the average wage paid in 1890 to males was £72; in 1916 it was £132. In 1890 the wages paid to females was £38, and in 1916 it was £57. In 1890 the money invested in land, plant, and buildings was £81,627; in 1916 it was £295,024, or £130 per worker, as against about £68 per worker in Australia. Then, here is a fact I consider most important for this Committee to absorb: On the question of the value of the output to the material, wages, and profit, the relation of material to output in America is 62·27, in Australia 56·8, and in New Zealand 54·1. It does not necessarily follow that the Americans cut up more material per hour than we do, but there is a difference in the value, because the value of the article is determined as the price at which it can be landed in the country. The wages-value to the output in America is 20·9, in Australia 28·8, and in New Zealand 31·9. A little later I shall show you what effect this 31·9 has upon the industry from a tariff point of view. In America for the whole industry, employing 185,116 workers, the gross profit to output is 16·4, in Australia 14·3, and in New Zealand 13·9. Out of that 13·9 has to be met all new plant, buildings, and other things, as set out in the table I hand in, and the balance is net profit. It is unfortunate that neither in this country nor in Australia are there statistics which enable the outsider to know what percentage of net profit is gained out of the gross. In America there are such statistics, and the United States figures show that the expenses not included in material or wages equal 11·16 per cent. of output. If the overhead and other charges are no greater, or no less, in New Zealand than America, then the industry shows to the manufacturer a net profit of 2·3 on his output. And here is a significant fact: Taking this industry as a whole and cutting out all the free goods, of which there are a large number, there remained in 1914 these figures: Total foreign value of dutiable goods, £357,964; upon which a duty was paid of £105,062. The general public, by putting these two things together, come to the conclusion that the boot-manufacturer gets 29 per cent. protection; but he does not. The operative wages-value per cent. of wholesale selling-value of shoes made in England is 14 per cent. and in New Zealand 31 per cent. Now, if the £357,964 worth of goods had been made in New Zealand, the wages we would have paid, at our present schedule of 31 per cent., would have been £110,968; but as a matter of fact the wages actually paid, on the basis of 14 per cent., came to only £50,115 in England. Therefore the difference which would be collected is £60,853, or 17 per cent. That 17 per cent. has come off the 29 per cent., because that difference has not gone to the manufacturer, but to the workers in increased wages, owing to the different conditions as between the two countries. We have to import a certain amount of raw material upon which a duty has to be paid when the goods come in ready-made. The one duty covers everything, and this item is responsible for £9,600, or 2½ per cent. Therefore we have 19½ per cent. cut off in these two items alone. Another difference between the cost to the New Zealand manufacturer over that to the English manufacturer is that our travelling-expenses, clerical work, insurance, and other charges are much higher, the difference by a most conservative estimate being fully 6 per cent. That leaves an actual protection over the Old Land of 3½ per cent. to the New Zealand manufacturer. The disabilities against that 3½ per cent. are two: that we are 16,000 miles away from the market, and that we are manufacturing in a small country with a sparse population and cannot export our surplus, if there is any. I am willing that these figures should be submitted to any one as to their correctness. There is another point: that no man in this world can have any income unless something has been made or produced or sold, and as a country has only one real asset—its people—and can only pay its debts out of the industry of its people it is surely common-sense that as much of the population should be employed as may be possible. There is another point that the Committee should take into consideration, and that is the relative hours of work that are observed in various countries. I have given here an extract from the Australian report on this question so that you may trace it.

Mr. Sidey.] What duty would you say is required?—We have not made any request for further assistance. I do not in this case claim to express the views of the manufacturers as a whole, though for twenty-three years I was president of the Manufacturers' Association. First of all, I believe it is the duty of the people to set up for themselves whatever standard of life they desire, and having set up that standard they should protect themselves to that limit. All the protection needed is to give to these people that standard of living in wages, conditions of work and hours of labour, and all things that appertain to it. Beyond that I think no protection should be given. Before any protection is given it is the duty of those engaged in the industry to prove to the satisfaction of the governing authorities that they are using the very latest and best methods and the latest and best machinery, so that goods may be produced at a minimum cost. Having done that, every industry is justified in claiming protection. Now that you have put the question I will answer it more fully. The New Zealand tariff is 1s. 6d. per pair and 15 per cent. on men's boots. One of the recommendations you will see from the Inter-State Commission is that it should be 2s. 6d. and 30 per cent. *ad valorem* for men's boots for Australia. Now, the population of Australia in 1913 was 4,764,236, and they produced 83 per cent. of all the footwear they consumed. In New Zealand, with 1,196,573 people, we only produced 51 per cent. I propose to put in a report here showing, first, the value of the goods produced being the products of wool, hides, and skins produced in New Zealand; and I will try and show you not only what is done, but what is capable of being done from that raw material which is indigenous to the country——and, after all that should be the basis of the whole thing. It is not a bit of good attempting

to make articles in this country if we have to procure all the raw materials from another country. The goods that are produced from wool, hides, and skins are, roughly, tannery goods, fellmongery, and wool-scouring—that is, the portion of the articles scoured; leather—boots and shoes, saddles and harness, portmanteaux and bags; wool products—hosiery and ready-made clothing. For the census of 1911—the last census under pre-war conditions—the import value of these goods was £2,759,439; and the revenue derived from that was £456,343. That was the imported value of the articles that are made from raw material which this country has in abundance. There is a feeling that this country was intended to be a country for farmers only. If you ask the average man in the street what proportion our secondary and manufacturing industries bear to our primary productions he will tell you probably 5 or 10 per cent.; but I ask the Committee to note the figures taken from the last available statistics: the export value of all our primary productions, in round figures, amounted to 31 millions; and for our secondary and manufactured goods the figures are 43½ millions. Those are the figures for one year. There is another thing, a table, to which I will refer, which I think will astonish you. Giving the primary industries all their share of doctors, lawyers, domestic servants, transport, &c., and the same with reference to the manufacturing section, the latter is very much the larger portion. The landed value of goods of the class I have mentioned was £2,759,439, and we manufactured from the same class of raw material to the value of £3,918,872. The actual added value or gross profit was £305,129, upon which taxation was paid; 8,961 persons were actually employed as workers, representing 34,022 of the population. The question is, what portion of this class of imported goods could we or should we have manufactured? The first is the tannery, fellmongery, and wool-scouring. We could manufacture three-fourths of the balance. I have taken these figures out very carefully, and am perfectly certain that it is a very conservative basis; and the result is £157,301 in value. We could manufacture half the quantity of boots and shoes that we now import. We would not manufacture them all, because there are certain highly specialized articles that some women will pay very high prices for. There are also gum boots and other classes of footwear made from rubber and things other than rubber. That would be responsible for 700 persons. Instead of going into the details, I will leave the papers with the Committee for perusal. The balance of the imports makes a total representing £2,148,041, which would give a profit of £504,315, to provide for an extra population of 39,171; and the revenue would lose £99,067 by the transaction. I have now to show that the country is not going to lose that £99,067; and here again I submit figures, and suggest that the Committee should carefully examine same or get some one to check them. The actual result of a balance-sheet on these figures shows that after debiting the £99,067 of lost revenue there is a balance in favour of manufactures of £403,444. That is arrived at although in that particular year the activities of woollen-mills showed no profit at all; however, in 1896, woollen-mills made a profit of £118,270. That is, between war-time and pre-war time from a revenue point of view we have £403,444 in favour of manufacturing; and we find that after debiting the taxation, local and general, and the direct Customs taxation—which, of course, we have lost—the figures show a loss of revenue amounting to £100,872. Debiting the loss of revenue, there remains a credit of £302,572 in favour of local manufacture. What have we done? We have not only provided the additional profit of £302,572, but we have found a living for an additional 39,171 persons. You gentlemen who are interested in the primary productions please find out how much it would cost per annum to feed that number of people, for we must all admit that there is no market in the world so good as the home market. Here is rather a peculiar point, and worth your careful study. All the figures there quoted are based upon pre-war taxation—taking Government taxation at £4 16s. 11d. per head of the population and the local taxes averaging £1 14s.: that taxation amounted for those 34,022 persons to no less than £222,703. For the taxation per head I took the figures from the Government statistics for the pre-war taxation, and from the newspapers for the 1918 taxation, and it works out now at a little over double the pre-war. If the taxation had been on the present basis, instead of giving a credit balance of £302,572 it would have been £812,000; and if we take the debit to Revenue Account the debit would become a credit of £153,895. Therefore it shows that the higher the taxation the more profitable it is to study intensive manufacture in this country. Now I would like to make a remark in criticism of a statement that I read in the paper this morning with regard to the making of paper in this country. There is paper in this town, and plenty of it, suitable for news printing-paper, that was made from New Zealand timber. A large quantity of West Coast timber was treated sufficiently to make ten or a dozen rolls of news printing-paper. A person was sent Home just before the war, who was instructed never to lose hight of that timber until it was converted into paper; that duty was faithfully carried out. Experts say that there is nothing better in the way of news printing-paper than this paper. There are large areas of similar timber available in New Zealand for the purpose. With proper cutting and replanting the supply can be maintained indefinitely. It would, of course, be ridiculous to suggest that this country should try to make everything. Our first aim should be to make such goods as the raw material for which is indigenous to the country. I submit to the Committee a group of forty-eight different articles imported into the Dominion in 1913 of a gross value at port of shipment—freight and duty are not included—of £14,000,000. In the first group the major part of the raw material for the manufacture of the twenty-four articles, of a value of £6,600,000, is available in the Dominion: We have the necessary materials waiting at our hands to be developed. I do not propose to read all the articles; but No. 2 group shows six classes of goods the home value of which was three millions; and a considerable portion of the raw material we have here, and in some instances we actually export the raw material when we have got the facilities for making the articles ourselves. In No. 3 table there are seven groups of articles of which there is still less raw material here; and the fourth group is a group that we should never aim at, and we shall not be able to make them for many years. In a great many inquiries of this kind it is absolutely necessary to

find out what is the relation of the material used or handled to the wages paid when comparing a particular industry with the same industry in some other country, but one must be very careful lest he fall into an error in taking a general survey.

I do not propose to read these three groups of figures, but will make a few general remarks. These are given really largely from memory, but you may take them as correct; they will only be a decimal or two out at the most. In a recent speech that I read by Sir Charles Feilding he announced the startling fact that in a period of exactly twenty years before war was declared the product-value of land in England was £4 5s. per acre, which during the period increased by only 2s. 6d. per acre, making the total productive value £4 7s. 6d. per acre; whereas in Germany the productive value of agricultural land had increased by £2 19s. per acre, making £8 19s. for Germany as against £4 7s. 6d. for England. That is cause and effect. I want to say this: that the Efficiency Board had evidence from some of the best men in New Zealand, and this statement was never questioned: that if the lands of New Zealand were treated scientifically, as they are treated in some other countries, and improved machinery and methods were used, we could increase threefold our primary productions in New Zealand.

I now just want to make a point with regard to profiteering. As between 1910 and 1916 the value of primary production as a whole increased 75 per cent. whilst the secondary and manufacturing industries only increased 43 per cent. I am not going to try and find the profiteer, but those figures, I believe, are unassailable. That appears to disprove the suggestion that the secondary and manufacturing industries have profited during the war to an equal extent with the primary producers.

Now I want to say a few words with regard to the point that some people even entertain to-day—namely, that our ambition to produce goods for ourselves is unsound, and that we should turn all our attention to developing the primary industries. In a book published by Sir John Foster, Minister of Commerce in Canada, there is some very interesting information on this subject. He tells us that there was a time, and not so very long ago, when a very large proportion of the Canadian people thought that Canada would never be anything else but an agricultural and lumber country. Then the author goes on to say what has happened. About the year 1901 Canada thought she would look outside for a market for her manufactures, and she succeeded in sending out goods to the value of 16 million dollars. That has been increasing year by year until in 1915 she exported goods to the value of 85½ million dollars—a very nice advance, especially when we remember that in that amount there were no food or forest products—manufactured goods only. I think we may look to Canada for another example as to what the value of home industries are to any country, and this is what we find: that Canada had 19,000 industrial establishments, employing 514,000 persons, who received 58 millions sterling in wages; 160¼ millions of Canadian raw material was converted into marketable articles valued at 281 millions sterling. Over 17 millions sterling worth of manufactured goods were exported to other countries. These figures show to what an extent Canada is providing for herself.

Now I come to the last point, and that is to claim that it is the duty of the Legislature to see that the people are employed in proper proportion—the one section to another. I mean by that that we should not direct all our attention to something that may fail—that we should not put all our eggs in one basket—but have as great a variety of productions as possible.

I have drawn out three tables in which the entire population of New Zealand, Tasmania, New South Wales, Victoria, and Queensland is absorbed. In Table A we have every producer—that is, every one who is a direct producer, whether in agriculture, pastoral, mineral, and the small primary industries and manufactures. In New Zealand the total percentage of producers to the entire population is 26·2. The percentages in the other colonies are—Tasmania, 24·8; New South Wales, 24·9; Victoria, 25·2; Queensland, 28·0. Queensland has the pride of place. She has the largest percentage of producers, and the smallest percentage of dependants and non-specified. New Zealand has nothing to be ashamed of; we stand second. In agriculture New Zealand has employed 5·4 of her population, as against 5·48 in pastoral; Tasmania is 10·4 and 1·3; New South Wales is 4·8 and 4·2, and Victoria 6·5 and 2·3. In the small industries New Zealand is ½ per cent.; Tasmania, 1⅓ per cent.; New South Wales, ¾ per cent.; and Victoria not quite ¾ per cent. I refer the Committee to the other figures in that table.

To Mr. Luke.] There is not an industry in New Zealand at the present moment that is not feeling the dearth of labour.

To Mr. Sidey.] The wood-pulp I have referred to was sent to Switzerland. I will furnish the Committee with a copy of my report to the Efficiency Board on the subject of wood-pulp.

To Mr. Sidey.] In regard to immigration, the policy must first be determined—which industries you are going to develop—but care must be taken that you do not provide two persons for one job.

To Mr. Forbes.] So far as profit in the boot trade is concerned, it is amongst the lowest in the Dominion.

A. E. Orchard, New Zealand Asbestos Supply Company, examined.

In connection with the development of asbestos in this country I wish to bring before your notice the following points: The material is only up to the present found in inaccessible parts of the country, and therefore the question of roads and a means of arranging all transport of same should receive consideration. Our present claim is about sixteen miles from the main road along a bush track, and the material has to be brought out on pack-animals. We took out close on 40 tons last season, and found the expense of treating same to make it marketable more than our company can stand at its present organization. We have, however, disposed of about 30 tons, which leaves a loss of about 25 per cent. of the material actually mined. This should be dealt

with right at the mine, and to do this it would be necessary to arrange for tracks sufficiently good to enable us to get heavy machinery right out on the claim, so that it would be bringing out only the very best, and this could be done with great economy on a reasonably good cart-track if same were provided. The materials we have supplied are: Asbestos-meal for boiler-lagging, supplied to New Zealand Government and the freezing-works; French chalk, supplied to the rubber and leather trades; and the asbestos fibre, as a binder for asbestos-meal. The good fibre is the portion of this product that requires development, and it would need machinery to separate same from the rock in which it is found. I suggest that this industry should be assisted in the nature of the formation of a reasonably good road, or through means of transport, and the Government could subsidize industries of this kind, as it also opens up the line, and the road would be used for many other purposes besides that of carrying asbestos.

To Mr. Hudson.] The location of the claim at the present time is in the Mount Arthur district, close to Takaka Valley. We have to pack the stuff out on pack-animals. What we want is a good road to enable us to use motor-lorries—a cart-track.

To Mr. Hornsby.] I might say that we have practically unlimited supplies of what I call "matrix," or this lagging stuff. There is a pretty big supply—running into thousands of tons—of pure fibre.

To Mr. Sidey.] Mr. Morgan, Government Geologist, has not reported upon this deposit.

To Mr. Poland.] Nor has any geologist reported on it to my knowledge. We have not developed the pure fibre yet, but there is no question there are thousands of tons of it. I understand that the cost of widening the road would be about £4,000.

To Mr. Hudson.] The distance to port is about thirty-five miles. I am absolutely certain the stuff is there.

To Mr. Poland.] We have only approached the County Council to maintain the road: we have not approached the Government.

To Mr. Craigie.] If we had a decent road we could compete with the imported article.

To Mr. Luke.] The selling-price of meal asbestos is about £25 per ton.

To the Chairman.] The expense of packing it to ship runs into about £17 10s. per ton—that is, mining it, too. I will supply the Committee with the figures of freight to port.

To Mr. Luke.] The land is leased from the Government. The Government has not mentioned anything about a royalty.

To the Chairman.] We have plenty of asbestos up to 2 in. in length. I have seen it 3 in. One-eighth of an inch is all right for meal. We have plenty up to 2 in., and it is considered of very good quality. The crude stuff lies on a bank about 40 ft. high and 5 chains long. There is a tunnel that goes through 100 ft., and it goes through the deposit right through the whole length—that is, the crude stuff. As to the other claim, a practical engineer is of opinion that there are fully 10,000 tons of pure fibre in that claim, and we have not worked it yet.

To Mr. Hudson.] An engineer we have residing there permanently furnished that report; he works the mine as well.

To the Chairman.] We have expended fully £1,000 ourselves in development, &c.

To Mr. Sidey.] The capital of the company is £4,500.

To the Chairman.] There is a big market in Australia for the stuff. I do not think there is any tariff duty against it in Australia. We have communications from Australia that they can arrange for big orders if we are ready to supply the material.

Mr. Hudson.] The County Council is anxious to assist in respect to the road?—We want some fairly heavy machinery to deal with the pure fibre, to get the lagging from it. I consider that it would take fully £2,000 or £3,000 to put the machinery there.

To Mr. Craigie.] We are considering the supply of material now for the making of slates.

H. P. Bridge, Secretary of the Parapara Iron-ore Company (Limited), examined.

The company has for some years past been endeavouring to establish the working of its ores in New Zealand by the establishment of works at Parapara, or at such place as might be determined by expert advice. There has been a great deal of negotiation here and in England. Recently we wrote to the Broken Hill Proprietary Company in Melbourne with a view of obtaining the general manager of that company to visit New Zealand, and Parapara particularly, and report on the question of establishing works at Parapara, and also advise financially as to the best kinds of works to establish and the most suitable site. The secretary of the company replied that they could not spare Mr. Delprat, who is a very important man in Australia in the industry, which has only recently been established, and we have since asked them to spare a suitable officer. In the secretary's reply he favoured us with the report of the Commission which sat in Queensland as to the advisability of establishing works in Queensland, and I propose to read portion of the evidence given by Mr. Delprat.

[Witness read from the report, and in reply to the Chairman said he would furnish the Committee with copies of the report.]

Joseph Smythe, Director of the Parapara Iron-ore Company (Limited), examined.

I wish to point out to the Committee these notes made by the secretary to the Commission in Queensland on the visit of the Commission to the iron-ore deposit at Iron Knob, South Australia, showing an estimate of the plant required, with salaries of the staff, number of men employed, and so on. The report also shows the cost of coal, the cost of pig iron, and other information. There was a total cost of £80,000 for the production of 18,900 tons of pig iron, equivalent to £4 4s. 7¾d. per ton. The company started work in 1915. The cost of iron-ore and limestone, not at the works but at the mine, is 7s. 8d. per ton; cost of coal at the mine, 12s. 6d.; and

cost of transport, 7s. 8d. The point is this: they have to pay a large price for their iron-ore and limestone, and they pay less for their coal than we would have to pay in New Zealand: it costs them 12s. 6d. per ton. It has been said we would have to import coke. We would not have to do so. We would bring in coal to the works at Parapara, and with converter coke-ovens we would get all the by-products, which would reduce the cost considerably. With regard to the Otamatara coal at Parapara, I lay before the Committee a report by Mr. Harley E. Hooper. It shows about ½ per cent. of sulphur. He also gives an analysis of the limestone at Parapara. The only disadvantage we are at is the coal. Supposing the coal costs 20s. per ton delivered, it would be a profitable proposition, because the by-products would more than pay for the treatment of the coal into coke, besides getting all the spent heat.

To the Chairman.] The company has a lease of the Parapara Iron-mine. We obtained the lease from the Cadman Estate. Mr. Cadman had contracted to commence the work of iron-smelting at Parapara. The company took over Mr. Cadman's liability. Up to the present we have spent about £60,000.

Mr. Forbes.] In what way?—We have washed the overburden from different outcrops; we have railway formation, wharf, and, not knowing how to profitably spend our money, we built roads and metalled them for the benefit of ourselves and the county. We also put a bridge across the Parapara, and we have water-power. On top of that we have put in two long tunnels, about 1,000 ft. each, at 150 ft. and 250 ft. below the top face. When Dr. Bell gave his report he said to us, "I will allow you 40 ft. below the outcrops, but not between one outcrop and another." He would allow nothing for in between. We wanted to prove that the outcrops were joined up together, and sluiced off the overburden. In some places we went down 30 ft. or 35 ft. to prove that they were continuous. In two different places we put in tunnels, and they proved the ore to be solid within 30 ft. of water-level.

The Chairman.] At any rate, you have a lease and you enjoy protection?—Yes.

Protection for how long?—For six months after peace.

And then you are supposed to commence work?—Yes.

And what if you do not start?—We are going to start. Of course, we want to get something from the Government.

There is a bonus provided for?—That is no good to any one. We will commence the work by hook or by crook, but we want the Government to help us.

What are you looking to the Government for?—We approached the Minister first of all and asked him to take up the matter of a first-class expert. Mr. Blow objects to experts, and says we have had too many; but I do not know that we have ever had a real engineering expert on the ground, or a metallurgist, who would tell us how to lay off the works or what they would cost.

In what way do you want the Government to assist you to get on with the business?—They could assist us in several ways. One way is a bonus, but I do not think we have a right to ask for it. The price of pig iron is so good and all iron commodities are so high it would be futile. I suggest that the Government should help in this way: If we can raise so-much money they could help us in the shape of debentures.

Would you issue the debentures to the Government?

Mr. Bridge: I may say that I personally addressed a letter to the Prime Minister before his departure to England, and that letter contains our proposals with regard to what Mr. Smythe is now explaining to the Chairman. I will put a copy of the letter in as evidence.

The Chairman: Cannot you state the proposals to the Committee now?

Mr. Bridge: I could not state them offhand, and in this matter we must be particular about the facts. I may say that we might want some assistance to get a capable officer from Australia to report on the works.

The Chairman: Is that in the letter?

Mr. Bridge: No; that is a subsequent matter.

The Chairman: In addition to what is in the letter you want the Government to assist you by obtaining an expert?

Mr. Bridge: Yes; and we would like him to come from the Broken Hill Company. He might be an expert recommended by Mr. Delprat.

The Chairman: Are your proposals practical proposals for the commencement of the work?

Mr. Bridge: Yes, they are.

Mr. Luke (to witness).] In your opinion, would it be a good thing for the Dominion and everybody concerned to send a shipload of 1,000 tons to the Old Country and get a proper test of the ore there?—You could not do it by sending 1,000 tons. What you could do is to send 100 tons to your foundry in Wellington.

You could not make a substantial test in that way. It would burn out the furnace?—We would put up a furnace 30 ft. high.

Mr. Sidey.] Is the witness aware that in the evidence in Wellington it was stated that there was less than 50 per cent. of iron-ore?—It is a high-grade brown hæmatite.

Do you think that the expert from the ironworks in Australia would be a satisfactory man to report on Parapara? Is it not a rival work?—It is. Of course, they are big people.

The Chairman.] The report might not be altogether unbiassed?—They have just found a first-class man for the Queensland Government.

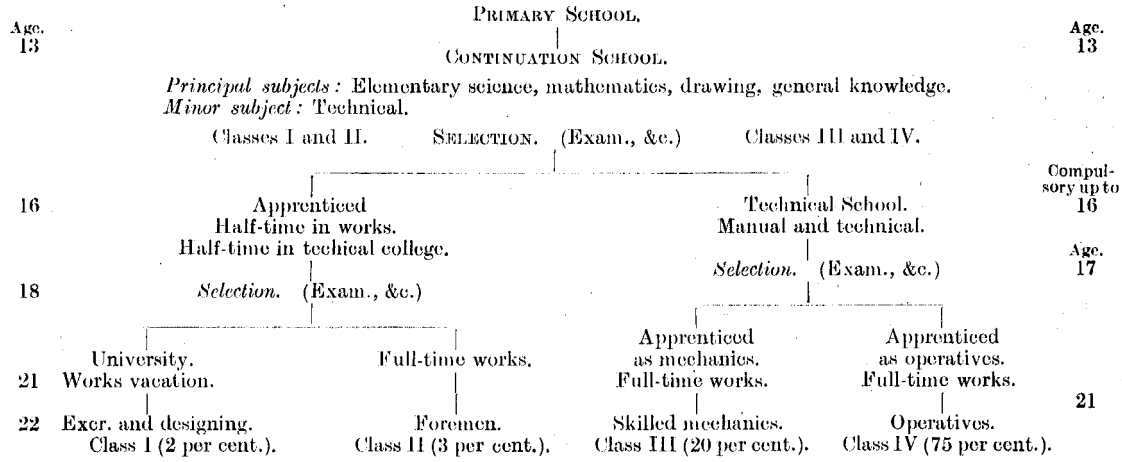
The Chairman: We will resume the hearing of this matter on the 3rd March.

R. J. Scott, Professor of Engineering, Canterbury College, examined.

For many years those in charge of the laboratories at the School of Engineering here have carried out a large amount of experimental work, chiefly at the request of manufacturers and

the Government Departments. [The nature of a number of the experiments was detailed.] Although doing excellent work at present, the utility of the laboratories could be extended in this way: We have at present an enormous amount of information, but have neither the leisure nor the funds to classify it and publish it. The teaching duties occupy so much of our time that without further assistance we have not the leisure to carry out original investigations, or even to make use of the information we have put away in pigeonholes. Then, I have some ideas on the training of those who are to be employed in the industries of the country. Let me say in the first place that I do not claim originality for the scheme. It must be realized, with regard to the training of those to be engaged in industries, that a large proportion of the number must be employed as operatives, and I have held that our system of education is wrong. It is based on an erroneous idea of what a democratic country should do. We give a similar education to every person whether he is intended to be an operative or a captain of industry. The only possible way of successfully training the people to be engaged in our industries is to classify them at an early age. I think that the system may be purely democratic, because all will have an equal chance. Those boys who at an early age show a leaning towards the theoretical, mathematical, or scientific side of the work should be selected and trained to occupy the higher positions. Those who show great physical capacity and comparatively sluggish brains and are clever at manipulation should be trained as operatives. It should be remembered that 70 per cent. of the people have to be operatives in any industry or you cannot carry on. [Witness detailed his scheme for the education of workers in manufacturing districts, of which the following is an outline.]

Scheme for Education of Workers in Manufacturing Industries.



Summary of Training after 13 Years of Age.

	Class I.	Class II.	Class III.	Class IV.
	Years.	Years.	Years.	Years.
Continuation school	3	3	3	3
Technical school	.	..	1	1
Technical college	1	1	..	..
University	3	..	..	..
Total educational	7	4	4	4
Works	2	4	4	4
Total term	9	8	8	8
Period of apprenticeship	5 + 1	5	4	4

[Witness continued:] If a system such as this were adopted we should have every one engaged in the manufacturing industry trained for that portion of the work for which he is best fitted, and we would not be giving technical education and higher education to those who are not fitted for it. I think that, to carry out the scheme in its entirety, it would have to be made more or less compulsory.

To Mr. Sidey.] In reply to the question as to what I want to enable me to be in a position to give the scheme to the public, I may say that as my department is constituted at present we have on our lecture list sixty-six classes, and the total staff of the School of Engineering comprises myself, three lecturers, and three demonstrators, which is practically only sufficient to deal with the tutorial work. If we are to publish the scheme a special assistant will be required to devote his time to it, and I must be relieved from some tutorial work. Such an assistant should receive a salary of £500 a year.

To Mr. Luke.] It would be necessary to make allowance for a number of young men turning into other trades. I have assumed a percentage to give a general idea of what I think the percentage might be. I am not familiar with the scheme put forward at Home by Mr. Fisher. With regard to manganese-steel manufacturing in New Zealand, a short time ago I tested some castings which came from the Bluff, and I was surprised at the advance that has been made in the manufacture. I believe that tin has been found at Stewart Island.

LESLIE W. A. MACARTHUR, Metallurgist and Electrician, Christchurch, examined.

The company I represent is the Dominion Marine Electro-Solar Salt Works Company. I produce a sample of the sea-salt which was obtained from two pints of salt water. This salt could be utilized in dairies, by butchers, and for agriculture. Unless the company has a lease of an area of land [plan produced] it cannot put its prospectus before the public. The Borough Council is willing to give a lease, but the Attorney-General will not give a permit.

The Chairman: We will communicate with Wellington on the matter and ascertain the position.

DUNEDIN.

THURSDAY, 20TH FEBRUARY, 1919.

SAMUEL NICOLSON, Engine-driver, Mataura, examined.

I wish to bring under the notice of the Committee my invention in the shape of a flax-dressing machine. I have been actively engaged on the machine for eight or ten years, but for want of technical knowledge I could not get ahead very well. The Government graders came to see my crude machine, and though it was opposed to their ideas they were much impressed with it, and said I was on the right lines if I could get a proper machine built. The Government, although offering a bonus, can do nothing for any one requiring assistance until a complete machine is built. I have brought samples of what we can turn out. [Samples produced]. We can do away with all loose-end fibre, and the gum that comes away from the leaf is like an oil, which could be made of commercial value. The Government bonus has now lapsed. The machine does not break the fibre. I have not sold any quantity of it to enable me to tell the commercial value of it. I can obtain the flax in the full length of the leaf—tip and butt. I have had no reports from experts yet—we are not so far on. The gum from the outside of the leaf comes away like a black oil. There is very little tow, as the fibre is not broken by the machine. The machine does away with the beating-bar. I would like the Government bonus to be reinstated. It was advertised in America to be £12,000. I have protected myself.

With regard to the papermaking, I produce some samples of paper made from such things as broom, thistle, ragweed, and Canadian thistle, boiled with caustic soda. The brown paper I here produce is so made. We had 5 cwt. made at the mill. The cost is very little. It would make beautiful writing-paper if treated with a chemical process. There are tens of thousands of tons of gorse and the like burnt every year. The machine is fitted up like a chaff-cutter behind a traction-engine. We use the foliage, sticks, and everything as it is cut. The local paper-mills are practically obsolete, and it will take a large amount of money to bring their plant up to date. Everything that is required in connection with the machine could be made in the Dominion. Out of a ton of gorse or broom you will get 60 per cent. of material for paper. If the Government were to offer a bonus it would help me in the work. I am only a working-man, and for the last four years everything I have earned has been put into the machine. As far as my inquiries go, there is no other place in the world where they make paper from scrub. The machine can treat big timber as well as small material. The traction and the mill can go to any place where there is a supply of gorse. At present 8,000 tons of paper come into the country every year.

The Hon. G. M. THOMSON, M.L.C., examined.

I appear in a dual capacity—as chairman of the Fish-hatchery Board, and as president of the Otago Institute. The fish problem is one that has never received the national consideration it deserves, and it is one that the Government and Parliament should do everything to encourage. First, I refer to the question from the cost-of-living point of view. With perhaps the exception of Japan, there is no country equal to New Zealand in its riches from a fishery point of view. We have about 50,000 square miles of fishing-ground, where there are enormous quantities of edible fish, and we hardly touch them at all. Yet fish ought to be one of the commonest articles of food in the country. The reason for this scarcity is the difficulty of distribution, and if we can make the distribution a success we shall largely solve the problem. I consider that in this matter the Railway Department has failed to realize one branch of its powers. The railways ought to be employed for the benefit of the community and for the fostering of public interests, and their co-operation will have to be ensured if we wish to ensure proper distribution. [Witness described a scheme at present before the Dunedin City Council to secure a supply of fish for the public.] The fishermen as a class are very poor men. Assistance has been given to them by middlemen, but the Government have never helped them. The boats all over the country are too small for fishing on any extensive scale. There is perhaps not one trawler in New Zealand—not even in the Napier district—which could be called an up-to-date trawler. Next, there is the aspect of the possibility of an enormous export trade in fish and the dealing with the by-products.

If you take the cost here of delivered clean fish at 1¾d. and the cost of transport to the Home market at 1¾d., you can land it in London at 3½d. per pound, which leaves a big margin of profit. Even filleted you could send it Home at 4d. per pound. Then, there is almost nothing done at present in regard to the by-products, especially the manure. The Dominion pays a large amount of money for phosphatic manures—about £400,000 a year—but a good deal of phosphatic and nitrogenous manure can be got from fish. On an average, it takes seven tons of fish-scrap to make a ton of manure. People must remember, however, that the question of carriage is an important matter. The next point is this: As the men in the industry have no capital, I recommend that the Government should advance to fishermen something on the lines of advances to settlers, and make them substantial advances on their boats and gear. A man who gets such an advance should be required to join the R.N.R., and the interest on the money could be taken in the form of drill, for which you would get a certain amount of payment. I make this suggestion because the fishermen at Home have played a marvellous part in connection with the Navy. In that way we would be building up a Naval Reserve for the days when we shall have a Navy of our own. Private enterprise having failed to develop the fishing industry, I want the Government to take the matter up and partly nationalize it. The Government might enter into it on proper lines and work it up gradually. I warn the Committee against the State buying trawlers. In New South Wales there has been a loss on the Government trawlers. You will get plenty of fish from private enterprise if the fisherman knows that all his catch will be bought.

In regard to research, I am going to ask the Research Committee for £200 to get a research student appointed at the hatchery, especially in connection with the food of fishes. Research students are not to be picked up every day. They require special training, and there are very few available. The most suitable, of course, are the professors, and you can only get their services by giving them assistance to relieve them of some of their tutorial work.

To the Chairman.] I believe the report of Professor Prince has not come to hand. I do not think you will ever get it. The gist of the whole thing is contained in his preliminary report, and anything he would add would be practically in the nature of padding. I am satisfied there is no need for a municipality or the Government to buy a trawler. You can get the fish if the fishermen can get them sold. I do not think the Government trawlers would catch the fish as well as the private trawlers.

To Mr. Veitch.] The boats at present in use cannot go outside to any distance, though they are all right for the local market. A larger type of fishing-vessel is necessary. Some of the trawlers at Home run to 150 tons. Here the biggest boat is 50 or 70 tons, I think. A large number of boats suitable for our purpose must be available at the present time.

To Mr. Luke.] I believe that Professor Prince's report condemns the State trawlers. The successful fishing in the United Kingdom is done on the share system—those in the industry are interested in the boats. There is a difficulty in getting State employees to go to sea under rough conditions, when other people might be more venturesome. I am not suggesting, however, that the State should catch the fish. It might happen, of course, that the fish would land at Home when the market was congested, and our fish would be at a disadvantage as to the price obtained. I have seen the market glutted at Home, but it is like any other commercial risk, and you would take your chance of that. I think the solution of the fishing industry is largely by making advances to groups of men for the purpose of engaging in fishing. The cause of our not getting a good supply of fish is that the men will not go far from the coast with the boats they have. The men would go out oftener and bring in more fish if they knew they could sell them. At present, when they get them, they limit their catch. The union will not allow them to bring in any more than thirty-six groper. The object is to keep the price up.

To Mr. Forbes.] I think that Professor Prince's report is a valuable one and a good guide. It contains a great deal of information that he got from the Marine Department, from myself, and others. It is a good basis for the Government to go on.

To Mr. Craigie.] As to the suggestion that the Government should bring out a model trawler and have a thorough survey made of the whole coast of New Zealand for fishing-beds, I do not think that is absolutely necessary just now. It would be very desirable, but I do not think it is of the first importance to-day.

To Mr. Hudson.] I think that a great many of the boats are worked on the share system now, but the boats here are not so big as those in the Old Country.

To the Chairman.] Government control of the oyster-beds seems to have been successful; but I have only the information on that subject which the members of the Committee have.

A. Morris, Dubbin-manufacturer, examined.

My object in appearing before the Committee is to try and get additional protection against the importation of dubbin and leather-preservatives. The effect of the existing protection is minimized by the exporting firms abroad shipping the goods in bulk. I think the protection at present is 20 per cent. I may state that the Government has taken considerable quantities of the article which we produce, and I have a letter from the Government showing that the article has given every satisfaction. I started this business seventeen years ago. We are at present employing three men in the business.

Professor Malcolm, Otago University, examined.

I have been asked to appear before the Committee by the Chancellor of the Otago University, who, having to leave here to attend a meeting of the Senate of the New Zealand University at Christchurch, was not sure that he would himself be able to attend the sitting of the Committee

to give evidence. I have been asked to speak on the question of the relation of the University to scientific research work. I would like to say that I am not acting as a delegate. The professors are on vacation, and no doubt if they had been here they would have appointed a delegate to give evidence. I know that several University professors are willing to do research work, but they are hampered in their efforts for want of time. We have a great deal of elementary teaching to do which absorbs nearly all our time and does not leave spare time for research work. Some of our laboratories are not sufficiently large to devote to research work. At present a fair amount of research work is done, but more could be done if further accommodation were provided. There is also the question of apparatus. Some of the University colleges are unable to supply some of the very expensive apparatus that might be needed for research work. I believe that the New Zealand Institute would be of value in this respect next year, because it has been promised a sum of £2,000 to provide apparatus and to encourage generally. That might be enough in the meantime. There is one thing I would like to bring before the Committee, and that is I think the research work can be viewed from two standpoints. There is the point of view of pure science, which attracts the professor always because it is of very much value in his own teaching. There is another kind of research work which is purely routine. One takes up, say, the analysis of food and foodstuffs: that has no direct attraction or value to the professor. I can speak from my own experience. It is of no value to his students to have repeated the processes which he knows perfectly well. But it is of value that he should do pure science, and it is necessary to have a man trained in pure science. I do not think any good research work can be done unless you have the expert in pure science available as well as the man who will undertake the commoner drudgery of the work. In regard to scholarships for research work, it has frequently been pointed out that these scholarships are not of sufficient value to attract students. I am referring to the Government Research Scholarships.

Mr. Sidey: Will you suggest in what way you think alterations should be made?

Professor Malcolm: I think there should be an increase in the amounts given. We have a half-time assistant. If we had a whole-time assistant it would be very much easier to do more of that work.

Mr. Sidey.] How much a year do you think would be sufficient for that purpose?—In my case I think perhaps it would be a little more than in others, because I would need a qualified medical man. Young graduates are not coming into this work unless there is something substantial. I made the suggestion a little time ago that there should be a full-time assistant. I think probably £500 a year might be sufficient: that would be a minimum for a graduate.

It is suggested that there should be a Board of Science and Industries, which should be provided with a Government grant of £20,000 a year. They no doubt will make use of your laboratories and professors for research work. Do you think that proposal should take precedence—that it is important? At the present time you ask the Government to do both?—I think there ought to be some central organization to prevent overlapping.

To Mr. Luke.] I think that where a professor wishes to do research work he ought to have some encouragement and have sufficient funds. When money is available assistance could be provided to relieve a professor of a certain amount of the drudgery and set him free to do the research and higher work he wishes to do.

To Mr. Craigie.] I do not suggest that the research should be done in one place. Research work is of enormous value in teaching, and could be done in the University colleges and at the Cawthron Institute at Nelson. Take my own case: I am interested in diet, as a physiologist, and therefore in frozen foods. I have done analyses in fish, but I do not care to continue it, because it is too much of the drudgery kind of work; but I could direct a young man to carry on and complete the analysis of fish. As a matter of fact, I intend to apply to the Institute for sufficient money to enable me to get a man to do that. In addition, if I had an assistant doing some of my ordinary work, I could get on further with the work that I am doing. All that requires more money and more help, and I think the advantage to the Dominion would be very great. I do not much care what method is adopted as long as the end is attained. It is no doubt of very great importance to New Zealand.

J. H. Hinton, Managing Director, Hintons Limited, examined.

I desire to speak in reference to the importation of pineapple-pulp from Queensland. As you are aware, New Zealand is not a producer of pineapples. I do not think the growing of pineapples has even been experimented upon in New Zealand. The tariff admits pineapples as fresh fruit free of duty. There is such a demand for pineapples that they are out of reach of manufacturers, owing to the demand of the fruit for dessert purposes. We are offered from Queensland large quantities of pineapple-pulp. Pineapples that are too ripe for exporting as they come from the gardens in Queensland are treated—peeled and preserved. They are not treated with any deleterious substance, but they are simply peeled and put in 40 lb. tins. These pineapples are practically net weight. They are practically ready for use in the shape of preserving; but we found on trying to import some of these pineapples for our preserving-works that we were saddled with the duty under fruit-pulp—a duty of 1½d. per pound. That makes them too expensive for use in our works and to be able to sell the jam at a price within the reach of ordinary folks. It seems to us that pineapple-pulp should come into New Zealand free, in the same way as fresh fruit. Pineapples have a valuable medicinal value, second only in the fruit world to that of lemons. It is recognized that pineapples are valuable as a dietetic food. Strawberry-pulp is another line which is handicapped by a 1½d. per pound duty. The growing of strawberries in New Zealand has never reached a stage at which strawberries can be regarded as a commercial jam fruit. Since the war started we have not been able to put out

strawberry-jam, owing to the high price it fetches in the local market for dessert purposes. In Auckland they are somewhat more favourably situated, but I think that as an article of diet strawberry-jam has never been produced in New Zealand in sufficient quantities to cope with the demand. Up till the outbreak of the war we used to import considerable quantities of strawberry-pulp from France—grown on the slopes of the Alps behind Marseilles; it came in 10 lb. tins ready for use. This is also saddled with the 1½d. per pound duty. Since the war there has been none of this French fruit imported. During the last season there has been quite a quantity of jam imported from Australia, simply because we have not been able to meet the demand. There is 2d. per pound duty.

To Mr. Hudson.] I have never heard of pineapples being grown in the north of Auckland. I am not familiar with the northern conditions. I do not see any reason why they should not be grown there. We have never been able to get any benefit from Auckland and Nelson strawberries in this district. Jam-manufacturers in Auckland and Nelson never have strawberry-jam to supply their customers and ours. I think the amount is small that a Dunedin firm pulps at Nelson. The price of strawberries here is never less than 10d., and it goes up to 2s. 6d. They are no use for the making of jam unless they can be got at 5d. per pound. We have a standing offer to pay 5d. per pound.

To Mr. Craigie.] My idea was to use pineapple-pulp in conjunction with melons. At the present time we use lemons with melons, and it makes a very popular preserve. I think that melon-and-pineapple jam would be a very valuable addition to our assortments. I think pineapple-pulp could be landed here from Brisbane at 3d. per pound and the duty, 1½d.

To Mr. Sidey.] We would use the pineapple to put up with our assortment; it would be a valuable addition. We would not be able to sell it at a less price than we are charging. If the duty were taken off strawberry-pulp it would enable us to make it up cheaper and keep out the imported article. I cannot say anything about the production of pineapples at the Cook Islands.

A. S. MALCOLM, M.P., examined.

I have taken advantage of the presence of the Committee here to bring before your attention a matter of the highest importance to New Zealand, and a matter of considerable urgency. During last session of Parliament a Distillation Act Amendment Bill was passed, authorizing the Government to issue licenses for the distillation of industrial spirits.

The Chairman: We have had the matter under consideration many times since we started our investigation.

Mr. Malcolm: I shall content myself by saying that the possibilities before the distillation of industrial and motor spirits are simply limitless. Twelve years ago they were able to produce the spirits at a low price—5d. per gallon—in Cuba. In view of the increased facilities I have no doubt that the price under normal circumstances would come down to 3d. or 4d. a gallon, and possibly even less. In a country like New Zealand, with a scattered population, the advantage of having a spirit that could be sent to any house is, as I say, limitless. It enters certainly into the question of motor facilities, and into nearly all the arts and manufactures, and even for lighting. Denaturalized spirit is likely in the future to come into competition with hydro-electric light. What I suggest to the Committee is this: before waiting to bring in a final report, to immediately correspond with the Attorney-General or Minister of Internal Affairs suggesting that no license be issued until the Committee report. The trouble is this, of course: Here is a product with immense developments before it. If the distillation or manufacture of spirits comes into the hands of a few people the result will be to put a monopoly value on it, and instead of the spirit being retailed at from 2d. to 6d. they will be able to put it up to any price they like. My own idea is that the Government should keep the manufacture of these spirits entirely in their own hands. There is this further objection: Doubtless the present breweries would be used for the manufacture of these spirits under license. If prohibition is carried on the 10th April it is proposed to give the trade generally compensation to the amount of four millions and a half. I take it that the public would very greatly resent the handing-over to the brewers a license of probably greater value than the license to brew which they possess at present, just after getting from the public four millions and a half. I think the public would regard such a transaction, to speak plainly, as a dirty transaction, and would greatly resent it.

The Chairman: Have you perused any of the reports by Government officials in connection with the manufacture of alcohol?

Mr. Malcolm: No; I have depended for my information very largely upon Professor Duncan's book, "The Chemistry of Commerce." For instance, sawdust could be used in the manufacture, and any vegetable refuse, and potatoes. Professor Duncan points out the extraordinary ease of distilling spirits. They can set up a distillery almost anywhere at all if they have only got the material.

The Chairman: Professor Easterfield in his evidence before the Commission said, "Various schemes have been put forward on the manufacture of industrial alcohol from waste products. Dr. Maclaurin has reported on the subject. I believe he is right in offering no hope, as far as he has reported."

Mr. Malcolm: I have the highest respect for Dr. Maclaurin's attainments, but as regards trade facilities and manufacturing processes university men are not the best guides you can get. Professor Duncan admits that in America they have been absolutely asleep. It was the Germans who showed them what might be done, and they took it up purely as a business matter; they manufactured their motor-spirits out of potatoes; they were able to manufacture it for twelve years at 9d. a gallon. In the United States they use Indian meal, and in Germany they were using potatoes. The point is very difficult, of allowing distillation to come into the hands

of private individuals. The temptation on the part of manufacturers to place the spirits on the market as a beverage would be almost irresistible, and that is one very strong reason why the Government should keep it under their control.

The Chairman: What would you manufacture it from mostly?

Mr. Malcolm: In New Zealand last year an enormous quantity of potatoes were destroyed or went bad. That is a fairly common occurrence in New Zealand, and there could be no better raw material for the manufacture of spirits than damaged corn or damaged grain of any sort. In the South occasionally we have a surplus of turnips; they would be very valuable. Professor Duncan lays it down that sawdust could be used to advantage. I was surprised to read that.

The Chairman: As a matter of fact, I made representations to the Government in my private capacity as a member, but I have not had any satisfactory answer in regard to the matter.

Mr. Malcolm: I myself made representations to the Government, but I was anxious to have these representations supported by such an influential Committee as this. To my mind this is a matter of enormous importance to the country. This may mean millions a year if the Government can prevent a monopoly being attached to the manufacture of these spirits.

Mr. Craigie: Will it get over the difficulty if the Government buy the whole output of New Zealand and keep it in their own hands?

Mr. Malcolm: The great advantage is to provide these spirits to the people at the lowest possible price. Why should they pay a middleman's profit? If private people do the distillation they would be tempted to put the article on the market as a beverage. Once private individuals get control the temptation to make gain means the passing of regulations, which are broken. Under Government control the spirits would be denaturalized and be made unfit for consumption as a beverage.

Mr. Forbes: In the event of State control being carried, and in the event of there being State distilleries, could they combine the manufacture of commercial spirits and other spirits?

Mr. Malcolm: If they wished, the Government could. They might have to use better material: that could be done.

CHARLES A. WILSON, of the Wilson Malt-extract Company (Limited), examined.

Some years ago I started the business. The English article was coming in, and had practically all the market. When the war commenced the English product stopped, and I got the benefit, and in the last few years business has been pretty successful. But while we are all right just now as far as malt-extract is concerned, when freights go back and grain at Home recedes to normal I will be in the same position as I was before the war. At the present rate of 20 per cent. it is hardly enough against the huge plants they have at Home. There is a 10-per-cent. preference duty, but really no foreign extract comes into the local market. That applies to extract for eating purposes in jars. The freight from Home on the jars is practically the same empty or full. The jars cannot be made in New Zealand; they are glass. We have increased our price on pre-war rates from 6d. to 7d. per pound, which shows that we are not exploiting the public. In malt-flour preparations there is a line that comes into New Zealand from Australia, called "bakerine." This article comes in at 1s. per 100 lb., and is sold at 7d. or 7½d. per pound to the bakers. If I want to get malt from Australia I have to pay 2s. per bushel (40 lb.). If I import barley I have to pay 1s. per bushel, which is double the rate of the malt-flour preparation, which makes the raw material ever so much more costly to import than the manufactured article. It is a line we manufacture readily, and we have a good business in it, and we reckon we ought to get the whole lot of it. We want more protection on that line to have the trade instead of Australia having it. We have fifteen or sixteen married men working for us. Our main product is barley, of which we use five thousand or six thousand sacks annually.

To Mr. Veitch.] I suggest that a reasonable tariff would be 20 or 25 per cent. It would put me on a good footing. We did not increase the local price on the bulk extracts when we might have done so.

To the Chairman.] We make the barley into malt, getting most of the barley in New Zealand. Last year we got a little Australian.

To Mr. Hornsby.] If prohibition is carried in April a lot of barley-producing land would go out of use. Our industry would tend to occupy that place. I am putting up another malthouse, and it will consume another five thousand sacks. Next year I anticipate to put through ten thousand sacks. I do not advocate that the duty should be taken off barley.

To Mr. Craigie.] Bakers use our material for their yeast. In Auckland, Wellington, and other North Island places it keeps the bread from drying up and getting crumbly. Hayward Bros., of Christchurch, also manufacture a malt-flour preparation, and a tariff would also benefit them. Our business is expanding.

To Mr. Forbes.] I would be prepared to submit my prices to the Board of Trade to show that I was not, under a high tariff, raising my prices unduly.

To Mr. Veitch.] I pay good wages, and generally have no difficulty in getting suitable labour.

J. GREENFIELD, New Zealand Sugar of Milk and Casein Company (Limited), examined.

The sugar-of-milk industry is new in New Zealand. The company commenced operations in 1914 at Edendale, manufacturing the sugar of milk from the by-product of the cheese-factory. We have approached the Railway Department regarding the classifying of the product with a view to giving us reasonable rates on the materials for manufacture. They consist mostly of muriatic acid. On that acid we have to pay a double rate. Sulphuric acid is really more dangerous, and is carried at a cheaper rate. We pay £13 19s. 4d. on every ton of acid we use in the factory, and we use a ton and a half, which makes the item pretty heavy, every week. On the sugar of

milk itself we pay £2 4s. 2d. per ton gross, or £3 9s. 3d. per ton net. Last year we paid the Railway Department close on £3,000 for forty weeks' railage. Then we use low-grade coal in our boilers, and we pay the same rate on the low-grade as on the best steaming coal.

To the Chairman.] Our product is competing against the American and Dutch on the London market, and fetching the same price. The highest price obtained at Home was £460 per ton. Before the war it was from £80 to £140. It is now £130. If we cannot get a reduction on the railways we may use electric wagons.

JOHN G. NEIL, New Zealand Sugar of Milk and Casein Company (Limited), examined.

I am chairman of directors of the company. Ours is one of the very few industries that has not a tariff. We use a number of imported articles that have to pay duty. We want a tariff against the foreign material. We can meet the British competition.

To Mr. Veitch.] Our industry is separate from the dairy-factory business.

JAMES WILDE, Union Felt Hat Company, examined.

We have to compete against overseas labour. There are three hat-factories in New Zealand, employing only a small number of hands. We have twenty-five. We must pay more than 50 per cent. over the British labour. I think the Australian duties ought to be imposed here. Australia is flourishing, while we are languishing. The Arbitration Court should not be allowed to interfere with wage-earners who are in competition with the foreign article.

To Mr. Hudson.] We reckon that 40 per cent. of the cost of production goes in wages, and if you increase the wages the cost of the article must increase. If the tariff is increased we will be able to pay in wages nearly £30,000 a year more than we do now. I do not see that a duty would have any effect on the cost of the article.

To Mr. Craigie.] If we get a tariff our business will extend. We send rabbit-skins Home to be shaved, and they are sent back in the form of felt.

To Mr. Luke.] The article is so far ready-made when we get it from Home that all we have to do is the blocking.

To Mr. Veitch.] The Government ought to discriminate more in items in the tariff. Hats and caps are together, but caps and straw hats do not cost the same for production in New Zealand as felt hats.

J. B. SHACKLOCK, Ironfounder, examined.

It seems to me that the industries that New Zealand should develop are those connected closely with the primary products of the soil. I fail to see that New Zealand can be a large manufacturing country in the ordinary sense of the word as compared with the European countries. It would be no use manufacturing articles beyond our own requirements. Other countries can manufacture as cheaply as we can, and consequently, in the event of our making a surplus, there would be no country to which we could export. It is necessary, of course, that certain industries should be protected. When I say "protected" I do not speak of protection in the ordinarily accepted interpretation of the term. I think the Government misses the mark of protection by putting a tariff on certain goods. The Government look on the tariff on certain lines as a source of income, whereas if you are going to protect an industry the Government ought not to look on the tariff as a source of income. I will give an instance that came under my notice since the war broke out. Black sheet iron is imported from Britain, and the only duty is a primage duty of 1 per cent. But somebody got the ear of the Government, and it was suggested that with a view to encouraging galvanizing in New Zealand an extra tariff should be put on galvanized iron. It is 30s. or 40s. a ton, and a preferential was put against the American black sheets. The result was that after the war broke out black sheets were unobtainable from Britain but were obtainable in America. The duty was really more on black sheets than on galvanized, and consequently instead of protecting any industry by the tariff the Government penalized the galvanized industry and the other industries that were called on to use black sheets. In connection with one lot of 15 tons of black sheet iron, if they had come from Britain the duty would have been £5 9s. 6d., but as they came from America we had to pay £112. If they have been galvanized and had come from America the duty would have been £32 6s. 9d. I have another lot of 30 tons. If they had come from Britain the duty would have been £7 18s., but as they came from America it was £165. If they had been galvanized from the United States the duty would have been £61 18s. The point is that the system at present adopted by the Government in fixing a duty on certain lines of goods does not always protect an industry. In fact, since the war broke out, it has penalized certain industries. The matter has been brought before the Government, but no impression has been made on them. The reply has always been, "Sorry; nothing can be done in the meantime." This is an anomaly in the tariff: On black sheets the duty is 20 per cent. and on galvanized it is 30s. per ton. Personally, I think that if it is decided that certain industries ought to be assisted—and it is desirable that some of them should be assisted in this country—there should be something in the nature of a bonus, which ought to be based on the freights between here and the Old Country.

To Mr. Forbes.] It would be well if a Board were set up that could recommend the Government to give assistance during the time an industry is being placed on a commercial footing.

To Mr. Craigie.] I am in favour of encouraging all the industries connected with the natural products of the country. In another place it was said that the Parapara iron-ore ought to be worked. Personally, I do not agree with that. If you do that you will have a large surplus of manufacture that no one will buy. If you have a plant to make rails you will make as many in a month as New Zealand would use in a year. They could not be exported.

To Mr. Luke.] 20 per cent. on hardware is the duty on ranges. We could not have built up our business without the tariff. Our business is standardized and systematized, and there is a multiplicity of orders off the same pattern. We are still building oil-engines. There is a substantial duty. Before the war there was little in the oil-engine business, in consequence of the American competition, but when the war broke out importations largely stopped. The oil-engine trade has not developed much in consequence of the war. Since the war broke out we have had all we can do. Assuming that the Parapara pig iron was as uniform in quality as pig iron imported from Australia, I do not think it would be a success even with reasonably-sized furnaces in operation. I am not a believer in the production of iron in New Zealand from the native ore. I think the requirements of the Dominion are not sufficiently large at present. They are not sufficiently large to warrant the necessary plant being put down. I think it will be a long time before Parapara and other measures will be worked successfully in New Zealand. India is much too close, and there they have larger and richer deposits than we have, and their costs are much lower than ours. Bengal iron is very uniform in quality, and there are other Indian irons just as good. I think that, although the Broken Hill people are successfully making rails, we have not the same chance on account of our smaller population. The Broken Hill people have Australia to work on. I am aware that the Broken Hill Company is exporting rails. That is under present-day conditions.

FRIDAY, 21ST FEBRUARY.

J. LOUDON, representing Brown Bros. and Loudon, Wool-scourers, and Otago Expansion League, examined.

There are three matters that I wish to bring before the Committee. The first is in connection with wool-scouring. I am not going to burden you with a mass of figures, because I understand that in Christchurch you have already had this matter before you. I would just like to say this: last year's total output of wool for the Dominion was something like 560,000 bales, of which between 80,000 and 100,000 were scoured in the Dominion. That is a much greater quantity than was scoured in pre-war days; but the Government, I think wisely, for the purpose of economizing shipping-space and for other reasons, decided, to the advantage of the low-grade and heavy wool, that it should be scoured in the Dominion. I am here to ask that the principle of scouring should be as far as possible extended. These figures apply to 1917–18. What I suggest is that it would be a good thing for the Dominion if a great deal more of the wool were scoured here. We have just got one little lot that we have finished; and the greasy weight of 196 bales was 65,178 lb., and the scoured weight of 172 bales was 42,667 lb., or 22,911 lb. of dirt and other foreign matter. You can easily see that it would be economic waste to spend freight on that quantity. On the other hand, as scourers who have been in business for very many years we have always had the objection raised, particularly by Bradford people, that the scouring done here does not suit the requirements of the various trades of our wool in the world's markets. There may be a good deal of truth in that, because, say, for the sake of argument, there may be sixty or seventy small wool-scouring works, many of them very primitive in their arrangements, and all working under different conditions as regards the nature of the chemicals they use in scouring and as to other conditions. A gentleman who has given the matter a great deal of thought made this suggestion: that the interests of a great many of these people could be combined, and that three up-to-date scouring-works might be established in the North Island and three in the South Island, where the whole of the wool of the Dominion might be scoured—might be treated scientifically and chemically, so that no possible exception could be taken, either by Bradford, French, or other buyers, as to the quality of the scouring. He suggested that that could be done, and that it would mean a tremendous increase in wages spent in the Dominion, and that it would consequently enhance the wealth and productivity of New Zealand. That is what the Expansion League is out for, and we hope that something in that direction will be done. A further industry we went into was the question of top-making. In Australia an industry has already been started, and is being carried on on a fairly large scale. It is co-ordinating with a primary industry, and there seems no reason why New Zealand should not manufacture tops and ship them to London or to some other market for sale. It seems to me wrong to say that New Zealand people are lacking in brains or initiative as compared with the people, say, of Bradford. No doubt there they have had the benefit of generations of experience in this line, but if we get experts from these places to New Zealand it seems to me that it would be a step in the right direction to try and establish such an industry here, particularly as, I say, it will co-ordinate with our primary industry. I have not got the figures of the employees engaged in the industry, but one can easily understand what they must be if the additional bales are scoured locally.

To Mr. Hudson: I think it would be a step in the right direction to erect scouring plants in the Dominion—three in the North Island and three in the South Island. Many of the existing plants are not up to date. There are some up to date in certain directions, but the scientific part is lacking. I suggest the compulsory scouring of wool. My suggestion is that the whole of the wool of the Dominion should be scoured, and that should be done by proper methods, so that there can be no possible objection taken to our wool in any part of the world. It is not necessary that all the wool should be scoured, but it would be advisable in the interests of the Dominion.

To Mr. Craigie: I could not state the number of men engaged in wool-scouring all the year round, but I know the number of men we employ. The additional scouring would mean the employment of more men, and it would also mean an economy in freights.

To Mr. Forbes: In the past wages seem to have been very much lower in Bradford than in the Dominion, but, if we are to judge by the trend of events in the Old Country, it seems to me that in the future the disparity in wages will not be so great. In regard to the wool-scouring plants, it is not necessary that they should be Government plants. I think it is possible for all the interested parties in the Dominion to combine and have comprehensive plants erected. I omitted to mention that the by-products are very valuable—potash, wool-grease, and lanoline. Under my scheme proper scientific methods should be inaugurated with respect to the whole of the by-products. Thousands and thousands of pounds in value in the by-products are now running down the streams which could be saved.

To Mr. Luke: I do not think our proposal if carried out would prejudicially affect the placing of our wool on the British market in any way; there are plenty of markets for our wool.

To Mr. Veitch: In the early days a pretty large percentage of the clips were shipped as scoured. It seems to me that the question of research is absolutely ignored here. That is shown by the fact of the Government only putting £250 on the estimates for research work.

To the Chairman: If the wool were shipped scoured there would be an immense saving in freight. As to the suggestion that only a certain percentage of the wool should be scoured, I think if you are going to make an improvement half-measures are no good. The machinery is simple for wool-scouring; there might be a little delay in getting the driers. We do not do any drying ourselves in the open. We have been experimenting for some little time in connection with wool-grease, but so far we have not been quite successful. If there is any place in the world that should be able to produce sulphuric acid it is New Zealand; we have the raw materials here.

Mr. Loudon: The second point I wish to refer to is in connection with agriculture and seed-raising in Central Otago. I am referring to this matter as a member of the Repatriation Board and as a member of the Expansion League. It seems to me that the avenues of employment can be very much extended. I am not giving only my own views in regard to this matter. I have discussed it with one of the largest seed-merchants in New Zealand, and he informs me that there is an unlimited demand in the world's markets for good seed. Every product of New Zealand has the mark of excellence on it, and it seems to me that as Central Otago produces the finest seed in the world, this is an industry that should receive the attention of the Committee and of the Government. The seed-merchant I have mentioned is prepared to go to great lengths in assisting our Board and the Government. He will give a fixed quotation for all seeds raised here. I hope to lay before the Repatriation Board a proposal to ask the Government to give us authority to either lease a block of land or buy it. Part of that land might be taken up by returned soldiers; there should be a thorough demonstration of the business by settling say twenty or thirty soldiers on the block. We would require an expert in seed-raising to control it, and probably a farm-manager to control the labour. Under the Repatriation Act soldiers are entitled to a certain amount: that would be paid possibly as wages; and if at the end of the year there was a profit on the work I think the whole of that profit should be divided amongst the soldiers. I would like the Committee to help us in inducing the Government to assist in this experimental project. I am convinced that not a penny would be lost, but that a handsome profit would be made.

To Mr. Hornsby: In the case of many of the poor fellows who come back from the war their nerves are shattered, but their condition in that respect is only temporary; that is one reason why I think an out-of-door life like this would be a splendid means of rehabilitating those men. I think it would be a very good scheme. I will certainly include this scheme in my suggestions to the Repatriation Board.

Mr. Loudon: The only other question that I wish to bring before the Committee is the lack of sympathy that has been manifested in connection with research work. I think that a tremendous lot can be done in that direction. In our own city we have turned out a number of very fine men—scientists and others—but there is no doubt that many others have been attracted to other countries owing to the greater inducements offered there. I have suggested on several occasions that I think it would be quite a reasonable thing if the Government selected two or three men from the North Island and two or three from the South Island—brilliant science students—and gave them a fixed salary for a certain number of years, so that they could devote the whole of their time and talents to research work, principally in investigating questions connected with the eliminating of waste in connection with our primary industries, and also in testing the potential resources of the Dominion. I understand that the Efficiency Board has submitted a scheme in this direction to the Government, but from what I have heard it means the creation of another State Department rather expensively conducted. I do not think that elaborate buildings are necessary. I think a plain building would do, with water-power and everything attached, and with a scientific man in charge. He would have, of course, the necessary assistance in the way of appliances, &c., and would test anything submitted to him with the object of bringing it right into a commercial and manufacturing centre. My grievance is that we have a University that is not in close enough touch with our ordinary everyday life, and I think if something can be done in that direction it will help the Dominion very much.

To Mr. Forbes: There is a general desire that research work should be brought into touch with everyday life. I think the Government should give at least £100,000 a year for this work.

To Mr. Luke: The question of preventing overlapping has received our attention. I think the whole of the colleges would be in close touch with one another and with one another's experiments.

C. TODD, Otago Expansion League, examined.

We feel in Otago that our land is not producing anything like what it should produce. The rabbits came in forty years ago. The country was open country, and was taken up in large blocks. When the rabbits came in it was found that the few settlers could not cope with it, and the settlers have been unsuccessful in coping with it ever since. The Expansion League met the local bodies around Dunedin and asked that a Royal Commission should be set up fifteen months ago; the Lands Committee of the House recommended that a Commission should be set up, but Cabinet did not fall in with the view expressed by that Committee. We saw Mr. Massey in Dunedin a little later, and he promised, if the matter were brought up in the past session, that it would be favourably considered by Cabinet. It was again brought up, and the Committee again brought up a favourable recommendation, but so far we have not heard anything further in regard to the question. We met Mr. Guthrie the other evening—a large deputation brought the matter up, and he thought it might be impossible to have a Commission set up before the general election. That means having to go all over the work again. If the Committee can assist us to get the Commission set up to go into the whole question of land-tenures, the depletion and deterioration of the land in Central Otago, and the best steps to take in regard to rabbits, and if the Commission is given a wide scope to take all those matters up, it will meet with approval here. I took out a return of the year just before the war—the year in which exports were not interfered with by lack of shipping. I found that nine million rabbit-skins and frozen rabbits were exported from this country in that year. It is well known that from six to nine rabbits eat as much grass as one sheep, so that nine million rabbits eat as much grass as a million sheep. Otago is losing because of the rabbits half a million a year. That is one of the subjects we must look into. If you could get this Commission going before next election it would be a good thing, because we do not know where we will be by then. 69½ per cent. of this land is under lease, and the capital value of the land is only 4s. 4d. per acre. I think that is a ridiculous amount. I think if that land were properly held and attended to it would run two million more sheep, and the land would be doubled and trebled in value. 69½ per cent. of the land is held under lease, and 30½ per cent. is freehold or leasehold with right of purchase. In the North Island there is only 8½ per cent. of what we call short, bad leaseholds, and 90 per cent. freeholds, 1½ per cent. being held on longer-lease terms. Whether that fact has any bearing on the subject I leave to the Committee to decide. One of the remedies to get rid of the rabbits is the use of rabbit-netting, each owner dealing with the rabbits on his own land. I think rabbit-netting should be given to the settlers at cost price. Boundary-fences should be compulsorily rabbit-proof. A factory might perhaps be set up to provide the netting as cheaply as possible, and each farmer should be compelled to get rid of the rabbits on his own holding. If this were done it would mean increased settlement and prosperity to the country.

To Mr. Hornsby: The importance of afforestation has been impressed upon the Government. We will be only too glad to supply the Committee with all the information possible in regard to this matter. I will see that the information is supplied to you.

To Mr. Forbes: The supply of wire netting by the Government at a low cost is what we recommend; I think it would be an indirect gain to the country. A very large number of men are engaged in trapping in Central Otago. The suggestion has been made that trapping should be stopped. In some places the owners trap and poison as well. It is not in the interest of the trapper to kill the last rabbit.

J. B. WATERS, Chairman, Dunedin Chamber of Commerce, examined.

I have been asked to attend and support the requests which have been made by Mr. Todd, president of the Otago Expansion League, in regard to the necessity—the absolute necessity, I would like to say—of an improvement being made in the tenure of the land in Central Otago. The Dunedin Chamber of Commerce has had this question before it time and again, and although we are a mercantile body and have more to do with the commerce side, still we very heartily support the Otago Expansion League in their representations. It is a well-known fact that the productivity of our land is steadily decreasing, and one of the great causes of that is the unsatisfactory nature of the leases. The short-dated leases do not encourage tenants, the larger tenants of the Crown, to go in for improvements in the way of regrassing their land, netting rabbits, clearing scrub, and making other improvements of a permanent nature. We have emphasized the necessity for an inquiry being held and for the establishment of some better form of tenure. The Dunedin Chamber of Commerce has examined this question again and again, and we very heartily support the representations which have been made in this respect.

To Mr. Luke: Of course, my Chamber is a mercantile body; and as to the question of tenure, an inquiry might be set up to take evidence on the spot. The renewable lease is already on the statute-book—a term of sixty-six years, and then the rental is revalued. In that case a man would have as good as a freehold; he would have the full benefit of all his improvements, visible and invisible. I would insist on any man holding land improving it to its possible capacity. I think if such a provision were brought in we would have our ends served. I think such conditions could be embodied in the lease.

Mr. Waters: As president of the Chamber of Commerce, there are two other matters to which I would like to allude briefly. First there is the question of scientific research. The Dunedin Chamber of Commerce heartily supports scientific research, and has already moved in that direction. In regard to the growing of agricultural seeds in Central Otago, we support that as a matter which is of really great importance. There is no part of New Zealand which is more adapted to that purpose than Central Otago. It is work which would have to be carried out under the direction of experts.

E. ANSCOMBE, Otago Expansion League, examined.

The industrial advancement of New Zealand is a subject in which I have been keenly interested for some considerable time, particularly now, realizing the war of commercialism with which we are face to face, and also the very large debt we owe to our returned soldiers—a debt we can never fully repay, but which in honour we should strive to liquidate to the utmost of our endeavours and abilities. New Zealand has her problems to solve, and one must acknowledge that preparedness should and must be the determining factor in all we undertake. The proposal I am desirous of bringing to your notice I am convinced, if carried into effect, will be a means of developing and increasing our agricultural activities, thereby also increasing the population of the Dominion as a whole. In addition it will serve as an admirable means of providing employment for large numbers of returned soldiers and others, and also will throw open the doors of opportunity to those who desire to go in for manufacturing lines which we have hitherto been importing, but which might easily be manufactured in the Dominion, and at the same time would give an impetus to the small manufacturers to set their abilities, industrially and commercially, to the utmost and highest purpose. We must face the fact that unless in addition to ideal climatic conditions we can offer some practical scheme to intending new-comers they will be drawn to other countries—for instance, to the United States and Canada, both of which countries offer so much opportunity and encouragement to those migrating thereto. We have the great questions to consider—viz., the increasing of our population, and the entering successfully into competition with those countries which are now striving to regain commerce lost through the war. To increase our population it is essential that we increase our industries and thereby our labour demand. It is impossible to attract a thousand or any workmen to a country unless there is opportunity for the employment of them; and it is equally impossible to retain those men when once here unless we keep opportunity continually before them. Men who cannot find sufficient support in their own country go elsewhere. Securing new industries of the right kind for any town means in addition increased revenues from new sources of taxation, increased purchasing-power, increased opportunity for the wage-earners, and increased prosperity for the whole community. If we could bring even, say, to Dunedin new industries that would employ an additional thousand wage-earners, who at the average wage would earn over £156,000 per annum, we would be increasing the purchasing-power of the community by that amount; and indirectly we would be increasing the revenue of the city, resulting from enlarged sources of taxation derived from the property of new business concerns and the increase in land and building values generally. To bring about a great increase in the manufacturing activities of Dunedin, and New Zealand as a whole, my proposal is to provide combination factory buildings wherein any number of individual small manufacturers could be accommodated under the most advantageous working-conditions, and in which any required amount of floor-space could be rented on an extremely attractive basis per square foot, the rent to include power, light, heat, elevator, and janitor service, transport facilities, keeping of accounts, &c. The proposed buildings would be constructed of reinforced concrete—say, four stories in height—equipped throughout with a sprinkler system, thus securing the lowest possible insurance rates for buildings and stocks. Being thus fireproofed, the lives of the workmen would be safeguarded, and tenants protected from loss of stocks, and also the loss of business which invariably results when a building is totally or even partially destroyed by fire. A further advantage of a building constructed of reinforced concrete is the resistance to vibration, and the resultant decrease in wear-and-tear of machinery-bearings, &c. Erected as proposed, the building would effect economies (1) in constructional work, less material being required for this than in the erection of a number of isolated factories; (2) in plumbing, drainage, &c., resulting from the grouping of fixtures; (3) in power, by supplying the whole group at a minimum rate now obtainable only by a large consumer; (4) in heating and ventilating, by utilizing one central plant for the whole group; (5) in transport, facilities for which would be at the very doors, thus eliminating excessive transport costs and the expenses incidental thereto; (6) in general office expenses, by utilizing the services of a central office to carry out the despatching and delivering of goods, purchasing of materials, &c.; keeping of accounts, and work incidental thereto, for individual manufacturers; and also acting as a labour bureau for the whole group, enabling workmen paid off in one shop to be shifted to another with a minimum loss of time. The building as outlined would also assure greater efficiency of the workers, fewer spoiled goods, faster and better production, besides which the employees would be working under more healthful and congenial conditions. Erected on the skeleton principle, it affords an opportunity of making use of approximately 85 per cent. of daylight, the interior being flooded with daylight throughout the whole working-day. A group of small manufacturers housed in buildings such as I propose would reap all the benefits of a co-operative association and yet retain their individuality. I say quite candidly that under ordinary conditions it is impossible for small manufacturers to obtain for themselves or their employees the advantages as outlined above except from the scheme I have submitted. The amount of capital necessary to construct a modern building suited in every way to meet requirements is in the majority of cases required as a working fund to increase manufactured output; whereas by adopting the foregoing proposal tenants would be able to obtain a building meeting all their own ideas as to detail, and as their business grew more space would be secured by moving the dividing partitions. Whenever a small manufacturer owns his own building the small amount of money available over and above that required to increase production is usually spent in the construction of an additional building here and there wherever space allows. These additions are of necessity built as cheaply as possible, the poor construction leading to low efficiency, unsightly appearance, lowering of adjacent property-values, and the decreasing of general health conditions of the

employees. The advantage of being able to increase production without any additional capital outlay by simply leasing further space, and at the same time working under modern conditions, is of the utmost importance to the small but growing industrial concern. By providing those combined factories we would also be offering the finest inducement possible to experts—of whom there are many—with initiative and good judgment to come to the Dominion. Up to the present such experts have been workers, and in some cases foremen, in large manufacturing firms, and have had no chance of rising to economic independence. They are the class of men needed here, especially those trained in lines of manufacture not up to the present located in this Dominion. Australia, realizing that it must be more self-supporting and not rely so much on imported manufactures, and that with a debt of about £800,000,000 the interest and capital of so large an amount must be covered by the productivity of their primal and secondary institutions, has up to the present made preparations for the establishment of no less than fifty-one new industries, to commence operation immediately. One of the units of the building would serve admirably as memorial workshop and trade school where returned soldiers, apprentices, and other industrial workers could receive training in the productive arts through the services of skilled instructors—with the added advantage of being able to make a tour of inspection at any time to see articles being made under actual working-conditions. Another portion might be set aside as a laboratory for scientific research work, for the purpose of discovering new and better processes of manufacture, which might be the means of establishing new industries and at the same time greatly assisting the development of existing ones. In considering the matter of research work, we should not lose sight of the fact that, apart from the great advantages that may result to industry, new avenues of employment will be opened up for many of our most brilliant men. Viscount Milner has well said, "To educate without creating opportunity is to set a bonus upon the export of national ability." We have unfortunately in past years not fully appreciated the importance of scientific research, but it has been shown in the great war to be vital to the progress of industry. About one-tenth of the cost of a battleship would build one complete unit scheme; the money so spent would provide a building that would last for generations, with growing benefits to the whole community year after year, and would go far to solve one phase of the problem of reconstruction. With the limited time at my disposal it is impossible to convey many other and varied advantages the combined factories building has to offer. However, these are embodied in detail in a paper now in the hands of the printers, copies of which I hope to have the pleasure of handing you prior to your departure, and your perusal of and report on which I respectfully request.

H. F. Sincock, Manager of Donaghy's Rope and Twine Company (Limited), examined.

My object is to place before you one or two anomalies in the Customs tariff. Binder-twine comes into the country free of duty. There is a 10-per-cent. protective tariff against foreign importations. We do not object to binder-twine coming in free, but we object to a £7-per-ton duty against us in Australia. Australia can dump their twine into this country free of duty, but if we send to their market we have to pay £7 duty.

To Mr. Forbes: Small quantities of their twine come in. Another thing is this: This is three-ply Hornsby binder-twine [sample produced] that can be imported into this country. Not a great quantity comes in. We have pointed out to the Customs time after time that it is practically a seaming-twine. It comes from Belfast and other manufactories at Home. We have pointed out that they are defeating their own revenue in allowing the stuff to come in. It is being used as a seaming-twine and not as a binder-twine. It was greatly used as a ham-twine when that commodity was scarce during the war-time. The three-ply Hornsby comes in free as binder-twine. I have approached the Customs time after time about the matter. With reasonable protection we could produce that article in New Zealand. To illustrate the point I can say this: Two-ply flax lashing, a similar article made of manila of three-ply and slightly thinner, bears a 20-per-cent. duty. It is strange that one should come in free and that the other should have a 20-per-cent. duty. It is distinctly an anomaly in the tariff. We are not particular about imports from the Old Country, as they have a long distance to come, and we have the New Zealand fibre here to compete against them. We do object, however, to Australia putting a £7-per-ton duty against us and being allowed to bring her product here free.

The Chairman: What does Australia do with lashing?—It has a duty of 25 per cent. The other matter that affects our business is the importation of Hong Kong manila rope. It has a 20-per-cent. duty, but it is not an effective duty against Chinese labour. If the rope were produced in America it would pay 20 per cent. plus 10 per cent., but Hong Kong being a British protectorate, it is allowed in at 20 per cent.

To Mr. Hornsby: It is made in China but shipped from Hong Kong.

To Mr. Craigie: We import large quantities of manila rope made from hemp imported from the Philippines. It is free of duty. In spite of the high tariff in Australia we send some binder-twine there, but we could send more if the tariff was taken off.

To Mr. Forbes: The local farmer has excellent protection against exploitation. New Zealand can produce over a third more than the binder-twine required for consumption in the country—in fact, it could almost double the requirements here. Binder-twine has gone up tremendously this year, but that is explained in this way: The Government controlled the price of fibre, but not the green leaf, and that has sent it up pretty well £20 per ton. They allowed the farmer to charge anything he liked for the green leaf, until it rose to about £2 10s. per ton, and it takes 8 or 9 tons of green leaf to make a ton of fibre. The farming community have recognized there was a necessity for the increase. We do not suggest that a duty should be put on against the British twine. There is a duty at present against the American of 10 per cent. We want

to stress particularly the fact that Australia has £7 against us, and we have nothing against them. Australia gets its flax from New Zealand and works it up. It is a large buyer. Fully 50 per cent. of its trade is made up of flax binder-twine. The manufacturers of binder-twine have not made undue profits during the war. Prices have advanced owing to war conditions, but any manufacturer could produce a balance-sheet and prove conclusively that they have just about made their normal profits. The Hong Kong rope is not as good as ours.

To Mr. Lake: 2,000 tons of New Zealand fibre are used for local manufacture every year. The flax-mills generally are not turning out as good a fibre now as they did years ago. There is a great future for the fibre industry. If improved machinery could be brought into use there is no reason why we should not make shop-twine.

To Mr. Sidey: During the war the price of fibre was controlled by the Government at Home. If the Government give us what we ask we are agreeable that there should be a regulation of the price at which we sell. Prices must come down. Very little binder-twine comes here, but we are afraid that eventually it will.

To the Chairman: The wholesale price of "O" manila was 57s. per hundredweight before the war; to-day it is 122s. About 25 per cent. of that manufacture would be New Zealand rope and the rest manila. Gold Medal binder-twine before the war averaged 4½d. per pound, and to-day it is 9d. To improve the quality of the flax of to-day the grading standard should be amended, and New Zealand flax would then command a better price in the market. If more flax like the Blenheim flax were produced it would in many cases replace the manila.

Rev. C. P. Bush King, Anglican Minister, examined.

The Otago Winter Show, and more recently the war service rendered by the women of the Dominion on behalf of the War Contingent Association, the Red Cross Society, and allied causes, emphasize that there is a great deal of potential service that might be used in the interests of the Dominion. But I particularly wish to emphasize the following points: This is not an attempt to interfere with or compete with existing industries, nor is it an attempt to introduce sweated goods or sweated labour into the Dominion. It is really a suggestion for the continuance of the employment of the leisured classes who have the time and the inclination for this work, and also returned disabled soldiers who may not be able to resume former occupations, so that instead of intermissive efforts for specific objects this work might be made continuous for the good of the Dominion. It would provide an outlet for the energies of the unemployed women of leisure and means, and I think that some place should be found for them in the system of our national economy. I believe the women would welcome some organized channel through which they could render more continuous service for the good of the State. The history of the development of industrialism reminds us that a large number of discoveries and inventions took place in the homes of the people, and that the subsequent development of industrialism meant the transference of women's labour from the home, where they worked as individuals, to the factory, where they worked collectively. The war has again emphasized the development of home-made industries, and we have heard no criticism of the effect that this had on the labour questions of the day. I am of the opinion that this should be continued and encouraged, for the following reasons: (1) It will give an organized outlet for a great deal of potential energy that might be used for the good of the Dominion; (2) a ready market will be found for such products, and that without much effort. With reference to No. 1, the war gave thousands of women and adolescents, especially those who previously had very little to do, the opportunity for working for the good of the Dominion. The enormous amount of material made and sold for the benefit of the War Contingent Association, and in the Red Cross shops, emphasizes what can be done in the Dominion for the Dominion. The war gave the women the opportunity of helping a worthy cause, and I believe that our hospitals, convalescent homes, and allied causes would benefit materially by the continuousness of these industries. These goods would be made not for the sake of the living, but for the benefit and upkeep of the causes referred to. A ready market would be easily found for such products, and if supply exceeded local demand trade might be opened up with countries like Egypt and England. When I was in Cairo some few months ago I saw a shop where Australian-made goods were being sold. Guaranteed home-made goods would find a ready sale, and the war has already taught the producer how to make and pack such goods. It would be necessary to establish local receiving-depots, also a clearing-house for the Dominion, and also sales-depots abroad. Such a clearing-house would serve two purposes: (1) It would enable the Dominion to estimate the questions of supply and demand, and (2) it would save the industry from being exploited. The producers might not be in a position to place a value on their goods, but a clearing-house could be used both for this purpose and to return the income to a central fund. It might be worked that from this central fund allocations would be made to the various charitable organizations to be decided upon.

A. C. Broad, Otago Brush Company (Limited), examined.

I want to draw your attention to the necessity for the appointment of a Minister of Industries, or a Committee of Industries. I think it would lead possibly to the prohibition of the exportation of our New Zealand timbers which have taken hundreds of years to grow. Look at the laxness of the Government in this matter, and compare it with the action of the Australian Government in prohibiting the export of millet, of which they can grow two crops in a year! Before the war we could get millet from five countries. Now, because of the absence of shipping, it looks as if it can only be procured from Australia, and in Australia the broom-manufacturers, recognizing this, have influenced the Government to prohibit its export. The result will be that we will be unable to make brooms, and they will dump their manufactures into New Zealand at

very remunerative prices. Last year they competed against us, with the result that one firm that had been making over a thousand dozen millet brooms a month went into bankruptcy. They dump their brooms here even in the face of a 25-per-cent. duty. Then there is the position as to bristles. In 1908 an Act was passed permitting by regulation the prohibition of animal-hair. In 1915 the present Government brought this into force without intimating the fact to those affected—the brushmakers—but verbally conveying the instruction to the shipping companies. The first intimation my company had of it was that the contractors in Australia told us that the shipping would not take the goods, because they had been informed that its importation had been prohibited by the Government. We have no objection to any regulation respecting these materials if applied to brushware made from the same things. This the Minister has declined, only subjecting the raw materials but not the manufactured article. I leave with the Committee the correspondence which has passed between the Department of Agriculture and myself with reference to the prohibition of the importation of bristles and hair, and the utter absence of any provision respecting brushware made from the same materials. The latest suggestion from the Department is that the bristles and hair imported should be analysed for fear of introducing anthrax or some other trouble, and I say there is not the slightest need for it. [Samples produced.] I wish to add that the Australian Government is more alive to the interests of the local manufacturers by insisting upon, say, brushware from Japan being stamped with its place of manufacture. Just recently a big parcel came to Australia and was not labelled, and it had to be returned to Japan.

J. M. BENTON, representing Hogg and Co. (Limited), Timber-merchants, examined.

We are joinery-manufacturers, moulding-producers, and steam benders. We wrote to the Hon. Mr. Fisher in 1913 with reference to irregularities in the tariff. We pointed out to him these facts: "We have invested in the last six years large sums of money in the erection and outfit of our respective factories, which are complete and fitted with the most up-to-date machinery for the purpose of producing spokes, naves or hubs, bent shafts and poles, bent wheel-rims, and other similar coach and carriage builders' material, and we regret to say that the financial result has not been encouraging, largely in consequence of competition from others who are more favourably circumstanced in Australia. The present tariff (see item 431) provides for the admission of ash, hickory, lancewood, and beech 'free of duty,' but curiously enough the grey and spotted gum which we have to get from Australia for rims and shafts is charged 2s. per 100 ft. duty under item 206 of same tariff, while shafts and rims made in Australia from the same timber are admitted free. The anomaly here is so obvious that we believe it has only to be pointed out to you in order to have it rectified. We should be allowed to import free of duty all grey or spotted gum we require if sawn to the sizes suitable for manufacturing the articles above referred to. We desire further to urge that we have a fair claim to some measure of protection on the manufactured article also. Ours is one of the very few industries which have been struggling along without, in our opinion, having received fair consideration, and if we are to have any chance against our more favourably circumstanced competitors in Australia this protection is necessary. There is a great deal of waste unavoidable in working up timber into sound coachbuilders' material, and you will at once see how seriously we are handicapped as against the Australian manufacturer, sitting as they do beside the original source of timber-supply, where their loss by waste is not increased by shipping-charges. Moreover, the Australian market is a very large one, and consequently the Australian manufacturers have a large output, which enables them to produce at much lower cost than we can, while the cost of sending their manufactured article to our market is little, if any, more than we have to pay for bringing the raw material. According to the present tariff (item 212) dressed shafts, spokes, and felloes are said to be dutiable, but this apparent protection is entirely annulled by item 433, which provides that the same articles in the rough are to be free. Now, the only difference which is made is that 'dressed' is held to mean 'planed,' while 'rough' is 'unplaned'; and you will easily understand that a coachbuilder does not care twopence whether his shafts and rims are planed or unplaned, seeing he has to dress them all over again, rounding off, shaping, and finishing to suit his job. We trust you will inquire carefully into this matter and have the tariff amended so that all wheelwrights' shafts, poles, spokes, naves, and wheel-rims shall be subject to 20 per cent. duty if bent or turned to shape, whether they be dressed or rough—that is, planed or unplaned." The Minister replied that our representation would receive consideration. It is a question of protecting our labour. Our wage-sheet is a high one, our plants are big, and the upkeep and general production require a great deal of watching.

J. A. SLIGO, representing the Gold-mine Owners' Association of Otago and Southland, examined.

Never in the history of mining in New Zealand has the industry been conducted under greater difficulties. The position has been brought about chiefly by the condition pertaining since the commencement of the war. Everything that is used in the production of gold or other metals has increased in price until the purchase of some is prohibitive. As you are no doubt aware, the Government, shortly after the war started, practically commandeered all gold by prohibiting its export, except through the Dominion Government. Wool, beef, mutton, antimony, scheelite, and other products were also similarly treated, with this difference, that the price given was a very large advance on the prices obtainable previous to 1914. As a matter of fact, in some instances the prices were almost doubled, and had the effect of enabling a greater profit to be made than was possible in ordinary way of business. On the other hand, the high cost of production without an equivalent increase in value has in the case of gold-mining, and in particular gold-dredging, had a most disastrous effect. Mines which were on a paying footing and directly

employed a large number of men, besides the labour employed indirectly, such as carters, coal-miners, foundry-workers, and others, have been compelled to cease operations, and others will have to follow suit unless some means of relief can be introduced. The question naturally arises, What can be done to retrieve the position the industry enjoyed previous to the war, and to endeavour to improve the productiveness of the country's resources? This could be done providing it were possible to secure a better price for gold. There have been statements made that gold has been sold as high as £15 15s. per ounce in London, and we think that the Government of the country should take measures to ascertain if it is true. If so, the producers here should get the benefit of the increased value. We are perfectly aware that the standard price has not been raised, but there are other ways in which the British Government can make a profit on our gold, and we claim that we are entitled to that profit, particularly as we had no freedom of sale after production. We also think that much good would result were the Mines Department to institute an inquiry into the whole condition of mining in Otago, such inquiry to be conducted by experienced mining men with an experience of both alluvial and lode mining, with whom should be associated some one having a good local knowledge of districts that might be worthy of further exploration. We are quite aware that assistance to some extent may be procured through the Mining Act, providing the County Councils subsidize, but we think that what we propose should be undertaken by the Mines Department, as few county bodies have funds to spare from the maintenance of roads, &c. We advocate this course as we think that the work of this Committee will be chiefly confined to the principal towns; hence those actively engaged in gold-mining will have few opportunities of placing their views before you. Some immediate relief should be given by a substantial reduction in railroad rates on all machinery and material used in the industry; also all material used in the industry to be free from import duty. We thank you for your patient and courteous hearing, and trust that you will consider the life of the mining industry, which has contributed so largely to the past prosperity of the Dominion, worthy of your consideration and favourable recommendation to the Government.

H. F. NEES examined.

I have not a great deal to add to what Mr. Sligo has said. What I ask the Committee seriously to consider is the question of stimulating the mining industry. Mr. Sligo has pointed out the many disadvantages under which the industry labours. A Committee which sat at Home under the presidency of Lord Inchcape suggested that the standard value of gold should be raised. The result of the finding of that Committee gives us no hope that in New Zealand the Government can give us any relief in that direction, for if the Imperial Government can do nothing in that respect it is useless to expect that the Dominion Government can do anything. The only thing left is that some assistance should be given to the industry generally. There is one thing that comes pretty hard on the miners, and that is the income-tax. A mining company acquires a claim and puts up plant, and if the venture fails it generally results in the plant being sold as scrap iron. The taxation of mining companies is the same as that of ordinary companies except that it is based only on one-half the declared dividends. That sounds all right, except when this occurs: The capital of a company is, say, £5,000. It may pay £4,000 in dividends; it pays income-tax on £2,000 of that. Then it goes out of existence, and the shareholders pay taxation on a certain amount of their supposed profit. It is a wasting asset in that sense. They pay on half the total amount paid in dividends. I think the taxation is unfair in such cases, and some relief should be given. In regard to railage concessions, I think they should extend to coal used on dredges. Mr. Sligo spoke of the Mines Department. There is one way in which the industry might be helped—the provision by the Government of experts who could advise miners. In the case of the other primary industries officers of the Government give assistance in various ways. Nothing of that sort is done for mining. The officers representing the Mines Department here are good men, but their duties are confined practically to inspection. I think mining is entitled to some assistance in that respect. I am not speaking as a miner, but as president of the local association.

The Chairman: Are you engaged in dredging?—Yes.

What about the position of good agricultural land being destroyed by dredging in certain localities?—There is very little of that taking place; but it does happen occasionally.

To the Chairman: As to the destruction of rich agricultural land by sluicing, that question has been a good deal discussed, and there is a good deal of argument both ways. The majority of the land worked for dredging or sluicing is practically useless for agriculture. It only becomes valuable when the miner wants to buy it, and then the owner wants perhaps five times the amount he is paying rates on. I agree to that question being considered in the event of the inquiry being held that we ask for.

W. R. HAYWARD, President, Dunedin Furniture Employers' Union, examined.

The furniture employers principally seek relief in the way of the Customs tariff. At the present time, although we have a tariff on manufactured articles, we also have a somewhat similar tariff on the material used in the manufacture of those articles. Take such lines as upholstery-coverings, cabinetmakers' ironmongery—we ask that these should come in free. In cabinetmakers' sundries you include dowelling; it may be argued that it can be made here, but in actual fact it cannot be made here, because there is no really suitable timber. We also ask that there should be a special tariff designed to encourage the manufacture of chairs locally. The tariff that would be necessary to do this would need to be somewhat on the lines of the tariff on imported boots and shoes, or on the lines of the Australian tariff. On chairs coming into Australia—cheap chairs—the duty is 3s. a chair, or 35 per cent., whichever is the higher rate, if imported from the United

Kingdom; and 4s. a chair, or 45 per cent., whichever is higher, in the case of chairs from foreign countries. In the case of cheap chairs that is a thoroughly protective tariff. The result has been that these chairs are not imported into Australia now. Industries have sprung up, and quite good local articles are being sold in many instances lower than the price of the imported articles before the tariff came into operation. When the war broke out the manufacture of roll-top desks was being started in a somewhat desultory manner, but the high freights which have been ruling afforded protection, with the result that roll-top desks are now being sold lower than when they were being imported from the United States and Canada. There is not a good chair plant in the Dominion at the present time, and will not be until some protection is afforded against the dumping by foreign countries. The industry would afford employment for a great number of men. In such factories there are numbers of men who are only partially skilled, and this I take it would afford an excellent opening for a number of our returned soldiers. I desire to draw attention to the great wastage that is going on in connection with our native timbers. There is not sufficient supervision of the millers cutting out the bush area. The percentage of timber that is cut is certainly not what it should be; in many instances the miller probably leaves at least a third of the available timber uncut. There is an enormous waste in connection with the stumps. There is probably 3 ft. of every logging-tree left standing in the form of a stump, which is an absurd waste. Then there is the question of the importation of Eastern furniture. The Eastern countries have large supplies of timber available at a very low price; they have also many processes of lacquering, &c., which are unknown to us; that remark applies particularly to Japan. They have also cheap labour, which is a distinct menace to furniture-manufacturers in New Zealand. In fact, it will be quite impossible when things go back to normal in the way of freight to compete against Japanese furniture. I have no objection to the importation of furniture provided it is manufactured in a country where the conditions of the workers are somewhat on a parity with the conditions here. To compete with Eastern furniture except with the assistance of a very high tariff is quite an impossibility. I saw articles just at the beginning of 1915—articles imported from Japan—costing 10s. 7d.; and it was quite impossible for any factory in New Zealand to have produced them at less than 17s. 6d., and there are very few factories that could have produced them at that figure.

To Mr. Craigie: We do not make bent-wood chairs. There is practically no competition with the Austrian bent-wood chairs, which are made from the Carpathian beech. The sample of roller desk from Japan that I saw here was very good—it was modelled precisely on an English line that we ourselves were handling. The price worked out at about half. The tariff that would enable us to compete with Japan would have to be very "steep." In the case of the cheaper lines I think our tariff should be on the Australian model; the Australian tariff is so-much per article, or a certain percentage, whichever is the higher. Of course, there are other people besides the Japanese in the East—there are the Chinese; and there are also exports from Singapore.

To Mr. Veitch: We are all a bit short of labour at the present time because there are so many men away at the front; they have not returned yet, but that is only a passing phase. We have no surplus labour in normal times, but we have now a shortage. We have had no serious labour difficulties.

To Mr. Hornsby: I advocate a protective tariff in this country as the only way I know of overcoming the difficulty with regard to the competition from cheap-labour countries.

R. LEE, Manager, New Zealand Coal and Oil Company (Limited), examined.

I know nothing about the treatment of shale, and have not been connected with that at all, but the Orepuki shale-works belong to the New Zealand Coal and Oil Company, which company owns the Kaitangata coalfields. My connection with the company is as manager for the company in New Zealand, and for a good many years I have done practically nothing except deal with the coal-mines. The Orepuki Shale-works were opened somewhere about eighteen or nineteen years ago, and after running for something like two years they were closed down. There were a lot of reasons given at the time for that. One reason—and it was a reason that did us a great deal of harm in trying to get a start again—was that there was supposed to be sulphur in the shale, which could not be taken out without injuring the oil. This has been proved to be quite a mistake. The company sent some 50 or 60 tons to the Old Country, to the Pumpherston Shale-works. The shale was treated in the same retort as the retort used at Orepuki, and was treated with very great success. It was found that no special process of desulphurization was necessary to turn out the product. The works at Orepuki have been closed down since then, but all the machinery has been kept in up-to-date condition. Some nine years ago, when I first joined the company, I was sent down to undertake certain prospecting which had been asked for by Mr. Ronald Johnstone, one of the biggest shale experts in Scotland. He was sent out by the company to report on Orepuki. I think he came out first in 1907 or 1908, and he asked that certain prospecting should be done before he sent in a final report. There was great difficulty in getting a suitable drill. Finally it was arranged to get a drill from the Government, but, speaking from memory, I think it took about eighteen months before we could get delivery of the drill. When the drill arrived at Orepuki in the early part of 1910 we started to prospect, and we carried out an extensive prospecting scheme. Mr. Johnstone came out from Home again in 1910, and he went over the ground; and he was then satisfied with what was shown of there having been a sufficient quantity of shale actually proved to be there to justify the reopening of the shale-works. We have a copy of Mr. Johnstone's final report, which you might care to have. [Copy handed to Committee.] Mr. Johnstone in his report estimated that there was sufficient shale to keep the works going for twenty-five years without any further prospecting being done. The indications shown were that the part of the field where we had proved was only a very small part of the total shalefield at Orepuki. The Orepuki Shale-works were

built for 60 tons of shale a day; and Mr. Johnstone recommended that additions be made to increase this to 100 tons a day; and it was on this 100 tons a day that he made his estimate of twenty-five years' work of shale being in sight. In regard to the quality of the shale and the suitability of treating the shale, Mr. Johnstone's report will give you better information than I can, because the treatment of shale is not in my line. The only information I can give from my own experience is as to the actual proof of the shale. Mr. Johnstone was very conservative indeed in his estimate—in fact, he was so conservative that we felt rather hurt at the time that he did not make a very much bigger estimate than he did. But he wished to be on the safe side, and his estimate of the quantity was twenty-five years' work without any further prospecting being done. With regard to the question of whether the shale is better worth working than the oil-wells, I cannot give you very much information about that. The only thing is that at Orepuki we have actually proved the shale. In his report Mr. Johnstone shows what the shale contains. Of course, when you start to sink a well for oil you have not got it until you have got the oil. Samples of the Orepuki shale were sent Home and tests were made—tests of shale from the borehole, and also from the numerous outcrops round the basin where the shale occurs; and his results are given in his report.

The Chairman: What prevented the works being operated again?—My company is an English company, and when the works were opened up, through one trouble and another the company was very badly hit financially, and they were not in a position at the time to carry on, and the works were closed down. An attempt was made to float a further company to work Orepuki, but for some reason or other which I do not know they were unsuccessful. Just before the outbreak of the war the local directors undertook to form a company here, and they had started the work of placing the shares—I think it was on the 1st July—and they had got a very encouraging start when the war broke out, and, as you know, nobody knew what was going to happen as regards finance. The result was that when hostilities started it ruined our prospects for the time for doing anything. Probably had we had another three or four weeks things would have been far enough on to have gone to an allotment.

Do they propose to go on with it now?—My local directors are now carrying on negotiations with the English board, which they hope are going to result in a fresh attempt being made to do something.

This report of Mr. Johnstone's does not say anything about the cost of producing the oil?—I think the figures are given there.

Mr. Hornsby: I think it is only fair to the witness that we should tell him something of what has been said with regard to the small extent of shale. We had evidence that there is very little shale there.

The Chairman: This report contradicts that.

Mr. Luke: The British expert says there is twenty-five years' work?—Yes, at 100 tons a day. Mr. Johnstone is looked upon as one of the first men in the shalefields at Home. In his report he states what he thinks of the shale itself. He also states that the works are quite suitable for carrying on the refining of oil; and as far as prospecting goes, I can show any expert over the ground.

Mr. Hornsby: Does he mention anything about sulphur in that report?—He gives the results of the tests made by Sir Boverton Redwood at the Pumpherston works; and I think my directors have letters, which I think I could obtain for you, in which Sir Boverton Redwood states that no special process of desulphurization is necessary.

Can you let us have that?—I think my directors have a copy. As to the first report, I will be glad to furnish you with that. In this report he does not make any statement about the cost of production beyond the mining cost.

The Chairman: To what do you attribute the failure of the works in the first place?—I can only go on hearsay, and certain records we have in the office show, as far as I can see, that it was mainly on account of the fact that the expert sent out from Scotland was not able to use the retort at Orepuki properly. The Orepuki works, I understand, were designed on the same principle as the Pumpherston works, which are looked upon as the most successful shale-works in Scotland. The expert sent out originally condemned the retort, and said the shale could not be treated in that. The shipments of shale sent Home were, as I have said, treated in the Pumpherston works, and were treated successfully. Mr. Johnstone paid great attention to our retorts when they were constructed, and he was able to get a man who was working at the retorts of the Orepuki works. He (Mr. Johnstone) stated that the manager had not enough experience in working that type of retort; and it resulted in the burning instead of the roasting of the shale; in getting the products out the shale was being burnt, and a very large quantity of crude oil was being burned instead of being driven off in gas.

And then they took the duty off, and that just finished it?—Yes. I believe myself that Orepuki could have stood the duty, but unfortunately every trouble seemed to come up at one time, and the company finally got into such a position that they were not able to carry on.

It is said that one-fifth of the product would be paraffin-wax?—Yes.

We have had a proposition put to us to take the duty off wax?—Of course, if that were done, it would make the chance of the Orepuki works much more risky. It would be a bad thing if anything were to happen in that direction. It would mean more difficulties, because Orepuki shale appears to be very rich in paraffin-wax.

In the case of the witness I have referred to, paraffin is his raw material used in his industry, and that is why he wants the duty off: he wants it as a raw material?—Yes.

From what you tell us there is no immediate prospect of the works being reopened?—There is no immediate prospect, although we are hoping that our London office is going to be successful in carrying out certain negotiations which are going on at present.

We have evidence that the oil contains a great deal of sulphur, and it was said that the manager stated that the oil would be all right if it did not smell like cat-wash?—I will not say anything about what Mr. Dunlop said at the time, as Mr. Dunlop came out as an expert, and he did not make a success of it; and he had to go back rather a discredited man; and the company suffered a great deal from certain statements that he made to really try and ease his reputation a little.

Would this oil produce kerosene as we know it?—Yes, I understand that is one of the products; then there are the lubricating-oils, and certain spirits are very much more important by-products: there would be very much bigger quantities of that than any burning-oil.

First-class oil is used for lamps?—I am not posing as an expert with regard to shale-oils, and I can only go on the reports that Sir Boverton Redwood and Mr. Ronald Johnstone have furnished, and their reports could not be better with regard to the quality of the products.

Mr. Forbes: I suppose you will practically require a new plant to start the works again?—No; the machinery has been kept in very good order. Mr. Johnstone in his report stated that the works were quite suitable even then for treating the shale. The methods have not changed to such an extent that any extensive changes would have to be made in the methods adopted at Orepuki.

The Government mining experts do not agree with the optimistic report about the quantity of the shale?—I personally did most of the prospecting, and I think Mr. Johnstone's estimate was a very conservative estimate.

Have you any reports from the Government Geologist?—Not that I am aware of.

Have you ever asked for a Government report?—No, I do not think my company has.

Is it the intention of the company to start again as soon as things are favourable?—As soon as they can put themselves in the position to do so financially they want to get the works started. The company is quite satisfied that it is a very valuable property, and I think when the company can do so they are going to start the works.

Have they got a lease?—We have something like 1,200 acres; I think it is a Crown mineral lease—under the Coal-mines Act.

W. S. NEILL, President, New Zealand Boot-manufacturers' Association, examined.

We have come along to submit to you some of our little difficulties in the trade. First of all, in normal times the trade has its slack times; but since the war there has been no shipping, and we have had a great amount of work to do, and we consider that a little more protection to the trade would be the means of keeping all hands fully employed. And then there are other difficulties we have to contend with at the present time. We have trouble in getting certain articles, such as heel and toe plates, which could be easily manufactured in the country. They are now manufacturing these articles in Australia. There are also iron rivets: we find great difficulty in getting those. Before the war we could buy heel-plates at from 5s. 6d. to 14s. 6d. To-day they are costing us £3. For brass rivets before the war we paid 8½d. to 8¾d., and to-day they cost us over 2s. Ink is another thing we cannot procure; and webbing and eyelets are unprocurable.

To the Chairman: We borrow from one another at the present time; those who have stocks oblige us with what they can spare. I think an extra 10-per-cent. duty would carry us through. The present duty is 10 per cent. *ad valorem*. We want a further 10 per cent. in order to keep the factories moving.

J. B. FRAME, Secretary, New Zealand Boot-manufacturers' Association, examined.

In support of what has been said by the president of the association, I want to say that the boot and shoe industry is one of the very highest skilled and most efficient industries in New Zealand. I desire to dissipate the remarks which have been made in regard to inefficient employers. We employ about 2,500 hands, and if we had the assistance that the primary industries have we could easily double our output and also the number of hands employed. The first handicap I wish to draw your attention to is the heavy duty on machinery—something like 30 per cent. *ad valorem*—that is machinery that cannot possibly be made in New Zealand. In view of the existing conditions it will easily be seen that it is quite a reasonable thing to ask that there should be a fair protective tariff on imported boots.

To Mr. Craigie: They work very long hours in America, and the wages are not as high as in New Zealand. Another suggestion is that the Government should bring in a Bill to compel the production of pure leather. One of the greatest difficulties we have at the present time is in connection with adulterated leather. I do not blame the tanners, but I think a law such as I have suggested should be passed.

J. D. RAE examined.

In addition to what has been said by the other representatives of the boot industry, I desire to draw attention to the question of machinery: this is a very big question and considerably affects the industry.

To Mr. Forbes: We have done nothing yet in regard to standardizing boots, because the Government has done nothing. You could not expect us to make a boot without knowing what the cost of the materials is going to be; the price has not been fixed by the Board of Trade yet. We are in favour of a standardized boot made out of pure leather, with the price stamped on the boot. The boot-manufacturers were quite prepared to meet the Government in that respect; we told them we were in favour of a scheme for standardizing boots in New Zealand; we want to help them all we can.

To Mr. Craigie: I think our greatest competitor in the future will be England. All boots coming into this country before they are retailed to the public must be stamped. We want another 1 per cent. duty.

To Mr. Forbes: In sole leather there has been an improvement in the local production compared with what it was previously. I am speaking of the past five years. Sole leather has deteriorated in the case of some manufacturers; we find that out in working the leather in the factories.

J. A. Brown, representing Methven and Co. (Limited), Ironfounders, examined.

As regards our iron industry, and particularly the part I am connected with, we have had some difficulty as regards the protection—the protection instituted particularly with respect to brasswork. During recent years wages have considerably increased, so that you may say that to-day the manufacturers are practically without any protection at all. The question has been discussed by the manufacturers' association and other bodies here regarding the best method of protection. They have not had time to come to any particular decision as regards a policy of protection. It has been recognized by several manufacturers that protection in the shape of increased Customs duties is not sufficient—that increased duties assist industries in their initial stages, but after that something more is wanted. It has been strongly held that the New Zealand market should be held exclusively for local manufacturers. The method of getting over that may be arrived at by a standardizing of productions. You have had the suggestion of a standard boot. In the case of brass goods we could tell you almost exactly how many brass taps, for instance, are used in New Zealand, and how many boilers. This brings up the question of the establishment of a Department of Industries. This Department would require to be invested with wide and plenary powers—a simple, well-organized, expert machine to report, instruct, and assist in development by acting in a fiduciary relation to and embracing all sections of industry within its folds. (1.) The Department could be divided into three branches—statistical, commercial, and scientific—controlled by an expert committee of management; and the following suggestions reveal a *modus operandi*. (2.) Collecting and recording of statistical data—viz., (*a*) all the factories engaged in production; (*b*) the local output of such factories; (*c*) the relation of the quantity of the total output to the total consumption. There are approximately 120 distinct industries, and the scheme would combine the various groups engaged in manufacture. Then, by totalling the sectionized output and comparing it to the consumption, the amount of local manufacture necessary to make up the deficiency would be determined. (3.) The scope, possibility, and desirability of increasing production. The work of the expert is necessary to determine the most scientific means of production. The elimination of wasteful and useless methods of manufacture would be discussed by the factors engaged from a standpoint of greater efficiency. A more scientific method may be arrived at by the division of production, allotting to each factory those articles it can manufacture to best advantage. (4.) The standardization of goods as a method of reducing costs, the objective being to ensure the consumer against defective quality. The creating of standard goods is the result of expert consultation with the factors engaged, to obtain the best results at a minimum cost. (5.) The purchasing and distribution of raw materials. A similar system has been adopted by the Minister of Agriculture with regard to wheat-supplies, and amply illustrates the possibility of joint purchase of all materials used in manufacturing. The negotiating for supplies on a quantity basis would improve the bargaining-power of the manufacturer. Dunedin ironmasters require approximately 4,000 tons of pig iron per annum. The exact quantity could be obtained, purchased, and distributed. The arrangement of leather-supplies for the manufacture of boots, involving the purchase of hides, wool for cloth, cloth for clothing, &c., quantities of which could be conveniently recorded and arrangements made for supplies on a population of guaranteed consumption. The underlying ideal of standardization is to steadily improve the quality of production by scientific investigation, which reduces cost. (6.) Scientific research: This department would be available to any person requiring its services. Where a discovery rewarded research, as, for example, the extraction of oil from coal-dross, a company prospectus could be issued giving all information regarding the process, the machinery required, prospective trade, and capital necessary. All beneficial results of scientific investigation should be commercialized by the department, and unless this were done such discoveries would be worthless. The manufacturers and their workers must combine and demand that the present policy of foreign importation be adjusted; that all goods that can be successfully manufactured in our midst shall be absolutely prohibited from importation. The system of base ingratitude which permits our wealth to be exchanged for the product of foreign sweated labour must be abandoned in favour of the better distribution within our own borders for the benefit and welfare of our own citizens, and for the employment of our own labour and ability. Again, importation of useless and luxurious articles must also be prohibited, thereby checking wasteful expenditure, on the very grounds that New Zealand requires for her industrial advancement builders' ironmongery, railways, stock, and raw materials, before silk stockings, fur coats, face-powders, &c. The exports of New Zealand's surplus production must be directed into channels for the exchange of only those articles which we ourselves cannot produce, and those luxuries we can afford to enjoy, and no half-measure policy should be accepted. In order to do away with recurrent crises and industrial upheavals in trade, the organized power of the State, the two factors in wealth-production, and every section of society, each acting in concert and co-operation with each other, must step in to reduce the order of existing apathy, which produces such baneful results. I would like to point out, as regards the duties in New Zealand, the average is about 14 per cent.—that is, the average right through. In Australia I think it is double. There has been a wonderful increase in the output of the iron industry in Australia. In regard

to the position in this country, I may state that the question has been seriously discussed as to the possibility of some of the larger iron firms in this city going to Australia, for they would there have better scope for their works; the people there take a greater interest in manufacturing, and the population is larger. In regard to Arbitration Court decisions, I think some better system could be arrived at than the present one. I think that something on the lines of the report presented to the House of Commons in 1918 should be instituted in this country.

To Mr. Lake: In the case of up-to-date plant in foundries, there is not enough of it; there is a lot of the plant that is obsolete. Although the result of one New Zealand manufacturer going to Australia may not have been satisfactory, the conditions have changed since then; there was not at that time the same tariff as there is now in Australia. There is not very much mining machinery being made now. In regard to the industry generally, you must put on a protective tariff to reinstate it—the only way is to put on a tariff sufficient to reinstate it—the reinstatement must be genuine. I anticipate much benefit from the Government being the purchaser of the raw materials. The Government would hold the stocks.

To Mr. Veitch: In New Zealand the proportion of cost of manufacturing going in wages is 25 per cent., and in the primary industries 6 per cent. In the former 50 per cent. goes in material and 25 per cent. in expenses and so forth. I have not worked out the exact ratio wages have gone up during the last five years, but I can tell you that in 1910 there were 41,726 employees, and they took in wages £3,098,561; and in 1916 there were 48,399 employees, who divided £5,749,554. That is a percentage of increase per man of more than 10 per cent. The barometer charts show that in pig iron, if anything, there has been a slight reduction in the cost. I think the relative increase in material and wages has been about stationary; there has been no increase in the cost of material. There has been an increase of practically 30 per cent. in wages in the war period.

G. E. MORETON, representing Messrs. Moreton and Bradfield, examined.

We are indent agents, but we are also manufacturers of one of our New Zealand products, and we have been hit pretty hard in respect to protection. We are manufacturers of a few lines of cheese in tins. The empty tins we receive from Australia at the present time; they cannot be obtained in the Dominion. A very considerable amount of Australian cheese has been imported into this country in tins, on which the duty is 20 per cent. *ad valorem;* and therefore it does not give us much chance against the imported article. They are selling some of the lines wholesale to-day cheaper than we can put them up, consequently our industry is suffering through that. New Zealand produces, and particularly Otago and Southland, the finest cheese in the world. It is almost an insult to our people to allow cheese to be imported into this country. We ask you to give us your favourable consideration, whereby we will get a reduction on the duty on tins. 25 per cent. is the duty on tins, whereas the imported articles, when the cheese comes in in tins, only pay 20 per cent.

J. DOWNIE examined.

I desire to make one or two suggestions to the Committee. What we want here is immigration. It is the want of people of the right kind that is stopping the progress of the country. I am not afraid of wages going back to cheap wages again; they cannot go back. Another thing that is stopping progress is that our Arbitration Court limit the number of apprentices to workers. Our industries are constantly being blocked through strikes. The Government have got the labour at their command, and they have the coal-mines at their command. Why not put some prison labour in the mines? If the suggestions I make were adopted it would result in greatly increased prosperity in the country.

F. RYLANCE, Paint-manufacturer, examined.

With regard to whiting and putty, I desire to say in regard to the former article I think I am about the only manufacturer in the Dominion who is manufacturing it, and it is manufactured from local material. Whiting is composed of what ought to be a substance which is largely in evidence in New Zealand. What we would like the Government to do is to give it as much protection as possible, because it is a low-grade material. The present duty is only 1s. per hundredweight. If a large duty were put on a larger amount would be manufactured in this country. Putty is made from whiting and oil. There is no putty made in New Zealand. I ask that an extra duty be put on putty. The duty is £2 10s. per ton. I think the duty ought to be at least double in order to benefit the local industry. We can make as good, or better, putty as can be made in the Old Country.

J. M. BENTON, of Messrs. Hogg and Co. (Limited), further examined.

I desire to say a few words in addition to my previous evidence in regard to the question of manufactured doors. The duty on American doors is 20 per cent. and 10 per cent. additional. Our firm has up-to-date machinery for making doors, and I think we have the largest stock of doors in the Dominion. We ask that a similar tariff be imposed here to that in force in Australia.

To the Chairman: We cannot compete at present with the imported doors. If you go through the bush districts of this country you will find that imported doors are frequently to be seen in the houses. Then, in regard to picture-mouldings, the present duty is 20 per cent. and 10 per cent., but that protection is quite insufficient if the market is not to be allowed to be flooded with the imported article. In respect to the use of imported timber, I may say that I think this country made a mistake in the pioneer days in not putting down oak saplings. There is no reason why in some districts the oak should not be successful for such purposes. Otago Central is a suitable district in which to grow oak in New Zealand.

SATURDAY, 22ND FEBRUARY, 1919.

R. JACK, Professor of Physics, Otago University, examined.

My purpose is to supplement what the Hon. Mr. Thomson and Dr. Malcolm have said. I understand that you are sympathetic to the claims of science, and so I shall refer to what is advisable for the promotion of science in its application to industry. We very much need more assistance in the University before we can apply ourselves to this most desirable object. Workmen talk about forty-four hours per week at Home, but in the University our week is about eighty-eight hours. We must remember that to attract such assistance we must give sufficient remuneration. At present the tendency of young scientists is to leave science and go in for medicine, because they have no prospect. Young men who do good work in science feel that they would ruin their future if they went on with it. Therefore we need to get assistants who are as well paid as those who go in for medicine. In the next place, we would need people who are devoting their whole time to investigations. Needless to say, the assistant would also do original work, and the professor, being relieved of much of his routine work, would do the same class of work. In addition we need scholarships for the students who will continue. These would devote their whole time to original investigations. The scholarship at present available is only up to £100 a year, which is much too little. In addition to merely scholarships, we must think of the future of these people. No man will go in for original work if he is not assured of having some definite future occupation. At present the only thing we can hold out is the teaching profession, which is a very poorly paid one. Also, there are many able scientists who are disinclined to go in for teaching, but they cannot go on with their interest in science because they feel they would have nothing to do. So I think that in addition to the improvement of the status in the teaching profession there should be other openings for science students. For instance, there is the electricity department. One of the branches of my subject is electricity, and yet if one of my honours students who has done original work applied to get a post in the electricity department he has to begin at the bottom. There is also the question of the Public Works Department. There ought to be openings there for scientific men. There is also the question of the absorption of the men into industry. I think that will come, but it will need careful nursing. We wish to get, first of all, connection with industry through the scholarships—that is, let us get a student put on to do some original work for some firm or group of firms. That firm or group of firms will realize that the science is of great use, and in that way the utilization of science students will be encouraged and will become an important one. I say then that we should, in setting up the scholarships, get an alliance with industry. We can, for instance, get a special student to take up work for a special firm. Part of his time he would be in the laboratory and part of the time at the firm's establishment. There is a great future once we get that. The next point is the equipment. In other countries the universities are equipped in a way far superior to what they are here. Our buildings, too, need extension. Further, we have not a proper library for reference purposes. Then, it is a mistake to think that the only thing of value is applied science. If you neglect pure science you are neglecting applied science. If we are going to encourage science and its application to industry, let us encourage pure science as well as applied science. Then, how much electricity is taught in the schools? I have been examining 2,300 papers—matriculation and others—in connection with an examination, and in the South Island only thirty-eight of the students have taken electricity. Teachers are not encouraged to go in for the subject, because there is no demand for the teaching of it, and scientists are not encouraged to go in for the working of it because there is no future for them. The thing is really appalling when one thinks of it. One of the matters I wish to get on with at once is to investigate the state of the atmosphere at different times and weathers in New Zealand, and how we could bring about rainfall in districts where there is no rainfall, how we could bring water on to the lands where the lands are needing it, how we could forecast the weather from the observations of the electrical condition of the atmosphere, and so on. The problem is an enormous one, and we have not got time to go on with it, nor have we the money to go on with it. I also wish to say this: In my laboratory I use a large number of instruments which could be made as well and as cheaply in New Zealand as at Home. There is room there for a new industry. Let me say, too, that there is no end to the number of problems that could be taken up, and you need not fear that their encouragement would not lead to the turning-out of work. The main thing is to encourage the work at the four centres. I do not agree that there should be a central place for research, and that one place should carry all the main work. We must have the competition element in the different centres and encourage our scientists in each centre. Then we must bring in the industry as well as the science—that is, get some scheme bringing in industrial men, and we will benefit them and they will benefit us.

W. N. BENSON, Professor of Geology, Otago University, examined.

At the request of the Chancellor of the University of Otago I desire to place before you a brief statement of the type of scientific investigation with an economic value that could be undertaken by the Otago School of Mines. Owing to the shortness of the notice given me for the preparation of my statement, and the absence of the Dean and Professor Park, and the brevity of my own residence in New Zealand, I cannot at present enter into any detailed discussion of the suggestions herewith made, which have been drawn up by Professor Waters, Professor of Metallurgy and Assaying, and myself. The materials-testing laboratory at the School of Mines could be extended so as to undertake more extensive investigations than it has yet attempted into the strength of New Zealand timbers, building-stones, cements, bricks, &c., the last items in particular affording a valuable check upon the quality of manufactures by various processes

from original materials. The assaying and metallurgical department could undertake work upon—(1.) Methods of utilizing the coal-slack produced in large amounts and thrown away by the coal-mines, though containing much calorific power and material for the production of gas and tar, and possibly oil. (2.) Methods for securing the most complete combustion of coal in producer plants; at present a large amount of the carbon fed into such producers remains unused. These two problems will probably have to be considered with regard to individual types of coal. (3.) The possibility of the manufacture of silica brick or sand-lime brick from local materials, such as the extremely abundant Caversham sandstones or other deposits. (4.) The investigation of the location, nature, extent, and suitability for the manufacture of bricks and pottery of the clays of Otago and Southland. In both these investigations the co-operation of the Geological Department and the materials-testing laboratory of the School of Mines should be of use in the location and survey of the deposits and the control by microscopical and mechanical tests of the products in various stages.

In regard to the Geological Department, any economic field-work that it undertakes would be spent to far better advantage to the community in the systematic study of regions in which valuable minerals have been discovered, to ascertain the nature and extent of the deposits, than in the search for new deposits in more or less untried regions. It should be pointed out that the extensive regions of coalfields in Otago and Southland have never been mapped in detail, and the investigation of the Kaitangata district, the Waiau valley (Nightcaps), the Orepuki oil-shales, and other mineral-fields is desirable. The occurrences of tinstone and wolfram on Stewart Island have never been surveyed in detail. The desirability of the study of deposits of material for brick and pottery making have been mentioned already. In all such topics the investigation might be accomplished by trained graduates working under the direction of the professors. The time required to be devoted to this work by the professors may render it necessary to relieve them of some of the routine work of tuition, and it might be best that the professor and the investigator should co-operate in both the teaching and the research work. In the case of work involving geological surveys, it may be best that a close association should exist between the Dominion Geological Survey and the University, especially if the work be of a regional character, upon which a published report is desired, that might suitably appear as a Survey Bulletin. Owing to the unsuitable nature of much of the winter-time for field studies, the employment of the investigator as a part-time assistant in the teaching may be very desirable. The University teachers themselves may also be co-opted by the Geological Survey for special investigation and regional surveys, this practice being followed in other lands. In such investigations by members of university staffs the employment of senior students as field assistants is often very suitable. Several of the bulletins already issued by the Geological Survey have been produced in this manner. It has the merit of increasing the field staff of the Survey in that portion of the year most suitable for field investigations, leading to an increase in the output of information useful to the country and to science generally. The School of Mines could not, however, undertake investigations of most of the topics suggested without considerable financial support, for the securing of ample instrumental and mechanical equipment, technical publications, the adequate remuneration of assistants, and other expenses necessary to such researches. It is not possible at the present stage to indicate what support is required or how it should be applied, especially if the research undertaken be chiefly in the interest of private individuals, for this would depend entirely upon the individual circumstances of the case.

To Mr. Hudson: The question of waste slack at the mines has possibilities of considerable development. There is so much potential power thrown away that it is worthy of investigation.

To Mr. Luke: A great deal of our New Zealand coal is different from the coal of England. We have largely brown coals. Coal is a widely varying substance, and different seams require different treatment. Investigation is necessary to ascertain which treatment is desirable. Professor Waters is of opinion that we ought to pursue investigations from our own aspect.

To Mr. Sidey: We have no equipment to enable us to do much in connection with the work of coals and firebrick.

E. L. MACASSEY, Land Agent, examined.

I wish to make a few remarks about seaweed. On the coast of New Zealand there are thousands of tons of seaweed which are at present going to waste. I have had a good deal of communication with the Minister of Marine on the matter, and he has suggested that I should have seaweed tested. We treated it in a rough way for potash for manure. In New Zealand at present potash manure is very scarce. The seaweed we treated was analysed by Professor Waters, and showed 11·2 per cent. of potash. That alone is worth a lot of money. [Sample produced.] We burnt the material. Besides the potash there are iodine and other properties in the seaweed. I refer specially, however, to the potash-value of the preparation for manure. Seeing we have so much of it on the coast, I think the Government should send an officer to America to find out the treatment and what machinery is required. Works might be established in a district such as that from Hampden to Shag Point. I would like the Government to bring an expert from America to examine our coasts.

C. S. MITCHELL, Manager, New Zealand Paper-mills (Limited), examined.

The wrapping-paper industry is carried on in New Zealand at present by the New Zealand Paper-mills (Limited), a company with £100,000 capital and three mills—Mataura, Dunedin, and Riverhead (Auckland). It confines itself solely to New Zealand, and its ramifications extend from the North Cape to the Bluff. Last year it paid out for raw material £36,840, in freights (rail and steamer) £4,042, for coal £9,750, and for wages £20,000. It is an industry that should be encouraged in every way by protection. We have written to the Government more than once, and hope to get some alterations made to the existing scale of duties. In regard to

carpet and insulating-felts [samples produced] we ask for a duty of 5s. per hundredweight, with 7s. 6d. preferential. At present there is no duty on this line. Coloured pressings are also duty-free, and we ask for similar protection. White printing-paper is another free line, but there is a good deal of it imported in small shop rolls of 9 in. diameter for wrapping purposes. We ask for similar protection on this line. Some time ago we drew the Prime Minister's attention to the fact that printing-paper can be made in New Zealand, and that we had already supplied several newspaper offices, which were quite satisfied with the quality [sample produced], but we cannot produce the article in normal times at a price low enough to compete with the imported on account of there being no duty on it. Before the war Canadian newspaper was carried in subsidized vessels, thus securing rates much lower than we paid for raw materials. If inducements in the way of protection were given our plants could be enlarged, and the manufacture would be made one of the staple industries of the country. We have, however, refrained from asking for this concession, and have devoted ourselves to the manufacture of wrapping-paper and bags, but in these lines we have been subjected in the past to competition which we submit is neither fair nor just. While the pulp-mills in Canada would not supply us with wood-pulp, on the ground that their works were fully occupied without our business, they were able, in the absence of a duty in our favour, to land paper here at a very low rate. Pulp boards, we submit, should also carry a duty of 5s. per hundredweight. Then, in the Customs tariff paper bags are divided—"paper bags, coarse," and "paper bags n.o.e." There are no bags imported under the first heading, but under the second heading all sorts of light bags are admitted, and many of these are used by grocers and others for the same purposes as the coarse class. We have had experiments made with all the local timbers for making wood-pulp for the manufacture of strong wrapping-paper, and the most suitable proved to be white-pine. This timber, however, is scarce, and is required for butter-boxes. The industry is a fine one for the Dominion, giving employment all over the country, and using up waste products that would otherwise be destroyed.

To Mr. Craigie: We have tried *Pinus insignis*. It makes good pulp, but it is not a local tree.

To Mr. Hudson: I think that broom, gorse, &c., properly treated, would make good paper, as stated by a witness the other day. I do not think that wrapping-paper should come in free.

To Mr. Forbes: The industry has developed considerably in the last ten years. In the lines I have referred to we have never done a large trade, but under protection we could do a considerable amount of work. We employ about 150 hands in our three mills.

To the Chairman: Our wood-pulp experiments were made in London in 1911. There are large areas of birch, or beech, in Southland. We sent some of it Home, but the report on it was that the paper was no good—it had no strength in it. I think there are other timbers than white-pine in New Zealand to make newspaper pulp, but unless we get protection we cannot compete with the material that comes from overseas.

To Mr. Luke: Generally the waste products of the country keep the mills going. Two-thirds of a white-pine tree would be suitable for the making of paper. The small branches could not be used.

J. E. MACMANUS, Farmer, Catlin's, examined.

I am interested in the development of the timber industry in South Otago, where I have taken up a bush section. Bush settlers have many difficulties. Under present conditions they are practically forced to destroy what is a national asset—the bush—and sow grass. This policy is pure stupidity. If a settler is a returned soldier the Government actually advance him money to destroy the timber. The soldier's disadvantage is that he cannot get his timber to a market. He lacks means of access to his land and from it, and he lacks means of transport. Now, in France I saw an idea that might be of value here—I refer to light railways to feed the main lines. On the western front there must be seven or eight thousand miles of railway, and the New Zealand Government will have an opportunity now of obtaining not only cheap railway-lines, but cheap rolling-stock from that country. The gauge is 2 ft. 6 in. There are vast possibilities in a country like this if the Government will only acquire a large section of that railway and rolling-stock. The Queensland Government has established a State sawmill, and is clearing the land before the settlers go to it. If our Government will do the same it will develop an excellent industry and make the difference between success and failure. I have been brought into touch with many soldier settlements, and I contend that some of them are doomed to failure. [Witness referred to cases on the Clifton and Benmore settlements.] Soldier settlers are better treated in Queensland. On all unimproved land the returned soldier is given an area rent-free for the first three years, and from the fourth to the fifteenth year he pays 1½ per cent. on the capital value. If money is advanced he is not asked to pay back any of the principal for the first seven years, and the interest is 3 per cent., rising to 4½ per cent. In addition, they get technical instruction from the experts of the Technical College and other advantages. The schemes there are a success. I suggest that something similar should be done in New Zealand. I believe, after the experience of Queensland, it is possible to settle men on unimproved land. Queensland helps a man over his initial difficulties.

To Mr. Veitch: I believe that land-aggregation is more general in this country than is generally imagined. The timber-supplies of the Catlin's district are very extensive.

M. W. MARRIAGE, Manager, Newberry, Walker (Limited), Ironfounders, examined.

The point I wish to make is this: Mr. Hayward said yesterday that he wanted a line such as cabinetmakers' ironmongery to come in free of duty when the tariff is reconsidered. We manufacture bedstead fittings for wooden bedsteads, and it is my desire that the tariff should be left as it is. We have put down extensive machines to do the work. At present we are competing with Birmingham successfully, and do not want the duty taken off now that we have established our branch of the industry.

INVERCARGILL.

TUESDAY, 25TH FEBRUARY, 1919.

J. T. CARSWELL, representing Carswell Company (Limited), examined.

The flax industry in New Zealand is not only a very important one, but also, by reason of the large amount of labour employed, an industry affecting the welfare of a considerable number of people. It is therefore fitting that the Government of the country should do all in its power to promote the industry. That the Government has not been negligent in the matter will be readily admitted by those connected with the industry. It initiated the system of compulsory Government grading of all New Zealand hemp prior to export. This was a tremendous advance, and immediately placed the export business on a sounder and better footing. Then it offered bonuses for improvements in the machinery connected with the manufacture of flax. A good deal of money has been expended in this way, some of it perhaps not too wisely. Nevertheless the effect has been to greatly improve the machinery used for stripping, washing, and scutching flax. The advance has been very gradual, but there is no doubt that the machinery in an up-to-date flax-mill of to-day will do its work better and more expeditiously, and with less expenditure of labour, than that of the mills thirty years ago. These are the two main ways in which the Government has assisted the industry in the past. The Government can further assist flax production and manufacture as follows: First, in regard to production. There are without doubt areas of swampy land belonging to the Crown which it would pay well to drain and retain as flax areas. The draining could be done either by prison labour, if available, or special inducements could be given to applicants applying for leases of such areas. The Government have spent a very large sum in afforestation by means of prison labour in the North Island. I venture to say that the money would have been more profitably spent in draining the swamp lands of the Crown, and even in planting flax. Some of the North Island drained swamps have averaged all over 35 to 40 tons of green flax to the acre. A fair average royalty for such flax would be about 15s. per ton—it has during the war been as high as £3 per ton for thickly grown flax—and as the flax can be cut every three or four years there is no doubt there would be a very handsome return for the initial outlay. In the Invercargill prison farm the Government have an ideal area for planting flax; and whilst the situation of this land might be considered too valuable to devote entirely to this purpose, a portion at least might be planted out. Then there are areas of waste land, such as along the Government railway-lines and reserves along rivers, which it would pay to have planted. The one disadvantage in regard to flax along the railway-lines would be its liability to catch fire, but the danger from this cause would not be greater than in the case of the large groves of trees alongside the railway-lines in Canterbury, which do not appear to be more than very occasionally set fire to. Then, secondly, the Government might do a great deal toward utilization of waste products of hemp. A private company some years ago endeavoured to extract and turn to profitable account the gum from flax, and there is no doubt that this side of the industry will yet be developed. The private company referred to was not very successful, but it by no means follows that the enterprise was foolish or ill-considered. Then there is no doubt that the Government should encourage the saving and treating of tow and stripper slips. Possibly a bonus on the first 500 tons of heckled tow produced would be a more judicious expenditure of public money than some of the bonuses paid for improvements to flax-mill machinery. The trouble with the tow and stripper slips is that most flax-millers have not time or labour available to turn out a really good article. It seems to me that this is really a business for specialists in these lines, who could collect the tow and stripper slips from the different flax-mills in the districts and treat them at one or more central mills. Thirdly, the Government might do something in the way of offering inducements to millers to improve the quality of their hemp. At present New Zealand hemp is used mainly in the manufacture of binder-twine, although some of our hemp is made into rope. But it might be put to much finer uses. Once the gum was extracted the fibre could be used for fabrics, and it takes dye very well indeed. I remember on one occasion an expert showing me a piece of fine-looking silk cloth which had come from Singapore. On dissecting the piece of fabric, however, it was found that part of the "silk" consisted of jute. If jute can be used in the manufacture of cloth, surely our New Zealand flax can be used also. Fourthly, in regard to improvements to flax-mill machinery, I am of opinion that there should be a special Government expert or experts employed to look into all new inventions, and if they have merit the Government should lend to the inventor any money actually needed for the development of the invention. In consideration of such loan the inventor would require to agree to allow the Government to fix what it considered a fair royalty for the invention, and the half of these royalties would go to the Government until the loan was repaid, with interest, the balance going to the inventor. This to my mind would be infinitely preferable to making a straight-out monetary payment of a larger sum for an invention which may prove of very little practical use. Fifthly, a profitable use to which tow (now practically a waste product) might be put is the manufacture of corn-sacks. Of recent years the price of sacks has risen enormously, until at the moment they are costing over 14s. per dozen to land. The Government might hold out inducements, such as a bonus on the first thousand bales of sacks manufactured in New Zealand, and when it was proved that sacks could be manufactured satisfactorily the industry might be protected by placing a small duty upon imported sacks.

To Mr. Veitch: On the royalties of the last ten years a good grade of flax, thickly growing, is just about as profitable as cultivating the land. In the North Island you have thickly growing patches of flax which are bringing a far better result than the land can possibly bring from agriculture. Fax grows best in well-drained land near running water

To Mr. Hudson: I base my remarks on an average royalty of 15s. per ton. During the war royalties were as high as £3 per ton for flax. I am basing my remarks on pre-war conditions altogether. I admit that the results of growing flax might not be as good as dairying under present conditions. The price of corn-sacks has risen greatly.

To Mr. Sidey: I think it is correct to say that the quality of the product is inferior compared with what it was some years ago. I think the Government should do something to induce millers to produce a better article. The greatest proportion of the flax produced in Southland is "low fair"; there is very little "good fair" being produced. I think more than an alteration in the matter of grading is involved. An expert going continuously around the flax-mills and trying to educate the millers in the production of a good article would help. Possibly this might be done: If the Government would for a year or two let the millers know that they would not allow them to export the lower grades it would be unprofitable to turn those grades out. As to grading, the trouble is there is a standard of grading, and the grader has to work on that standard. As to improving the standard, the point is this: If the Government were to say, "We won't allow you to export 'low fair.'" the result would probably be that in two or three years very little or none of that "low fair" would be produced. As a matter of fact, in London they do not want our "low-fair" or common hemp. It is a bit of a problem improving the quality, but I would suggest that for a year or two the export of "low fair" or common be prohibited. I certainly think the millers should get at least six months' or a year's notice. In most instances the quality of the product itself is all right. In this district, and I suppose in Canterbury also, linseed can be grown very well, and that is an industry which no doubt in time will come to the front.

To Mr. Craigie: There is some swamp land in Southland, but it is mostly swamp with bush. Flax will not grow where the water is stagnant; there must be good drainage. There are areas a bit far back that it would pay to deal with in that way. We export fully three-fourths of our local product—probably more. Towards the beginning of the war the price of jute was getting up to about £30 per ton, and the pre-war price of our flax was about from £25 to £30 per ton. I know they have cheaper labour in India, but as against that I would suggest putting a small duty on imported sacks.

To the Chairman: The Government recently offered a bonus for improved machinery, but I do not know about it at the present time. I think the suggestion I have made is better than making a straight-out payment for an invention. There was a prohibition in the United States against the importation of New Zealand flax, but it has now been removed. The price is very low at present, and there is not much inducement to make shipments there; manila and Mexican hemp is going in. Only a few millers produce the finest quality of hemp; it is a suicidal policy not turning out the maximum quality. The millers' cost per ton for "good fair" is about £1. In the North Island it would be considerably less. It takes about nine tons of green flax to make a ton of fibre.

G. W. Edwards, representing Southland Flax-millers' Association, examined.

Regarding the utilization of waste products in connection with New Zealand flax, I beg to offer the following suggestions: (1.) That an exhaustive analytical test be made to ascertain if alcohol can be obtained by distillation or otherwise, and in what quantity, from the waste vegetable refuse of flax (*Phormium tenax*) after it has passed through the ordinary mill stripper. I have every reason to believe from observations extending over twenty-five years of flax-milling that if alcohol can be obtained in commercial quantities and at a low cost, as I believe it can be, it might serve as a substitute for imported articles of a similar nature for use as fuel for combustion engines, &c. (2.) When I was flax-milling at New River Ferry, where there was practically no feed, I found that cattle ate the flax-refuse whilst in the fermentation stage greedily, and in preference to good swede turnips growing close by. I also found that the cattle throve and fattened upon it, and I did not lose any cattle through fibre-ball, such as would have been the case with manila hemp. I might also state that where the refuse was carted out on to the sand clover and other grass grew luxuriantly. From our own experience I should say that the waste products of flax, which are at present running down the streams, would, if carted out to stock, feed an average of fifty cattle at each flax-mill.

To Mr. Hudson: I have had actual personal experience of feeding cattle with the flax-refuse. I did it for two years before I sold out of the place; I reared calves on it up to two years. I bought calves, and they had nothing else to live on but the refuse from the stripper. There was a man who was milking cows for a dairy factory, and he used to take away the stuff occasionally, and his wife told me that every time the cows were fed on the refuse she got an extra tinful of milk. I have not heard of it being used elsewhere. I have heard a flax-grader say he knew that cattle were very fond of it. I have known of no bad effects so far as the cattle were concerned.

To the Chairman: The cattle were fed on the refuse that comes from the stripper—the outside green of the flax.

To Mr. Sidey: The cattle generally eat it better after it starts fermentation. Fermentation starts on the third day.

A. E. Bath, representing Southland Coach and Motor Union of Employers, examined.

Re local industry as pertaining to motor-body building in New Zealand, I have been appointed by the Southland Coach and Motor Union of Employers to represent them, and to tender you evidence on this subject. It is very discouraging to those engaged in the motor-car body and side-car body building industry in New Zealand, after spending a considerable amount of money

in up-to-date machinery and appliances, in which we were encouraged by the pre-war tariff throughout the Dominion—the chassis being duty-free, and 20 per cent. *ad valorem* on British imported bodies, thus making it possible for the local maker to turn out body work at a payable rate—to find that owing to some unknown reason the Dominion tariff has now been altered to 10 per cent. *ad valorem* on chassis and the same rate on finished cars. This is the surest means of destroying local enterprise, and a very unfair treatment to the body-makers throughout the Dominion, many of whom may have found it hard to get the cash to buy the machinery for its manufacture; and now that the bodies of the car complete can be brought in at the same rate as the chassis it means partial ruin to those engaged in the industry. In Australia this industry has made big strides in the industrial world, and until recently, when the importation of motor-car bodies was prohibited, the protection was, on single-seated bodies, £15 British, £17 foreign; while double-seated bodies were £21 British, £24 10s. foreign. Bodies with fixed or movable tops, as the limousine car, are £36 for British, £42 for foreign; chassis only, British are free and foreign 10 per cent. Now, we respectfully ask you to use your endeavour to induce our Government to give us an adequate protection, for which we have the right to look, and which we were led to understand would be granted, provided that we could show we were able to make the bodies in a properly finished and workmanlike manner; and this will, we think, be accepted by all competent judges. We are asking no special favours, but have a right to be protected, so that this industry would be payable and would keep a considerable amount of money in our Dominion.

To Mr. Veitch: The date of the Customs revision was 1907. We were in business before that.

To Mr. Luke: The adoption of the Australian tariff here would give us a big help. The help would be little enough with present labour conditions.

To the Chairman: A case came under my notice of a car which had been sold in the Old Country; a local body was put on, and the order was cancelled for the body at Home; £14 was allowed for the body, which it had cost £40 to build.

To Mr. Hudson: There is a prejudice against the local body in favour of the imported body as far as the money is concerned—that is to say, a man importing a certain line of chassis wants to grind us down to the lowest, and get the biggest price from his customer; we are squeezed from outside and inside, as it were. Getting in the chassis free of duty and putting it on the body of the car would get over the difficulty. As far as the local man is concerned, he would go for the local body every time if we produced it anywhere near the figure; the quality is superior here.

To Mr. Sidey: We can make the weight lighter in the case of the locally made article. There are three or four other similar manufacturing firms in Invercargill. Three of us are able to be quite independent of each other, and have a complete set of machinery. We import chassis, too, occasionally, and we sell the completed article—we did before the war, but with this duty coming on, and with the labour trouble, and the taking of our men for service at the front, the position is changed. The trouble is that we have to build to every man's design; we are not in the same position as builders in those places where there is a standardized body; we cannot standardize, because every customer has his own fad to carry out—that is the biggest handicap we have.

To Mr. Forbes: The industry has made wonderful strides in Australia; the imports have decreased.

To Mr. Hornsby: We are not at present hampered by royalties.

To the Chairman: I could not make a statement to the effect that there is any faking of invoices, or that the Customs are defrauded in connection with the importation of the motor-bodies. I would not care to say that. As to the saving in connection with the chassis as against the complete car, I could not say what it would be, but I should think it would be fully a third—say, 3 tons in measurement. I suggest that the whole tariff should be put on the body and not on the chassis, and we would complete the body. As to what the Government would do for revenue, I would suggest putting it on the tires, where there is no revenue now.

To Mr. Craigie: There is no factory for making tires in New Zealand at present. I would not like to put money into it without further protection; the trade is maintaining four shops here on jobbing principally.

A. HALLIDAY, Sawmiller and Farmer, examined.

I am of opinion that a Board of Inventions should be established. Practical men with a wide knowledge of various subjects should be members, and the Board should have power to give sympathetic advice to inventors, and to recommend Government monetary assistance, after going thoroughly into the matter before them, if deemed advisable. The Board should be so constituted that inventors would have every confidence in them that their ideas would be safe-guarded against piracy whilst in the embryo state. Inventors whose ideas might be considered by the Board worthy of exploitation should have access to a Government workshop or laboratory. I suggest that the costs of patenting an invention in countries where it might be considered advisable should be borne by the Government. The patent should be taxed with the costs out of the royalties that might accrue. The Government should be the patent agents and be able to protect patent rights. The law at present requires amending to give greater protection from infringement. We have Government State insurance (fire and life), public trust machinery, and others—all for the protection (and most wisely so) of the public; and patentees should also be afforded facilities for similar protection. I can speak from a practical point of view. [Witness showed members of the Committee drawings of a patent spark-quencher.] A poor man may have a brilliant idea, and he has to go to a patent agent. My idea is that the State should take him by the hand and help him right through.

To Mr. Sidey: I am not quite clear as to how the Board should be constituted—it would depend on the questions likely to come before the Board; there would need to be different men dealing with different subjects. The idea of setting up a Board of Science and Industry is a good one; the two would work in together. In regard to my fire-quencher, I may state that I have had it in operation in connection with a portable engine for a considerable time with good results. It is patented in New Zealand and in some other parts of the world. In regard to the question of the cost of living, I would like to draw attention to the importance of the utilization of worked-out sawmill areas, and make some remarks concerning domestic fuels. Large areas of land adjacent to railways, off which milling-timber has been removed, contains an immense quantity of good wood which will eventually be wasted by rotting and burning if left in their present state. The bulk of this can be economically handled and put on the market as cheap firewood if assistance were afforded by the Government by allowing their trucks to be taken over light lines into the old bush workings in order to save double loading and extra haulage. The lines should be laid at the property-owners' expense. At the present time small portable mills can be worked in these areas for the cutting of firewood, and the loading done by elevators. If double-handled the material becomes too expensive for fuel, and would not pay the owner to turn into firewood. Some of these properties also contain brown coal or lignite, and if the same facilities were granted this article could be placed on the market cheaply, besides clearing the lands adjacent to railways, which must have a beneficial effect on railway revenue. The importance of such clearing of these lands is twofold: cheap fuel for the people, and the land would be saved from falling into disuse by weeds and pests. If these facilities were granted the high valuation of much of this land might be justifiable, but which is absolutely extortionate in their present state. Land in stump is not worth more than £1 to £1 7s. 6d. per acre for taxing purposes, as it is well known in Southland that it takes £9 to £12 per acre to put stump land under the plough. Cheap gelignite and rabbit-netting should be provided for the development of virgin land. At present the rents of private railway-sidings are exorbitant. The Government should put switches in at cost.

To Mr. Veitch: As to bringing out firewood on existing bush trams, at the present time the question of labour is the trouble. As to putting in special lines, the millers are now too busy trying to make both ends meet in connection with their sawmills. It would mean setting up a special plant. We are considering doing that now if we can get a cheap-enough side line.

To Mr. Hudson: I think it would be a good idea if the Government undertook the supply of proper machinery for the removal of stumps—such as log-haulers. At the present time traction-engines, with the aid of gelignite, is our cheapest method of dealing with stumps. I think it would be reasonable to ask the Government to issue gelignite at a reasonable price.

To the Chairman: The pre-war price of gelignite was £2 15s. a case of 50 lb. Electric batteries and detonators are very expensive at present.

To the Chairman: I will ascertain and let the Committee know the price of gelignite before the war and the price to-day, and will state at what price I think gelignite should be sold at. I went into the question of the price, &c., of a private railway-siding last August. We thought of putting in a private siding for our mill. We thought that if we could get the Government to give us a cheap line into our sawmill it would be a benefit to us and would certainly increase the freights received by the railways. The cost of material at that time ran us into about £300 to get it done. The material put on Government property would always belong to the Government, even although it was not paid for by them. There is an annual charge a year—about £20 or £50 a year. Then there was the question of the weight of the rails which must be used. The Department said they would have to inspect our line after we had made it. They would not allow us to use our own rails; the Engineer said they must be 35 lb. rails. We have rails there which I am satisfied would carry an 8-ton truck of firewood, providing the sleepers were laid close enough and the grade was level. The cost would be £300, and we could not afford it. I suggest that we should be allowed to put down lighter rails. I think we should have a switch to the Government line at cost price. Then there was the question of bringing the loop line in under a 5-chain radius. The position was hedged round with too many difficulties.

WILLIAM HALLIDAY, Farmer, examined.

I am a settler of over fifty years. I wish to advocate State ships. The Government should provide twenty ships, each not less than 5,000 tons, for the purpose of carrying produce to foreign markets and importations of the Dominion's requirements. All the farmers of New Zealand should become shareholders, and should be bound to both ship and import their requisites by the State-owned steamers. The farmers should pledge themselves to the State line, and the Government should co-operate with the farmers and producers. As time goes on the fleet would be added to, in order to provide for increased shipping requirements. Another matter is this: The productions from the soil being the greatest asset this Dominion has, it behoves us to foster that which is the easiest of attainment and best known to the greatest number. After forty years of practical farming I emphasize that lime is a requisite for the soil. I advocate a scheme by which the Government will find the money to establish lime-kilns, built on scientific principles, alongside the deposits. There are many such deposits in Southland. Light lines could be run in to join up with the main lines. The cost of the kiln would be worked out by charging up to farmers for interest and sinking fund.

To Mr. Hornsby: Eventually the producers of the country will become the owners of the shipping lines, with the State having a share in them, as it has in the Bank of New Zealand. That would be better than having a purely State concern.

To Mr. Sidey: I would not allow the merchant to have a share. I want to get rid of the middleman.

To Mr. Luke: I believe there was once a State kiln at Dunback, but it was a failure.

To the Chairman: I am paying 22s. for oxide of lime on the truck at the kilns. Carbonate of lime is cheaper—it is 15s., but it is still too high.

JOSEPH HENSLEY, Sawmiller, examined.

I desire to bring a few points before you regarding the wood-pulp and paper-manufacturing industry. Some years ago a prospectus was issued on the West Coast setting forth the points connected with the industry, but owing to the disabilities caused by the war and the high cost of production the whole matter was held up. The Southland League has gone into the question very fully, and with a view to getting finality has sent to the London Institute samples of our timbers. The Institute has acknowledged the receipt of our letter, and told us that as soon as the samples arrive they will be put under test and we will be acquainted with the result. We expect to get further word probably in the course of a few months. In a timber country like New Zealand every effort should be made to promote this industry. As a sawmiller I am as anxious as the Government to eliminate all waste, and the time has come for the establishment of a pulp industry to work toward that end. When a mill works out a section of bush a considerable quantity of material is left behind. It is estimated that there are from 15 to 20 cords of wood left over from an acre, and this should be utilized by the Government in the manufacture of wood-pulp. This residue would produce from 11 to 12 tons of paper. The consumption of printing-paper in New Zealand runs from 50 to 60 tons per day, and the current price is about four times what it was in pre-war times. The establishment of such a mill would cost approximately £80,000 or £100,000, and it would produce from 15 to 20 tons per day, or less than half the quantity of paper now imported. I think that a mill of this description, or even larger, could be very well built in Southland. It would have a sufficiency of timber to maintain its operations for a considerable period. I produce samples of paper made in New Zealand. New Zealand is a timber country, and in Southland we have thousands of acres that have been milled, while we have thousands of acres of timber in the interior which is virgin. In Seaward Bush there are vast quantities of timber that could be utilized for this purpose. One of the main difficulties is the want of water. A very large quantity of water is used. About 8,000 gallons of water are required for a ton of pulp. I think it is for the Committee to look into the matter carefully and get all particulars regarding it. It would be a pity to allow the waste timber to be burnt.

To Mr. Sidey: I think it was a birch timber that was used in the manufacture of the samples produced.

To Mr. Hornsby: The people in Westland and Christchurch have an opinion that there are 30,000 acres of timber on the West Coast, which would keep a mill going for sixty years. There are Government officials who think that the industry ought to be looked into, and we wish the Committee to analyse the matter thoroughly. We want a Canadian or a Swedish expert opinion to put us right and to advise the Government as to the possibilities of the industry. I do not know of the utilization of gorse and broom for the making of pulp.

To Mr. Luke: In the process of manufacture the water of a stream would become polluted, which would be a detriment to people using the stream lower down.

To Mr. Veitch: I do not think the price of paper will come down to pre-war prices. Hydro-electric energy will help to reduce the cost of manufacture. We are awaiting the report of the Institute, and if the Government does not undertake the industry we shall probably send an expert Home to give us definite evidence before we go into it. The best suggestion I can offer is that made by Mr. Hornsby, that the Government should go into the thing carefully and send to Canada or to Switzerland—Canada preferably—to get an expert to come out.

T. D. A. MOFFETT, Grain-merchant, examined.

As requested, I beg to embody in this report a few particulars in regard to my suggestion *re* Government Board or Committee of specially trained scientists and chemists to be associated with one or more sound business men, and one or more leaders of industrial workers, for the prosecution of research work in this Dominion. Firstly, I would emphasize that there is nothing novel in the suggestion. For years past nearly every journal and magazine of repute in the world has called attention to the importance of such work being conducted by the State. Moreover, the recent publication "Eclipse or Empire" deals with the subject very exhaustively, and I would commend its perusal to every one. That a combined organization for research does not at the present time exist in this Dominion is a matter for regret, as few virgin countries are so ripe for it. The field for research work is immense. From gasworks and coal-mines, saw and flax mills, lime and clay deposits, our forests and marshes, &c., right down to the products of the sea, there is surely work yet to be done. The constitution of the Board might first begin with our present University professors, associated with others chosen for their expert practical knowledge of industries and business methods; labour especially should be represented on the Board; practical ability—not necessarily literary attainment—should be a big desideratum. One has only to look at the average New-Zealander to know that all his life he has had enough and to spare both of food and raiment; that he eats and deals with the "pith" in most cases, casting away much of what is called waste matter, and for which he has no immediate use. I venture to say that more is lost in this country in this manner than in any other in the world. The lavishness of raw material is, of course, responsible, and therefore I suggest that no other country is

readier or riper for research work as to waste products, and the scientific study of economical methods.

Re waste products: The chemists on the Board would examine each scientifically. Their research would naturally begin where the other fellow has left off. There is no use getting the embryo chemist who would have to plod through the same old road at a paternal Government's expense, and probably reel off elementalisms to an admiring but select audience. If any lecturing is to be done—and I would certainly advocate it—let them be given to the industrial masses, even if members of the Board have to go into the camps and mines to meet them. This is where the very highly trained men—and for whom you must be prepared to pay—are to come in. The chemist would confer with the business end of the Board, and the engineers and the inspectors if necessary, and the very practical members would supply broad details of quantities, &c. I would encourage the scientists to confer with the lowliest members among the sewage or other employees, credit to be given to these latter for valuable suggestions. It is not always the boss of the mill who knows that a tooth is out of the saw. Any progressive manufacturer puzzled over an important problem should be able to seek and get advice and information from the specialists Board. The most informed member would be told off to investigate and advise, or, if the matter were found beyond his province, he would in turn consult his Board generally, and the difficulty probably be overcome by joint investigation. Further details need not here be given; suffice it to say that local bodies to-day very rightly have access to a drainage expert in important works of that nature. Electrical research should receive every encouragement. This Dominion affords a great field for its application to science, industry, and commerce. Any worker, either in Government or private employ, showing marked ability should be encouraged and his efforts stimulated by being given ready access to a laboratory of science at one of the centres. At least two or three laboratories should be established at the earliest possible moment. The research laboratories must be staffed by the best brains procurable, and before the men and women with such qualification are snapped up—for the demand is great in the most important parts of the world to-day for both men and women with knowledge of applied and practical science. Reports of analyses of minerals, &c., are, I understand, in most cases only to be obtained by favours of certain University professors, who have the advantage of access to apparatus not available to the private analyst. This should be remedied.

Conferences of scientists, engineers, professors, &c.: Annual conferences should be encouraged by all local public bodies. Legislation should make them compulsory, and expenses be chargeable to the several bodies. There should be no "hat-in-hand" application by a borough or county engineer for permission to attend an annual conference in New Zealand. Indeed, the engineers of the Dominion who now meet annually of their own accord are deserving of highest praise. Personal after-dinner discussions are ofttimes of greatest value in their profession, with a resultant economy of public money.

Compilation of known data in regard to existing industries: This should be at once undertaken, so that access to reports might be had by any one requiring information on existing methods. One example only might be instanced—namely, sawmilling. Data as to power for different-sized mills—sizes of pulleys, their speeds, &c.—amount of water necessary for practical working plants, should be carefully collected. Men of long practical experience should be interviewed by practical men before the former pass away and their stored amount of unwritten knowledge lost to future generations. Old methods might be compared with the new. Details of some men's lives, and the history of the Dominion generally, are collected and written up for future reference, and I contend that its industries and methods should be recorded similarly.

The Government grading and inspecting departments of farm and factory produce, hemp, and machinery—and I would here like to refer to the machinery and boiler inspecting departments as instances of existing departments of great value to both buyer and seller, and to the industrial employer, and agriculturist and worker generally—their value could be greatly enhanced by further organizing-methods. The suppliers of horse-power to-day are often in the dark and have to rely on experiment—often to the cost of the other man. The question occurs, Do these Government staffs work and confer and pull together sufficiently? All should be encouraged to confer whenever convenient and discuss the work and methods of their separate districts at such conferences. A Government bonus should be given to any member bringing forward practical and useful suggestions.

The Board of scientists would be the consultative centre for the present-day Government Graders, Inspectors, &c. No single Minister could possibly deal effectively with all questions. Records of the failures of enterprises, whether above or under ground, should be faithfully collected. Indeed, it should be made compulsory for secretaries of companies to supply full details of the causes of such failures at the legal winding-up of any company. This might save future pitfalls to those embarking on similar projects. If honest they would start at the point where others failed.

Assistance to private companies for mineral deposits, &c.: Government assistance might be granted after *bona fides* were established by expert examination of the project in hand. Details as to repayment for such service as may have been rendered by the State could later be arranged.

Government reports on prospective companies: Before flotation of companies, for the protection of the public and the proper care of the utilization of their money riches, I would make a Government report by expert compulsory. How many "wild cats" have been put on the market—oftentimes the same one and same locality, &c., only at a different period? for it is a known fact among exploiters that every seven or ten years bring along a fresh supply of "gullibles." We have many instances of this in Southland; and the present generation is so scared and scarred that it would probably refuse a sovereign for twenty shillings of silver

if a "company for exchange" were mooted. I will not elaborate further, but may be permitted to remark that the Government were to be commended for making public in recent years their experts' valuable reports on the oilfields of the North.

Assistance to so-called "cranks": No man should be turned down as a fool with a "bee in his bonnet" who exhibits highly inventive genius, but should be treated as an asset of the State and taken in hand. Many men of the kind in our experience have died poor and broken-hearted, and the product of their brain has been lost, often through illiteracy and through want of a little paternal encouragement by the State.

Edison successes: It is fairly well known that many important inventions credited to Edison have in the embryo stage been the product of some humble worker. Edison has provided the laboratory and taken the place which in this country the State should take.

Specimen exhibits in school: For years past it has been my desire to see in the schools of the Dominion samples and specimen exhibits of minerals, &c. How many of us to-day deplore an ignorance of even elementary geology! How few know the first thing as to a sample of phosphate rock, the discovery of deposits of which the Government to-day has wisely encouraged! The idea of exhibits in schools might be extended to seeds and weeds. Many farmers to-day are ignorant of these. The re-establishment of the School of Mines should receive the earnest consideration of the Government.

Physical science should be made compulsory in schools: It is usually found to be most interesting study to most high-school boys, and the few that have got a smattering have longed for more. Take to-day the few men who understand the workings of a common pump, and the fewer who know of centrifugal force. I would bring the pump itself into schools and demonstrate, for ocular and personal contact with the practical objects is much more lasting in its educational effect than mere theory. Theory and practice should go together. As an instance of physical comfort afforded by scientific investigations conducted in America by army experts, I may mention the present-day footwear, evolved after long experiments in the army. There is no need to-day for a growing lad to have his feet pinched and distorted, as was the case some years back. Lasts are to-day made to conform with the shape of a man's foot, not *vice versa*, thanks to scientific insistence.

One day the matter of educating the masses on the suicidal policy of restriction of output must be taken in hand. The subject ought to be introduced into schools, and scholars be encouraged to write essays on it. The introduction into school arithmetic of easy problems dealing with "outputs" might tend to lay a foundation for future good results. The Board of Scientists' advice might be taken on the matter. To quote from "Eclipse or Empire": The organization of the country, and those industries in particular which are the life-blood of her power, must be safeguarded in the interests of the State. Mr. Runciman, in his speech of the 3rd January, 1916, in London, says, "It will, in fact, be apparent to all observers that a country that fails to regulate and foster its industries in the national interest cannot in the nature of things long survive the rivalry of another country where the industries are so regulated and fostered." This sentiment may be applied to New Zealand. The question, Are we making the most of and getting the best and most economical results out of our productions to-day? should be answered by experts. It has been said that a nation can never become great which is a producer of raw material only, and it therefore behoves us for our future's sake to encourage in every way work and study such as shall produce the highest and best results from the materials which a bountiful country has placed in our hands.

To Mr. Veitch: If we are going to allow industrial troubles to be a barrier against us we might as well drop the whole thing, as far as the development of industries is concerned. I think we should go ahead. My idea is to bring all the classes together and have a table talk about different matters to see where the difficulties really are.

Dr. D. E. HANSEN, Director, Invercargill Technical College, examined.

It is being brought home to the people of our Empire in a most striking manner since the beginning of the war that many of our industries have languished and others have become defunct through failure to improve the manufacturing methods, to utilize fully the by-products, and to make proper use of what is wrongly regarded as waste. To keep our industries in a flourishing condition a proper co-ordination is necessary between the manufacturers and those who are competent to advise, including more particularly the chemist, the physicist, the botanist, the consulting engineer, and other experts. Most of our young men who have attended secondary schools have the rudiments of a scientific training, yet insufficient knowledge to grapple with the intricate problems that are encountered by the manufacturer. These problems can be handled only by specialists, who are to be found on the staff of our universities or in practice as consulting experts. The latter are comparatively few in number, and the former are in general discouraged in terms of their engagement by the University authorities from engaging in outside work, or are so loaded with work of an elementary nature as to have no time for duties outside the lecture-room. One has only to look to Germany and the United States of America to see how the employment of university professors in solving the problems met in manufactures and industries has benefited the country in general. In the United States professors are generally allowed to associate themselves with manufacturing firms as scientific advisers, whilst it is also a common practice for a firm to make a donation to a university on the understanding that one or more research students will be set aside to investigate some problem which the firm cannot solve in its own works and by means of its own staff. The practices mentioned do not result in a deterioration of the standard of work done in the universities; it has instead the desirable effect of increasing the number of research students and the number of professors and highly

trained assistants required on the teaching staffs. I am therefore of the opinion that the Government should be urged to move as follows:—

(*a.*) Scientific professors engaged by the affiliated colleges of the New Zealand University should be expected to give advice to manufacturers and to spend their spare time in research bearing on the industries of our country. For such work they should be permitted to receive remuneration. The present salaries of professors, many of whom are engaged at £600 per annum, are but poor payments for highly trained experts.

(*b.*) Such professors should not be expected to devote their time to the instruction of students below university standard; this work could be done by assistants at £300 per annum. It is poor economy to set a professor at a salary of £600 per annum to teach work of high-school standard to a large proportion of his students, and yet that is precisely what is happening in our University colleges to-day.

(*c.*) The Government should increase the number and value of the scholarships or fellowships granted for post-graduate research. The present payment of £100 per annum to a man or woman who has probably spent a minimum of five years in a secondary school and four years in a University college, and who up to the age of twenty-three or twenty-four years has earned nothing towards the cost of his living and education, gives very little encouragement to take up post-graduate research. Should the holder of such a scholarship be required to travel to prosecute his researches he should be paid his travelling-expenses. There is no reason why a student should not be sent from Victoria College, Wellington, for example, to investigate diseases among the fruit-trees in Nelson, or in flax at Feilding, or from Otago University to investigate coal-deposits in Southland. The universities have professors capable of supervising such work, and the research students would be available if reasonable encouragement were given to them. I would go further and say that research students should receive a bonus for achieving useful results in their research. We may then expect, when the expert has gained the confidence of the manufacturer, that our industries will flourish and develop. But so long as our universities remain isolated from, and uninterested in, the problems of the industrial, aye, and of the social world too, so long will they fail to take their proper place as the guiding spirit of the nation.

To Mr. Forbes: I am sorry to say anything against a movement towards taking a forward step, but in the meantime I think the proposed Board is rather needlessly elaborate. I do not think we are making use of the agencies right to our hand to-day. Our universities could do a great deal more than they are doing. The Board of Science could not work without a large laboratory, and it would have to possess a laboratory in each centre.

To Mr. Craigie: The experts are in nearly all cases in the universities now. I do not see how one director can keep satisfactory control over the students who would be researching in different branches. If we subsidize the universities to have an expert, with the staff necessary, it would be as well done as by a central Board. It would be as effectively done and as cheaply.

To Mr. Sidey: As far as duplication is concerned there need be little fear of it. I have spent a good many years in research, and have seldom found there were two men actually engaged in research on the same subject. Our universities are not being paid sufficient at present, and I am afraid that if the Board is set up it will mean more starvation for the universities. I think it would be a difficult matter to carry on work between the Board and the staffs of a university. It is very desirable to have a Board with funds at its command. I am not opposed to the Board, but I think the University has not been given a fair chance, and the University, I consider, could meet all the demands of the present day.

To Mr. Luke: If it is a question between the University and the Board I favour the University.

To Mr. Veitch: I do not object to the Board as long as the University is adequately subsidized. I welcome the idea of the Board as long as the University does not suffer. Under the existing organization it is not possible to get into touch with industry. If our University governing bodies were more representative of the trades and industries of the country I should say that a scheme such as I suggest would render the Board unnecessary.

The Production of Beet-sugar.—Sugar, as one of the carbo-hydrates, must be regarded as a necessary food constituent and not as a luxury, hence the necessity for a greater measure of attention to its production in increased quantities in the various parts of the British Empire. In the matter of consumption of sugar the people of our Empire head the list, the average requirement per head being approximately .88 lb. per annum, exceeding even that of the United States, and far exceeding the average for France, Germany, and other European countries. In the twenty years from 1886 the production of sugar throughout the world increased from 5 million tons to 12 million tons. Of these amounts, the cane-sugar production increased from $2\frac{3}{4}$ to $4\frac{3}{4}$ million tons, the beet-sugar from $2\frac{1}{4}$ to $7\frac{1}{4}$ millions, so that the latter promises finally to exceed the former in importance in the world's markets. The cultivation of sugar-cane can be carried on only in the tropical climates under the most unhealthy conditions, but the sugar-beet is grown best in temperate climates.

Cultivation: In the cultivation of the sugar-beet great care has to be exercised not only in the fertilizing of the soil, but also in the selecting of the seed. This has been illustrated clearly since the war commenced, for in several American States which drew their seed from Germany for each season's crop the production has decreased seriously since it has been necessary to rely upon home-grown seed. The sugar-beet requires only a moderate rainfall, with plenty of sun in the late summer and in the autumn for the proper development of the sugar. The alluvial soils of some parts of Southland and Canterbury should serve well for its growth, and undoubtedly many suitable areas could be selected in the North Island. The beet requires also heavy manuring—stable manure, potash, sulphate of ammonia, and above all superphosphate being found neces-

sary even in good soils for the growth of the best roots. By good roots one means naturally roots not large but rich in sugar. The desirability of extreme care in the selection of the best seed and scientific manuring and cultivation is shown by the fact that though the beet originally contained less than 5 per cent. of sugar, it is now not uncommon to find crops averaging from 18 to 20 per cent. of sugar in the roots. This enormous increase is due solely to care in the seed-selection and in the manuring.

Manufacture of raw sugar and refining: There is little need to deal at length with the production of the sugar from the roots, but it is noteworthy that machinery and automatic contrivances have been developed and utilized to a very large extent in modern practice, both in the extraction and refining of the sugar. This is particularly of interest in a country where labour is expensive and where machinery must be relied upon if working-expenses are to be kept down. The roots after being washed clean and weighed are cut by machinery into thin slices, then washed in many warm waters, and finally pressed to get rid of the last traces of sugar. The weak solution of sugar is made alkaline with lime and concentrated by evaporation, much the same as in cane-sugar refining. The final processes of purification are washing the sugar-crystals with concentrated sugar solution, and decolorizing by means of sulphur dioxide and animal charcoal. The molasses left after the raw sugar has been filtered has been utilized in the ordinary way for the production of spirits and for fodder, and by a special process it can be treated with a salt of strontium for the recovery of most of the sugar it contains.

By-products: The sliced roots from which the sugar has been extracted is by no means waste, for it has been used freely as a valuable manure, rich in potash and nitrogenous matter. It has found even wider use as fodder for all kinds of farm-animals, which eat it greedily. At times it is dried by passing it through a furnace, and bagged for export, or, again, it may be carted from the factory in its wet condition and stored in a silo for winter feed. In the latter it decomposes, with a very rank smell, but this change does not seem to detract from its food value. Much of Denmark's finest butter is made from the milk of cows receiving a regular ration of this fodder throughout the winter.

Cost: The retail cost of the finest quality of beet-sugar—viz., loaf sugar—is about 2d. per pound when sold by the single pound. This sugar has a purity of approximately 99·9 per cent., and the low price at which it has been produced has made it a formidable rival to cane-sugar within our Empire. The ever-increasing need for sugar as a food, and the fact that cane-sugar is unlikely to be produced in larger quantities than at present, render it highly desirable that experiments should be made in various parts of the Empire to produce it on a commercial scale. New Zealand, as a country in which the industries are mainly agricultural and pastoral, should not lag behind in the matter, and our Agricultural Department should see to the planting of small experimental plots of sugar-beet in various parts of both Islands. The Dominion Analyst would readily conduct analyses of the roots, and if it could be proved that the percentage of sugar was sufficiently high, capital would almost certainly be available for the development of an important industry.

To Mr. Sidey: I have seen a good deal of sugar-beet growing on the Continent, both in Germany and Denmark, and also the utilization of the by-products. I have been through the methods pretty fully in the course of my studies. I have also seen it used as cattle-fodder in Germany and Denmark. Perhaps the conditions for growing it in many parts of Southland are not so favourable, but I should imagine that parts of Canterbury would be suitable, and I should imagine that Hawke's Bay would be rather a satisfactory place for an experiment to be tried in connection with it. I believe some experiments were conducted in New Zealand about twenty years ago; on the other hand, the development of the sugar-beet industry is more or less recent. The Agricultural Department is carrying out experiments, but I consider that they should be conducted on modern lines.

To the Chairman: Sugar made from sugar-beet can be sold at 2d. per pound readily. I think that in many countries they are using labour that would be replaced by machinery here. I am aware that under war conditions sugar is cheaper in New Zealand than in any other country. I think the production of cane-sugar is going to decrease rather than increase.

W. HINCHEY, Chairman, Bluff Harbour Board, examined.

From the point of view of industrial development it appears to the Bluff Harbour Board that the first thing to be desired is a return to the facilities for shipping commodities which were in existence before the war. In 1913, the last complete year before the war, the exports through the Port of Bluff reported by the Customs were £1,567,019, and imports £671,947—a total of £2,238,966 of foreign trade, besides a large coastal traffic. The volume of direct imports fostered by the Southland Importers' Association had increased during a series of years to 23,979 tons in 1913, being an average of 2,973 tons per steamer. The association had been promised a steamer every two months for 750 tons cargo. The Bluff–Melbourne service was in full operation, a steamer each way calling on Mondays at Bluff, with passengers, cargo, and transhipments. One of the first consequences of the war was the cessation of the weekly Bluff–Melbourne service, among the reasons given being the disorganization of trade generally by reason of the war, the Union Steamship Company having their largest vessels taken by the Government for transport purposes, and the reduction in both passengers and cargo traffic through the war. The cessation of the service produced a general outcry, the fish, oyster, timber, and fruit trades being particularly affected, and after pressure was brought to bear upon the Union Steamship Company a service was instituted which practically gave Bluff a ten-days' communication with Melbourne via Hobart or Wellington. As the war progressed the position as regards shipping became more and more confined. For the supreme effort in France the shipping ordinarily

used for Dominion traffic became concentrated in European and American waters, and the tonnage entered at Bluff dropped from 612,470 net tons in 1912 to 101,931 tons in 1918. In 1913 about sixty-five large ocean-going vessels worked cargo at Bluff; in 1918 only six such vessels were in port. The Bluff–Melbourne service, after a spasmodic existence, is now practically *non est*. The coastal service, which was carried on by large and commodious cargo-vessels, has now fallen into the lot of the smallest cargo-carriers working on the coast. Very heavy expense has been incurred latterly by importers by the fact that steamers from Britain and America have not come beyond Port Chalmers, and they have had either to pay a heavy transhipment rate to bring the goods on by steamer to Bluff, or a still heavier railway haulage charge from Dunedin in order to get delivery of their goods, even after long delay. On the other hand, the same cause has operated against exporters, and large quantities of cargo have been railed from Bluff to Port Chalmers for shipment there. The revenue of the Board, which is chiefly derived from harbour dues, suffered a corresponding declension: the annual trade of the port in tons has fallen from 144,418 tons in 1912 to 80,000 tons in 1918. The Board is aware that some of the causes which have brought about this state of things have been beyond the control of the management of shipping companies; and in common with the rest of the British Empire the port has been resigned to suffer, and see the facilities which it formerly enjoyed being employed for the good of the Empire. But now that the war is over and the necessary readjustment of services is being considered, the Bluff Harbour Board is out for a return to the state of things before the war. Certain amalgamations of shipping interests have taken place, and it is necessary that the claims of the port shall be kept prominently before the powers that be in order that the trade of the port shall be adequately served, and promises made before the war shall be implemented. The Board therefore urges that the Select Committee of Industries shall note the position as regards Bluff, and add the weight of its recommendation in the proper quarters. A very large quantity of commodities has been held up during the last two years, such as frozen meat, tallow, wool, cheese, &c. The productivity of the district is increasing yearly, and as soon as the province gets satisfactory outlet the figures regarding imports and exports quoted for 1913 will be largely increased. The port requires—(1) Frequent visits from ocean-going steamers to carry exports; (2) direct services from Britain and America to cope with the imports; (3) a return to the Bluff–Melbourne weekly service each way for passengers and cargo and transhipments; (4) an adequate coastal service. In the local trades mentioned, fish, oysters, and timber exports, and timber, fruit, &c., imports, adequate steamer accommodation is essential to their proper development. With regard to the capabilities of Bluff Harbour, the Board has its own dredge, and has carried out a continuous dredging policy for the last fourteen years, during which time the port has been worked by the largest steamers regularly trading to the Dominion. It has agreed to improvements which include widening the wharf, and thus increasing the depth of the water. At present vessels can be loaded up to 28 ft. 6 in., and it is anticipated that the improvements will result in adding materially to that accommodation. The financial position of the Board is very strong: the funded debt is only £35,500, while the excess of assets over liabilities amounts to £130,000. The Board has authority to borrow £130,000 for harbour-works, and it intends to use this money in the near future in improving the facilities of the port by judicious expenditure at suitable times. Bluff has strong claims to being ranked as the fifth port of the Dominion, in normal times enjoys freights and insurances at main-port rates, and with the splendid Southland District behind it it is only a matter of time before it comes into its own. Attached, for the information of the Committee, is a copy of an article in the "Annual Review for 1913 of Shipping and Commerce," giving particulars of the shipping and trade statistics of the port, which will be of use to the Committee in considering the question of the industries of the province.

As the proper provision of harbour-construction is a natural adjunct to the development of industries, and comes within the scope of the present inquiry by the Committee on Industries, I wish to say that in my opinion a great improvement could be made in harbour-construction work in New Zealand. Harbours are national concerns, and should be treated as such by the Government. The functions of Harbour Boards should be to attend to the business and financial affairs of the ports and find the money for carrying out such harbour-works as the necessities of the district demand. The Government should appoint a highly qualified harbour engineer, with the necessary staff, to plan the construction work of every port in the Dominion; and no Harbour Board should be permitted to carry out construction work except on the plans prepared by a central engineering harbour-construction department under the control of the Minister. If a Harbour Board wished to add to the facilities of their port, they should say to the harbour engineer, "We can find a certain sum of money, and we want greater shipping accommodation to meet the growing requirements of our district: show us how much of the plan of our harbour can be carried out with the money we can afford to spend"; and the work could be proceeded with accordingly. Hundreds of thousands of pounds have been spent in harbour-construction in this country, through amateur engineering, for which no adequate results have been received, and many districts are encumbered with heavy liabilities for harbours which have not yet materialized into a semblance of what was expected. The appointment of a highly qualified harbour engineer would make for more efficient work in harbour-construction, would provide for a general improvement in the harbours of the country, and would save thousands of pounds of ratepayers' money.

To Mr. Craigie: The figures I have in regard to export do not include coastwise trade. I could not give you the figures for both overseas and coastwise.

To Mr. Hornsby: I have not considered the question of State control of shipping.

To Mr. Luke: We think that our port has suffered more than any other port; in any case, we have been very hard hit.

To the Chairman: The depth of the Bluff Harbour at low water is 28 ft. 6 in.: there is a 7 ft. rise of tide. Since we widened the wharf we can berth at low water a vessel drawing 31 ft.: that will provide for the berthing of the largest boats that come to New Zealand.

To Mr. Veitch: I do not think our harbours are so well conducted as other local bodies, for this reason: that harbour engineers are not so plentiful as county engineers. Engineers are born, not made. Mistakes have been made right throughout New Zealand in connection with harbour-works, and the result has been that the settlers in the surrounding districts have been encumbered with large liabilities. The sanction of the Marine Department is required for new works; but that Department does not exercise sufficient control. Harbours are national affairs, and should be in charge of an engineer of great ability.

To Mr. Luke: The instructions of Sir John Coode and other eminent engineers have not always been followed.

To Mr. Hudson: Perhaps it would be advisable for the Government to have a dredge to be used by small harbours not wealthy enough to procure a dredge of their own. I would suggest that the Committee support such a recommendation.

A. LE H. HOYLES, General Manager, New Zealand Milk Products (Limited), examined.

We have for some years past been impressing upon the Government the necessity for safeguarding the industries of the Dominion by prohibiting the importation and use of foreign capital for the purpose of the establishment of new concerns. We use the term "foreign capital" as distinct from New Zealand or any purely British capital. The principle involved in this issue is, of course, a very broad one, and concerns practically all the industrial world not only of New Zealand, but of the British Empire. We, of course, are more concerned with our own particular industry, that of milk-condensing, and our company this month completes twenty-one years of industrial activity in the Dominion. The bulk of our capital is held by New Zealand shareholders, and the balance in Australia. We have been definitely advised by the Nestlé Anglo-Swiss Company that when they commence manufacturing operations in the Dominion their intention is by hook or by crook to secure the whole trade of New Zealand. That this threat is no empty boast is evidenced by the fact that in Australia at the present time they control the trade in condensed milk, having during the past ten years by various methods succeeded in so hobbling the purely Australian concerns as to make them of no practical account to the trade. As far as genuine British competition is concerned, we naturally can have no possible objection, but we certainly think that the Government should protect one of our primary national industries from a corporation whose management and head office are located in Switzerland, employing a capital of over four millions sterling, of which according to our last advice 95 per cent. was held by shareholders in Switzerland. At the present time the price of condensed milk in New Zealand is as low as any other country in the world, and in some instances considerably lower. In conclusion, we may say that our negotiations with the Government up to the present time have led us to believe that they are entirely sympathetic with us and are prepared to do all in their power to preserve the milk-condensing industry in New Zealand as an all-British-owned one. I would only add this: there has been an impression not only here, but all through New Zealand, that during the past few years—during the war period—our industry has made enormous profits. I would like to take this opportunity of publicly refuting that. Although our turnover during the past four or five years has considerably increased, yet our net total profits per annum during the last five years have been very considerably less than before the war commenced. That is due to the fact that our manufacturing-costs to-day are 90 per cent. higher than they were five years ago, and the price obtained for our manufactured article to-day is only 60 per cent. higher than it was five years ago.

To Mr. Forbes: When the general manager of the Nestlé's Company came over here from Sydney some years ago he came to see me in my office, and he told me definitely that they never considered it worth while buying up a competitor—that they could always get rid of them without that. At that time the general manager of that company selected a site for a factory for the company near Palmerston North. I understand it is their intention to start as soon as they can get machinery after the war. By their own showing, 95 per cent. of the shareholders are Swiss. They might promise to sell condensed milk at a lower price; but that is only one of the tricks they have. Ten years ago in Australia condensed milk was 22s. and 24s. a case, and Nestlé's came in and sold it at 14s. a case; and by that method they knocked out two or three Australian concerns. At the present time the price in Australia is exactly the same price as it is in New Zealand; the scheduled price is 32s. a case—four dozen in a case—8s. a dozen. I have had no further information beyond that I received three years ago as to their starting again in New Zealand soon.

To Mr. Hornsby: It is practically an impossibility to find out the nationality of the shareholders, for this reason: that all the shares are payable to bearer—there is no share-list.

To Mr. Hornsby: The suspicion as to its being a German company could only possibly be set at rest by means of inquiries made by our Consul. Provided the guarantees were sufficient, it might meet the case if no company of that sort were allowed to come into the country and start business except under license from the Government. If the guarantees were sufficient that might do, but the term "under license" may be very broad. I may say that we made inquiries at Home through our London agents some years ago, and also in 1917; and as far as the information from London goes the Nestlé's people informed them that about 95 per cent. of the shares were held in Switzerland, and the other 5 per cent. abroad and in France. They had no information as to how their shares were held.

To Mr. Luke: Our business has increased during recent years. Five years ago practically all the milk we made was consumed in New Zealand, and during the war period the supply increased to nearly 100,000 cases. At the present time we are manufacturing considerably more milk than can be consumed in New Zealand, and we are now finding export markets for the surplus. The fresh-milk supply, both as to volume and price, has been practically undisturbed by our operations. We would be prepared to guarantee to supply the local market at any reasonable market price. We do not control the price; cheese controls the price. We have to pay a higher price than cheese-factories pay to secure milk-supplies. I think there are over sixty co-operative cheese-factories within a twenty-five- or thirty-mile radius of Invercargill, and we have to compete against them and give a higher price in order to get the milk.

To Mr. Hudson: As to foreign companies and foreign capital, there is always the danger of dummy shareholders. I take it that the New Zealand Government before registering a company would have to be satisfied with respect to the shareholders: the position could no doubt be wriggled out of afterwards. I think, with reasonable provisions, such a regulation might be effective.

To Mr. Craigie: The only company that could possibly make a corner in condensed milk would be the Nestlé Company. In regard to the Nestlé Company crushing out Australian companies, I prepared a long statement for the National Efficiency Board two years ago. I will let you have a copy of that statement.

To the Chairman: We make no allegation that the Nestlé Company is a German company. We have our own ideas; but we make no allegation to that effect. The Milkmaid Company's milk, which is coming into New Zealand, is Australian-made. The duty is 25 per cent. *ad valorem*. We pay 2d. per pound exporting to Australia, and that works out at from 45 per cent. to 50 per cent.

E. Rabbidge, Waikaia Oil-shale Development Company, examined.

We would like to know if the Committee can help us in getting assistance from the Government to establish the industry of recovering oil from the shale. The company I am interested in has spent £1,000 at a place called Freshford, at Switzer's, near Waikaia. The work of boring was carried out by the Mines Department, for which we have had to pay. There is a proved deposit of 750,000 tons. The analysis at the Dominion Laboratory shows an average of about 40 gallons of crude oil per ton; and the company is now considering the best method of recovering it. We find it very difficult to induce any one to put money into the industry at the present time owing to the indefinite price and the labour conditions generally. We have discussed the advisability of asking the Government to give a bounty for the production of crude oil. There is a big market for crude oil. There is no actual demand for it in New Zealand at the present moment, but there is a market for it. It is not proposed by our company to be a refining company, because with the present output that could not be carried out. We wish to know if the Committee will advise the Government to establish a bounty for the production of crude oil.

To the Chairman: I could let you have a copy of Mr. Morgan's report. The bounty would be on the number of gallons produced. The shale is easily mined, and it is within 500 yards of the railway-line. If the shale had to be taken to a place like Orepuki the cost would be small. No one will at present give us the price that a retort will cost. Our company is a limited-liability company.

To Mr. Forbes: The seam of shale varies in thickness from 5 ft. to 18 ft. Boring showed that the whole quantity of shale is contained in an area of about 50 acres. The company has expended over £1,000 in boring, &c. We are now anxious to make a start and establish the business. There is equal to 22,000,000 gallons of crude oil at Waikaia. It seems too valuable to lie there.

To Mr. Sidey: Our company has been going for about eighteen months. We have thoroughly prospected the ground. Boring was done by the Mines Department. The only thing that the Minister did was to waive the charge of £50 for boring. Before we can induce people to put money into the company we desire to get some further assistance.

To the Chairman: Dr. Maclaurin's report is that the shale is similar to that at Orepuki—the analysis runs out about the same.

A. W. Rodger, Runholder, examined

I have to apologize for the absence of Mr. Macindoe, public analyst, of this city. In a paper he had prepared for the Committee he says, "Southland possesses in the Ohai Coalfield a possible industry of the highest value. Borings have been made under the instructions of Mr. Rodger, of Birchwood, to a depth of 500 ft. These borings have shown that the coal improves with depth. Numerous analyses made by me have shown the coal to be of good quality, low in ash and sulphur, and a blend of two deposits—one a fairly bituminous coal; the other, high in resin, produces a coke hard and compact." I wish to offer a few supplementary remarks to the suggestions made by Mr. Macindoe. The Ohai Coalfield dealt with by Mr. Macindoe has been proved to extend over an area of at least 3,000 acres, and there is every likelihood of the coal being found over twice that acreage. Means have been taken to open up this asset, and a temporary tramway has been constructed which will provide facilities for the marketing of the coal in comparatively small quantities during the construction of a permanent railway, which will be of the same calibre as the Government railways, such construction being about to commence. Mr. Macindoe has indicated in his report that one of the samples gave a much larger proportion of fuel-oil than did the other samples analysed by him. I believe the sample to which he refers is that

taken from what is known as the resin seam of coal which has been found to overlie the whole of the coalfield under consideration, and which is at the present time regarded as valueless. This seam varies in thickness from 2 ft. to 3 ft. up to 14 ft. or 15 ft. so far as investigations have proceeded. It will therefore be apparent to the Committee that in the Ohai Coalfield Southland has an asset of inestimable value, and it is of the utmost importance that Mr. Macindoe's suggestions as to further investigations being made in regard to its development should be carried into effect. The pitch could be used, in conjunction with oils and rags, in the manufacture of patent roofing, of which a large quantity is imported at present. This would be a new industry.

To the Chairman: There are five or six companies mining the coal. The Government could assist by making inquiries as to the establishment of works to make use of the by-products of the coal. Most of the slack and other residue is being thrown away at present.

Witness: I desire to say further that in view of the fact that Southland is proceeding, under the Electric-power Boards Act, 1918, to have the whole of the province proclaimed an electric-power district for the purpose of generating and distributing hydro-electric power within its boundaries, the question of the cost of electrical appliances of every kind is of vital importance. These costs, it would appear from inquiries which have been made, are materially increased as a result of the heavy import duties at present levied by the Customs Department, and, taking into consideration the fact that every portion of the Dominion has now under consideration the early supply of hydro-electric power, it seems to me that a revision of these duties should be made without delay. Dealing further with the Electric-power Boards Act and its very important bearing upon the development of the resources of this Dominion, I would respectfully suggest that the Committee consider the present method adopted by the Government regarding hydro-electric power. The Government's method in the Lake Coleridge scheme has been to not only generate the energy, but to distribute it throughout certain portions of the area coming within the scope of the particular source of supply. I suggest that this is quite inimical to the best interests of the Dominion as a whole. It undoubtedly favours certain portions of the Dominion to the detriment of the remaining portions. It prejudices certain portions of the particular district that might be supplied from the same source of power in favour of those portions of that district which have the benefit of the energy. I respectfully submit that the equitable method, and the method that will undoubtedly bring about the more rapid and the most efficient development of the resources of this country, is as follows: That the Government should generate the power at the particular source of supply and stop there; that districts should be formed under the Electric-power Boards Act for the purpose of purchasing the power from the Public Works Department in bulk and distributing that power to the ratepayers or the consumers within the boundaries of their allotted districts. No portion of the community would be favoured to the detriment of another portion, each having the privilege of forming a district and obtaining the power in bulk, and the incentive for the centres to assist in the development of the outlying country upon which they are undoubtedly dependent for their prosperity comes into play, and would be a material factor in the progress of the Dominion. Southland is proceeding upon the lines which I have suggested, and there is every reason to believe that the scheme is going to be a marked success from every point of view. I trust that the Southland idea will be further investigated by the Committee, and that as a result of that investigation recommendations will be made that will induce every portion of the Dominion to follow our example.

To Mr. Sidey: I understand that Mr. Parry has decided on his South Island electrical plans to this extent: that our proposals will be approved by him. We are taking our power from the Monowai River and Lake. We have not called on the Government to do the work. Ultimately we hope the works will be owned by the Government. We would be pleased to ask them to do the work, but we have little hope of the Government doing it soon. We are therefore going to do it ourselves, and the Government may take it over later on. We can get the money at an advantageous rate. I do not say that we have to go to a private source for it. We hope to get plenty of labour when the soldiers come back.

To Mr. Craigie: I do not know that the Government can borrow the money at a cheaper rate than we can.

W. RIDDELL, Door-manufacturer, examined.

I wish to draw your attention to the door-manufacturing industry as carried on in Invercargill. In the years 1887 and 1888 the concern I am connected with made from a hundred to a hundred and thirty doors per week for export to Australia, all from local-grown timber, and forty to fifty per week from native timber, kauri, and imported timbers for use in New Zealand, paying wages from £25 to £30 per week. Local timber in those days cost 6s. 9d. per 100 ft., and kauri 13s. 3d. to 13s. 9d. per 100 ft., this trade showing a fair margin of profit. Up to a few months prior to the breaking-out of war prices had advanced 150 to 200 per cent. on materials and 60 per cent. on wages, which made it impossible to compete with the imported article from Norway and Sweden, where the ruling rate of wages were 2s. 6d. to 3s. 6d. per day of ten hours. Since the days of 1914 materials and wages have increased enormously, and when the foreign article reaches this market again it will be disastrous for the local-made article. From the United States and Canada, where they have splendid organization and unlimited markets, doors can be exported to New Zealand, and after adding 20 per cent. and 10 per cent. preferential duty can still be sold under the local article and show a profit. I consider a duty of 5s. each on all imported doors up to 6 ft. to 8 ft. by 1½ in., 7s. 6d. each up to 6 ft. to 8 ft. by 1¾ in., and 10s. each on larger sizes, would meet the case. I would also call your attention to the necessity for reafforestation of suitable timber for manufacturing in the future. It would be wise to create a more efficient training for skilled workers. The present wages paid to unskilled

workmen is so much higher than that paid to the skilled workmen that there is no incentive for the skilled worker to perfect himself in his particular trade.

To Mr. Veitch: I have no scheme to propose for the training of workers. If you work out a scheme to-day the wages are so unsettled that your plans are upset to-morrow. We cannot get apprentices. A youth will go to a flax-mill, where he can get good wages, rather than be bound as an apprentice at 15s. per week.

To Mr. Luke: There is any amount of scope for workmen in this district. I refer particularly to skilled carpenters. There would be no difficulty in absorbing journeymen after their apprenticeship period. We are not getting enough apprentices trained at present to fill up the places of joiners and carpenters who take up other trades or who die. We are left now with very few men to carry on, and if work becomes very busy, as I believe it will, we shall be in a difficulty. The Technical School will help us a great deal in the matter of apprentices. I am not in favour of giving my boys time off in working-hours. We work forty-four hours per week, which leaves a boy plenty of time to attend classes after working-hours.

To Mr. Hudson: If doors were taxed as I suggest their importation would stop. It would not raise the cost to the consumer.

JAMES LEGGETT, Southland and Otago Co-operative Timber Company, examined.

I wish to bring one or two points before the Committee. The charge for railway-sidings is excessive. This has long been a sore point with some of us. A man who starts a sawmill applies to the Department for a siding, and the Department asks what price it likes, and the sawmiller, having no option, pays the price. When the siding is finished, after having cost £300 or £400, the Government at once charges a rent for it—£50 per annum. But the Government does not stop even there. They claim the siding as their own, and if it should be lifted on account of the bush cutting out it is the property of the Government. A mill may bring revenue to the Government to the extent of from £3,000 to £5,000 per annum.

To Mr. Sidey: We have met the Railway Department about the matter, and can get no satisfaction from them.

Witness: Another point is this: the rating of standing timber for county purposes. If a sawmiller buys timber from a farmer the farmer pays rates on the land, and we are rated on the timber. It is an instance of double rating. We do not use the roads, and therefore hold that we ought not to be called on to pay rates. We are in the Catlin's district.

J. K. CAMPBELL, Sawmiller, examined.

There are one or two matters I wish to mention. First, there is the duty on imported timber and the railage on imported timber. On no account should the duty or the railage be reduced. The Government are taking drastic steps in connection with the export of timber. They have reduced the export quantities of rimu to 25 per cent. of the total output of the Dominion, and of white-pine to 40 per cent. That means that the sawmilling industry in New Zealand has to look more and more to its own local market to get quit of its supplies. If outside countries, such as America, are allowed to bring timber into this country it means that the local industry will collapse. The sawmilling industry is an important industry, as so many other industries depend on it to a greater or less extent. Therefore we suggest that on no account should the import duty or the railage charge on imported timber be decreased. Then the Government is restricting the price that the sawmiller can charge for his timber. If the Government will not assist the industry by allowing the millers to increase prices when necessary, the mills will have to close down, because no man will run a mill at a loss. The Government are protecting the consumer all the time, but there are no signs visible that they are taking steps to protect the industry, and it is worth protecting. At the present time the sawmillers are working under very onerous conditions. They have to make use of unskilled labour—men who know nothing of the getting of timber or the milling of it—and no inducement is held out to men to enter the industry. In America they have schools of forestry and scholarships, where young fellows are trained in all matters pertaining to timber—growing, cutting, and milling—with the result that many young fellows look to the industry for a livelihood. Another matter is this: In this district there is a large number of small mills, which means that there is a great wastage. In America there are mills which turn out a million superficial feet per day. Here we have mills turning out only a few thousand feet per day. This tends to inefficiency and waste. Therefore some of the mills that belong to the company are considering the question of erecting a central mill, in order to ensure more efficiency and to keep down costs. There is a probability, however, of the Lands Department saying to us, "You cannot put up a big mill to cut timber on this area. You must have sawmills with separate areas." That is an unfair position in which to place the mills. We suggest that in the interests of efficiency the Government should place no obstacle in the way of mills centralizing. One other matter is this: There is a large quantity of light rails purchasable in France at present, and it would help the sawmilling industry if the Government were to buy a large quantity of those rails and offer them to the sawmilling industry in New Zealand at a reasonable price.

To Mr. Sidey: There is a duty of 2s. per 100 ft. on imported timber. We understand, however, there is an agitation to have it reduced, and we are against it, as it would cripple the local industry. If anything, the duty should be increased.

To Mr. Hudson: No difficulty has actually arisen to the centralizing of the mills, but it is looming. I see no reason why the Government should object to such centralizing.

To Mr. Forbes: We have splendid timbers of our own in the Dominion, and there is no reason why timbers should be imported. An exception might be made in the case of timbers required for piles. There is no reason why redwood should be imported from America when we have such a fine building-timber as rimu. Doors and sashes are being made in Melbourne from our Southland beech. They say it is a splendid timber for the purpose. American timbers are produced much cheaper than ours are; they have not the waste that we have.

To Mr. Craigie: The Sunshine Harvester Company use Southland beech for lorries, harvesting-machines, &c. They use it in preference to any other timber. In Australia they are finding out the value of our timbers before we know it ourselves. We have hundreds of millions of feet of beech in this district. In October some of the beech was submitted to the Department of Agriculture in Wellington for testing for butter-boxes, and the Department informed us that the results were quite satisfactory. In a test made by the Engineering School of the Melbourne University, as to the strength of the Southland beech (*Fagus Menziesii*) in comparison with the best-known Australian timbers, the "modulus of rupture" of the timbers was—Southland beech, 18,755 lb. per square inch; Victorian yellow stringy-bark, 16,650 lb. per square inch; Tasmanian blue gum, 14,500 lb. per square inch; Victorian mountain-gum, 13,880 lb. per square inch.

T. J. GARVEY, Farmer, examined.

In accordance with the wish of our committee (consisting of members of Tussock Creek, Forest Hill, and surrounding districts), who have been granted a reserve of 134 acres in Forest Hill to develop a seam of limestone of splendid quality—93·87 per cent. carbonate of lime (analysis by the Mines Department)—I have been delegated, with others, to interview your Committee and endeavour to enlist your sympathy in regard to my proposition that the Government should devise some scheme by which farmers living at a distance from the lime-kilns and railways could be given Government assistance to develop the lime industry. At present the high cost of labour and horse-feed precludes the use of lime on a large scale by farmers who can only go one trip per day, and that in good weather, as the roads in our vicinity are liable to floods. Therefore the liberal use of lime is restricted to those who are fortunate enough to be near the railways; but by the establishment of lime-crushing plants where the stone is available and of good quality the prosperity of the agricultural industry would be assured, as our industrial future depends on the proper fertilization of the soil, and this cannot be done without a cheap supply of lime, for lime is absolutely essential to the soils of Southland. This matter is so serious from the point of view of national production that I would ask you to go fully into the matter of a cheap and plentiful supply of lime for the farmers in the backblocks. In view of the fact that agriculture is the principal source of all our exports, and always must be the chief factor in the Dominion's prosperity, I am firmly of opinion that assistance should be given, as the probable initial cost would be more than recouped to the Dominion by the increased returns in the production of raw materials to supply the essentials of the various industries fostered or encouraged by your Committee which are bound to spring up as a result of Mr. Rodger's scheme for the electrification of Southland. Besides the stimulus that would be given to the employment of labour, and higher wages that would result from a corresponding increase in the output, providing food in abundance and thereby reducing the present high cost of living, it would enable us to take our full part in the development of the nation. As to the repatriation of soldiers and all the talk of putting them on the land, I may say that as things are at present we cannot get enough lime for our present requirements, and if the Government is going to make a big increase in farmers by settling soldiers on the land they will also require to adopt my suggestion and make a corresponding increase in the local output of lime.

There is another subject which I would urge on the consideration of your Committee—that is, a cheaper and more adequate supply of superphosphates. The Government should take action to acquire a suitable place for the manufacture of superphosphates, either by the acquisition of some of the seams of phosphate rock already opened or by prospecting for new deposits. I am aware that the Government is offering a substantial bonus for the discovery of a payable deposit, but it is not likely to be a success, as few private prospectors have suitable machinery. I am certain that the best way of handling the prospecting would be through the Geological Department starting a staff of men equipped with the proper machinery and a qualified geological expert to direct the prospecting, and make a thorough search in all the likely places. I have had correspondence with the Minister of Agriculture as far back as the middle of September, 1914, in regard to the phosphate deposits in Samoa, and I then suggested that a concession be reserved to supply New Zealand with superphosphates if the islands were annexed by the New Zealand Government at the final settlement. The Minister of Agriculture promised to give the matter his earnest attention. I hope the suggestion will not be lost sight of, as we have to import enormous quantities of this valuable fertilizer from Australia and other places. The importations from Australia alone for the quarter ended 30th June, 1918, are 7,230 tons, valued at £37,526; for quarter ended 30th September, 1918, 5,064 tons, valued at £26,500: totals for the six months, 12,294 tons, valued at £64,026. But as I think this is a matter more in Mr. Macindoe's subject, I will not go further on the superphosphates, as he will be likely to deal more exhaustively with it. I trust that it will not be urged against my proposal that a compliance with them would involve heavy expenditure by the Government. But there is nothing new in the idea, as I understand the Government has a carbonate-crushing plant now working at the Otira Tunnel. So far as expense is concerned, considerable expenditure has been incurred by this Dominion in developing other industries of less importance than agriculture.

I trust that your Committee will give the above suggestions your earnest consideration and assistance to develop our primary industries. By doing so you will earn the sincere gratitude of all the pioneers of the backblocks as well as the spontaneous gratitude of my committee.

JOHN KINGSLAND, Boot-manufacturer, examined.

I represent my son, T. D. Kingsland, fellmonger, of Waikiwi, who has been prevented from coming before you to-day. It was his intention to lay before the Committee certain facts in connection with the tanning of hides. We have enough bark in the country to tan all the hides in New Zealand. I leave with the Committee a paper on the subject written by my son.

OAMARU.

THURSDAY, 27TH FEBRUARY, 1919.

E. P. LEE, M.P., examined.

I desire, if I may, to state the case on behalf of Messrs. Lloyd, Kinder, and Co., manufacturing chemists, of Oamaru, in relation to the establishing of an industry for saving wool-fat and potash for industrial, domestic, medicinal, and fertilizing purposes. Professor Gardner, Technical College, Bradford, stated that raw wool carries from 18 to 20 per cent. of wool-fat and from 5 to 6 per cent. of potash. According to the "New Zealand Year-book," page 480, New Zealand exported in 1916 200,119,016 lb. of wool, and sold to mills here 8,772,467 lb., a total of 208,891,483 lb. Placing the wool-fat content at 20 per cent., we have exported 40,023,803 lb. of wool-fat; New Zealand washed 1,754,493 lb.: total, 41,778,296 lb. This is equivalent to 17,867 tons of wool-fat in exports, and 783 tons in locally washed, a total of 18,650 tons.

Uses of wool-fat: (1) It is used in medicine as a basis for ointments, salves, cosmetics, and as a superfatting agent in the manufacture of some toilet-soaps; (2) in less purified condition it is used as a base for the manufacture of "Degras," used in the tanning industry as a stuffing-grease for leather; (3) it may be used as a lubricant for machinery, or base for such; (4) and as a base for manufacture of leather and belt-dressings.

Collection: It is a by-product in the wool-scouring industry. The crude grease as skimmed from the scouring-bowl contains dirt, some occluded wool, soapy scour solution, &c. In England the wool-scourers are compelled by regulation to remove the fats and soaps from the scour solutions before they are run down the drains and creeks, in order to prevent pollution. In New Zealand there are no such regulations, and the fats are not removed. For its collection in the scouring-works a settling-tank would be the only extra requirement, thence the wool-fat could be skimmed off and sent to the next department for treatment and purification. The purification plant is not an expensive one. In our own works less than £500 has provided a plant capable of refining a ton a day. Everything that has been put there has been in an experimental way, and much time, thought, and expense could have been saved had we had definite knowledge of the requirements necessary. The final process of purification is our trade secret, and you will see by the Government Analyst's report we are manufacturing a product which fulfils the requirements of the British Pharmacopœia for lanoline. We think no industry in New Zealand more deserving of Government investigation than this scouring one. No place in the world is better able to handle the work. We have the wool, the water, the power, and the men. If each grading-centre were in addition a scouring-centre, what riches would be circulated within our own shores that are now wasted or given away! Taking wool-fat as worth only £15 per ton, its value in the 1916 clip was £279,750, which amount, at least, was entirely lost to this Dominion, either by neglect to save the scour-products or through shipping away the wool unscoured.

I have referred to the potash present in our wools, and wish to show what is lost to New Zealand by neglecting to save it or by giving it away to foreign purchasers.

Uses of potash: The sulphate and chloride of potash are imported principally as fertilizers, for which purpose they are becoming increasingly popular as manures for growing heavy crops of vegetables, fruit, vines, &c. Large quantities of potassium-chlorate are required for the manufacture of explosives. Caustic potash and pearlash are used largely in the manufacture of soft-soap. Potash from wool is better than from other sources. Three samples from various wools gave the following results, viz.:—

Potash	58·9	58·7	52·9
Soda	3·0	4·6	9·2
Carbon dioxide	21·7	26·0	22·2
Chlorine	11·1	10·0	8·5
Sulphuric anhydride	Trace	Trace	4·3
Insoluble matter	0·3	...	0·6

The soda-content is low, and the only other impurity of importance is potassium chloride. As this and the sodium carbonate, and also potassium sulphate (if present), crystallize out of a concentrated solution of potassium carbonate, it is possible to obtain a practically pure potash carbonate from this source.

Cost of production of potash from wool: Assuming a scouring-works dealing with 3,000 tons greasy wool annually, working one shift only, the extra plant required to effect the recovery of the potash would be as follows. Such a plant involves the use of three scouring-sets, and to secure economical working it will be necessary to have a steeping-bowl and set of squeezing-rollers at the head of each bowl, so that the wool, once fed into the potash-recovery plant, goes through the scour as one continuous process. Three steeping-bowls, with rollers, at £300 = £900; one small Porion evaporator and incinerator (capable of evaporating 5,000 gallons a day), £400; storage, redissolving, and crystallizing tanks, sheds, &c., £400: total, £1,700. Working-costs: Wages, £450; water and coal, £270; power, £150; repairs and renewals (10 per cent. of £1,700), £170; capital

charges, interest and depreciation (10 per cent.), £170; casks, bags, bagging, &c. (at £1 per ton), £157; contingencies (at 10 per cent.), £137: total, £1,504. Revenue: 3,000 tons of wool, yielding, say, 4½ per cent. potassium carbonate—157½ tons at £15 per ton, £2,367; less cost of production, £1,504 = £863. Thus this potash-recovery plant costing £1,700 should pay an annual dividend of 50 per cent. on the initial cost, and wages to workmen of £450 per year. The potash in our 1916 clip, which was a small one, amounted to 4,650 tons, and, taking it at its pre-war price, £15 per ton (present price is about £400 per ton), represented a value of £69,750, all of which was lost to this Dominion. For the purposes of the above calculations the values of the product have been based on normal prices. It has also been assumed that the expenditure involved in the production of potash is all additional cost; but, as the dirtiest wool is richest in potash, it could all be put through the steeping-machine, and thereby do away with all the preliminary hand picking now adopted when scouring some classes of wool.

These notes have been collected from various sources—"The Wool Year-book," "The New Zealand Official Year-book," "Bulletin of Department of Chemistry, S.A.," &c.—backed by personal experience of the writer in the manufacture of lanoline as samples here shown, and they will, I trust, be of interest to this Committee and of value to the Dominion. The following is an analysis of sample of lanoline by the Dominion Analyst, dated 15th January, 1918: "Moisture, 2·7 per cent.; ash, 0·065 per cent.; unsaponifiable matter, 44 per cent.; acid value, 3·25 per cent.; saponification value, 103 per cent.; iodine value, 9·4 per cent.; Reichert-Meisse value, 0·6 per cent. The sample is of good quality, and of very good colour and appearance.—J. T. Maclaurin, Dominion Analyst."

William Kinder, Chemist, examined.

To Mr. Hornsby: I favour the prohibition of the export of greasy wool. We have experimented, and we now have a marketable article. We do not find a ready market for the second-quality grades. The market is not worked up. We expect to find a market for the lanoline. There is a 33⅓-per-cent. tariff against us in Australia. We have not opened up trade with America, but are in communication with it.

To Mr. Luke: We have a sufficient plant to handle the lanoline. From the evidence I think that lanoline has not been used to the extent that you would expect. If the prohibition of unscoured wool were put into operation it would not affect the export of wool.

To Mr. Hudson: Some of the machinery we have obtained in New Zealand. The local foundry has made upwards of £100 worth very satisfactorily. We would have an outlet in New Zealand for all the grease turned out, but not for all the lanoline. Importation would not be a handicap on our work with the duty now levied.

To Mr. Craigie: We employ two men. I think all the wool should be scoured in New Zealand, but I do not advocate total prohibition. Three advantages would accrue—we would save the by-products, employ men for scouring, and save freight.

To the Chairman: We would like the Government to make an advance to us by way of loan for the erection of potash-works.

To Mr. Hornsby: In the event of Lever Bros. starting works at Petone, as was contemplated before the war, a large amount of our product would be usable by them for toilet preparations. I do not think Lever Bros. would take the business out of our hands.

William Gardiner, Farmer, examined.

I have been asked to attend to speak about the wheat-growing industry. I have been a fairly large grower of wheat for the past thirty years, and along with other farmers I consider that we are not getting fair treatment from the Government. The price promised by the Government this year is 6s. 6d. f.o.b. The Australian wheat costs 6s. 10d. to land in New Zealand. As farmers we consider that we are entitled to the same price, whether it is this year or any other year, that the Australian people can get for their wheat—that is, the landed price here. The 6s. 10d. is without duty. Three or four years ago the Australian Government was buying wheat from the Argentine at 8s. 9d., and there is no reason why this should not happen again. If there is a drought in Australia there will be a shortage, and under those circumstances it would be most difficult for us to get wheat from Australia. At any rate, my view is that we are not being treated fairly. We farmers are growing wheat at a loss. I would have been much better off to-day if I had not grown a bag of wheat for the last twenty-five years, and I am voicing the opinion of almost every farmer in North Otago.

To the Chairman: I am not going to grow more wheat unless something is done. 6s. 6d. is the f.o.b. price. We pay for our sacks, but we lose 2d. or 3d. The Australian price of 6s. 10d. is sacks included. 6s. 6d. is a fixed price for all grades of milling-wheat, but I do not think it is so far gazetted. I wish I could make all my wheat into fowl-wheat: I could get more for it. There is no price fixed for fowl-wheat. In Southland it is selling at present at 8s. 6d. per bushel.

To Mr. Hornsby: The farmers were growing wheat at a loss last year. The crops are better this year than last, if we get them in, but year in and year out the farmers are losing money at wheat-growing. We have had seven or eight years bad, and the cost of production is very high. We were to have an open market. That was the promise of the Government, but it did not work, because we did not get it.

To Mr. Luke: Australian wheat is not to be compared with New Zealand wheat. There is no need to import Australian wheat, either for bakery or domestic purposes. It ought to be a legislative regulation that sufficient wheat should be grown in New Zealand to meet New Zealand's requirements. There are some farmers in this district who have not grown wheat for

four or five years, and the Government ought to make these people grow wheat or take the land from them. If Australia had a big season and we had a bad one I would be satisfied to accept their prices. If the Government will only give inducement to the farmers to grow wheat there will be no need to import wheat from Australia.

To the Chairman: The promise of a free market was made by the Hon. Mr. MacDonald on the Oamaru showground. I am only going by what appeared in the newspapers. It was understood by the farmers in North Otago that the price would be 6s. 6d. and an open market. As a result of the Minister's promise hundreds of acres were put under wheat. The promise was made on the day of the ram fair last March. We got 5s. 10d. for our wheat last year.

To Mr. Hudson: I would be satisfied to grow at the Australian price. If the price of imported wheat dropped next year to 6s. I would accept it year in and year out. I would be satisfied if the embargo were taken off and we were given a free market. It means now that there will be little wheat grown next year, owing to the cost of production.

To Mr. Craigie: It would stimulate wheat-growing if the price was fixed for three years at 6s. 6d. If meat falls in price I do not think there will be a rush to put in wheat. It is paying us better to-day to have ewes and lambs than to grow wheat. With the labour difficulties, I do not blame the small farmer who takes up the line that pays best. If the large farmer does not grow wheat the Government would be doing right in commandeering his land and making the best use of it. I am of opinion that the duty we have to pay in Australia should also be imposed in New Zealand.

To the Chairman: I believe that wheat cannot be produced at less than 7s. per bushel to-day.

To Mr. Craigie: You cannot sell land to-day as well as you could two or three years ago. The labour question is one difficulty.

To the Chairman: The price of 6s. 6d. per bushel was agreed on six weeks ago, after the crop was nearly finished. A straight-out price fixed for, say, three years would be a satisfactory way of getting over any difficulty. I say that the price ought to be 7s., and nothing less. With that price I would not object to a farmer being compelled to grow a certain amount of wheat.

L. H. ORBELL, Farmer, examined.

I am present as one who has taken a considerable interest in wheat-growing for a number of years, and as one who has been actively engaged in the industry. After what Mr. Gardiner has said it is hardly necessary to state that the industry has lapsed into a very languishing condition at the present day. To my mind the cause of it to a great extent is, to put it in two words, foreign invasion. I have advocated a reciprocal tariff between New Zealand and Australia, because the present tariff does not encourage the New Zealand farmer to grow the wheat that is necessary in this country. If a reciprocal tariff is not enough let it be a prohibitive tariff, and leave the rest to supply and demand. There is no sentiment about wheat-growing. For some years the farmers have been growing wheat at a loss. I exclude this year, because it is above the average. The crop is not saved yet, but, assuming that it may be saved, it is much above the average year. The area sown in the Dominion is 223,750 acres, which the Government expect to yield 28 bushels to the acre—a high return—which will yield 6,265,000 bushels. I estimate New Zealand's requirements at 7,000,000 bushels, allowing for a safe carry-over. I wish to say, with all due deference to the Minister of Agriculture, that so long as the powers that be make a North Island man Minister of Agriculture, the wheat-growing industry will never be on a satisfactory footing. I am aware that Mr. MacDonald is a farmer, but North Island farmers do not know wheat-growing as we do here. If we are going to have wheat and flour dumped into New Zealand from Australia the industry will be gone, because farmers will not grow wheat in competition with Australia without adequate protection from the Government. The previous witness said he would take the Australian price as a standard, but I do not altogether agree with him. If we are going to be dependent upon Australia for wheat or flour the time will come when Australia will have the market and we shall have none, because we have gone out of the industry, for the simple reason that we have had no encouragement to continue in it. If all our wheat and flour has to be grown in Australia it will put a great number of our labourers out of an employment which they look for every year. Then we have no experimental farm in the South Island, and we ought to have one. The North Island cannot be compared with the South Island in the matter of agricultural land.

To Mr. Craigie: If the Government must control the wheat then I say, "Offer a price for three years ahead, and let us know where we are." Mr. Gardiner suggested 7s. as the price. I think it is a high price, but it would induce farmers to grow wheat. This district has not benefited by the high prices of the last few years. The Government should have a clear-cut policy and give the people time to get their land prepared. The price should be fixed in January for the following year, or perhaps in December. I think the Hon. Mr. MacDonald has the best of intentions towards the farmers, and it may be that he was overruled in Cabinet. I suggest that a Canterbury man should be the Minister of Agriculture. I do not contemplate New Zealand being an exporter of wheat. Every article from the time the plough is put in the ground until the grain is in the mill has gone up enormously. Speaking as a citizen, I think it is national policy for this country to grow as much wheat as will keep it. There might be a drought in Australia, or shipping or other troubles, and we would have to import from Canada or the States. And if we are to import from Australia, where are our bran and pollard to come from? I do not believe in compelling a farmer to grow this or that. Personally, I am not much bothered with the labour difficulty.

To Mr. Hudson: When I speak of a prohibitive tariff I believe that a reciprocal tariff might be sufficient. If the reciprocal would not, then I would make the tariff such that the wheat

required would be grown in New Zealand. A price that would induce the farmers to grow wheat is 7s. I believe if it was a fixed price, 6s. 9d. or 6s. 10d. might be sufficient, but 7s. certainly would.

To the Chairman: The average price of wheat before the war was 3s. 6d. to 4s. per bushel, and to-day it is 6s. 6d. I cannot suggest any other way than a fixed price for a number of years that would encourage the development of the industry.

To Mr. Luke: If we get a reciprocal tariff the general public may be sure they will not be thrown on the Canadian or Argentine growers for their wheat if the New Zealand farmer does not put in a sufficient amount of wheat. If the Government protect the farmers, and there is a good season in New Zealand, with a surplus, there ought to be a granary where the surplus could be stored, as the following season might be a bad one.

To Mr. Hornsby: I was present when the Minister made the promise to the farmers on the showground. It was the year before last. It was when the prices were 5s. 8d., 5s. 9d., and 5s. 10d. that Mr. MacDonald addressed the farmers about last year's crop. It was in the previous April that he announced what the price would be. I do not say it was official, because I cannot say it was gazetted. He was speaking Ministerially, and he said 5s. 8d., 5s. 9d., and 5s. 10d. I do not think there was any open market mentioned. This year we were promised 6s. 4d. by Mr. MacDonald when he was speaking in Christchurch. I was not present on the occasion. The statement in the paper was not contradicted, and I took it to be correct. If at the outbreak of the war the Government had fixed a reasonable price to the farmer no trouble would have arisen. It would be unpopular for any Government to put a tax on the food of the people. If we have no encouragement to grow wheat our bread will rise to famine prices, and we shall have to import wheat.

To the Chairman: It was in April, 1917, that the Minister made the promise for last year's wheat. That price was to be 5s. 8d., 5s. 9d., and 5s. 10d., and we got it. It was f.o.b. In 1918 we had a promise of 6s. 4d. with an open market, and we are going to get 6s. 6d. The open market, however, is the bone of contention, and that is the alleged breaking of the promise. The farmers would have been more satisfied with 6s. 4d. and an open market than with 6s. 6d. We are now getting 6s. 6d. f.o.b. The 6s. 4d. was also f.o.b. The farmers want a provision for "on the truck" or "at the mill." In regard to the experimental farm, it has occurred to me that on many occasions it is an unwise policy on the part of the Government to keep all the experimental farms to the North Island, while in this Island we have none. Lincoln College is experimental, but it is not a Government institution, and farmers do not avail themselves of the knowledge they might gain there. If we had two experimental farms in the South Island we would be satisfied.

To Mr. Craigie: Experiments in the North Island do not suit the South Island, on account of difference in soil and climatic conditions. An experimental farm in North Otago or South Canterbury would not do for the whole of the South Island. Look at the difference between North Canterbury and Southland. We cannot increase our acres, but we can increase the production of the acres.

W. H. FRITH, ex-Manufacturer of Paints and Varnishes, examined.

I wish to speak about paints, varnishes, and linseed-oil. Thirty years ago I commenced in Oamaru as a paint and varnish manufacturer. I started in a small way, and worked the business up to a fairly efficient state. It was giving me a good return for my labour. Twelve or fifteen years ago, however, I ceased to work, as I lost my money in dredging. I think a great deal could be done in the Dominion by encouraging farmers to grow linseed to produce oil. Some years ago Kempthorne, Prosser, and Co., of Dunedin, established a mill in Dunedin for the production of linseed-oil, and in my business of varnish-maker I used a considerable quantity of that oil, which was a very good article. For some reason Kempthorne's firm ceased producing the oil. At the time their representative assured me that from a farmer's point of view linseed was a payable thing to grow. I wish to point out that fact, and to assure the Committee that if anything can be done to encourage the growing of linseed it will be a good thing for the Dominion. In connection with varnish and paint, I was making a considerable amount of money. There is an impression that most things made in the Dominion are a losing proposition. This is a thing, however, that can be manufactured here to a great extent and at a good profit to the man who understands his business. If the farmers would grow the linseed they could produce the oil, which enters into the manufacture of varnish. New Zealand has one of the finest gums for the production of varnish—one of the finest in the world: I refer to the kauri-gum of the North Island. At present it is sent to the Home countries, to the United States, and to all the European countries, and sent back to New Zealand manufactured into varnishes, and we have to pay for all that going backward and forward, and 2s. per gallon duty on top of it. If the industry was encouraged here and people were to make the varnishes and paints here it would be a good thing for the makers, and would employ a considerable amount of labour. Again, in connection with dry colours, I used to make colours, but I did not deal with native earths, such as ochres, Venetian reds, umbers, and that sort of thing. I used to make colours by precipitation. While I was making paint I was repeatedly approached by men from the outlying districts—Livingstone, Tokarahi, and other places—who would bring me samples of earths which were really good. I was told that these deposits were extensive in the district. On the Otago Peninsula (near Dunedin) they are producing dry colours. At the Thames and at Nelson they are doing the same. The industry is not pressed forward sufficiently, however, to get the best results from the supplies in the Dominion. I believe that in many New Zealand districts there are large deposits of native earths which are easily treated. I know there is a great amount of

prejudice against anything made in New Zealand, at any rate, in this line. Our architects place in their conditions a particular varnish that must be used on a work. If that could be avoided by our architects it would be a good thing. I should like to see them encourage the local article instead of specifying a foreign article. Leave the question open, and let the matter be judged by the quality of the material and not by a name. My varnishes were as good as any ordinary varnishes that came into the country, but our architects persistently placed in their specifications that such-and-such a varnish had to be used. A contractor came to me once and said, "I want some of your varnish, but I am compelled to use a particular make. However, I am going to take yours," and he filled some of the other marker's tins with my varnish, and it was quite satisfactory. I suggest that, to help the industries of the Dominion, the Government should publish a list in one of their periodicals—the "New Zealand Year-book," or a special periodical—the name of every firm in New Zealand making or manufacturing any article for public consumption, together with the address of the manufacturers and the goods they are making. Also, there should be well-written articles by men who understand the various industries —articles in support of these industries, and asking the people to be patriotic and to assist local industry throughout the Dominion.

To Mr. Craigie: At one time a good deal of linseed was grown to the south of Dunedin. I believe the farmers would not grow the linseed, as it was out of their ordinary routine. I believe that Nelson hæmatite is good. When I was making varnishes and paints I tried to get an order from the Government. I wrote to the different Departments, and the only order I ever received from them was for three gallons of varnish for the Public Works Department.

To Mr. Hudson: Kempthorne, Prosser, and Co. gave good prices for the linseed, and were satisfied with the quality of it.

To Mr. Hudson: I have had no direct experience in connection with experimental farms; but I have been engaged in farming for thirty years, and I am interested in them. I have had no expression of opinion from those who have lived close to these experimental farms; but in my own opinion there is a great deal to be learned from these farms. So far as the farmers in the South Island are concerned, they do not bother their heads about the present farms.

To the Chairman: I suggest that there should be not less than three farms in the South Island—one each in Canterbury, Otago, and Southland.

GEORGE LIVINGSTONE, ex-Farmer, examined

I endorse what previous witnesses have said in regard to wheat, but so far as the yields of grain are concerned I differ from them. I have travelled very considerably throughout the district, and I say there appear to be inferior crops in some parts. I was talking to one man yesterday, and he said he had a paddock that would not go more than 5 bushels and another that would not go 15 bushels. I am almost certain that we are not going to have a good average yield. In some districts there are some crops that are very fair.

To Mr. Craigie: I think 28 bushels is too high. I am not farming now, but I have grown wheat for many years in the district. It is not the cost of labour that is the difficulty, but it is the quality of the labour. We do not grudge the men the wages they get. It is very hard to get men. If you take the industry from the ploughshare up to the wheat it takes fully 50 per cent. more to get the work done than it did twenty-five years ago. We cannot get the yields now that we used to do. I think from 6s. 8d. to 7s. would be a fair price for the next three years. It would be hardly fair to put the same price on all classes.

R. K. IRELAND, Flour-miller, Oamaru, examined.

We are of the opinion that the wheat position as far as New Zealand is concerned is not thoroughly understood, and we are stating our views with the hope that Parliament will recognize in the wheat-growing industry one which is of such importance to this Dominion as to warrant measures being taken to ensure sufficient wheat being grown to satisfy the country's requirements. Some discussion has arisen as to New Zealand wheat making a satisfactory flour for breadmaking. We think the quality of New Zealand bread during the last thirty years is, with one or two exceptions, a reply to this point. The proportion imported was very small. Further, during the last season flour from New-Zealand-grown wheat has successfully competed against flour made from Australian wheat. Can wheat be grown profitably in New Zealand? Farmers have replied that it does not pay as compared to the sheep. We are not prepared to dispute this statement, but wish to compare what the wheat-growing lands would produce with sheep as against wheat. In 1918 New Zealand had approximately 270,000 acres in wheat, yielding about 25 bushels per acre, at 5s. 8d. per bushel equal to £7 1s. 8d. per acre, making a gross return of £1,912,500. The same area carrying sheep in 1918 would have produced—allowing 1½ ewes per acre, 100 per cent. lambs, with 8 lb. of wool per ewe, at 1s. 3d. per pound (is this a fair allowance?)—405,000 lambs at 25s., £506,250; wool, 8 lb. at 1s. 3d. (equals 10s. per ewe), £202,500: total, £708,750—showing in favour of wheat of £1,203,750. It may now be asked, why does the farmer prefer sheep? The reply is that all the gross profit made out of wheat is spent in producing the wheat. This labour is expended in ploughing, harrowing, sowing, cutting, stooking, stacking, threshing, and carting to the railway. We endeavour to make this point: that wheat-growing supplies work for a larger number of men than any other form of farming would supply on this class of land. After this wheat leaves the farmers' hands at the railway-siding it begins to produce revenue for the railway, estimated at not less than £70,000 by the time it gets to the seaboard. Then comes the labour of unloading, storing, and milling, £100,000; also labour in loading for shipment to the North Island, £20,000; while indirectly many business firms depend to a large extent on the above for their revenue, such as implement-making and grain-stores. Prac-

tically all of this employment would be lost by giving up wheat-growing in New Zealand. Is it not worth while encouraging an industry which shows a gross return of about £2,000,000 and requires so much labour in its production? By the time the crop arrives at the seaboard in the form of flour, bran, pollard, and fowl-wheat it is worth—120,000 tons flour, £1,800,000; 23,000 tons pollard, £161,000; 30,000 tons bran, £150,000; 500,000 bushels fowl-wheat, 500,000 bushels seed-wheat, £300,000: total, £2,411,000. In 1918 it is impossible to arrive at a comparison of what Australian flour would have cost, as there are no quotations available. The following is a comparison between Australia and New Zealand for 1917:—

Australia.

	£	£
120,000 tons flour	1,860,000	
23,000 tons pollard	184,000	
30,000 tons bran	225,000	
Extra freight on 12,000 tons bran and pollard transhipped to New Plymouth and other ports	8,700	
Extra freight on 24,000 tons flour transhipped to New Plymouth, Nelson, West Coast, and other ports	17,400	
		2,295,100

New Zealand.

120,000 tons flour, c.i.f., North Island		1,770,000	
23,000 tons pollard		167,900	
30,000 tons bran		124,500	
		£2,062,400	
Less 40,000 tons flour consumed South Island, on which there is no freight	£29,000		
Less 15,000 tons bran and pollard consumed South Island, on which there is no freight	10,900		
		39,900	
			2,022,500
Thus the saving to New Zealand by growing our own food requirements is			£272,600

In addition to which all the labour expended contributes to the benefit of our own people. The foregoing is a comparison with Australia in a year when they had a good rainfall, and they were manufacturing large quantities of flour for export. Yet the demand for mill offals in Australia exceeded the supply. If we had actually drawn our requirements of bran and pollard (53,000 tons) our buying would have advanced the price in Australia and made the comparison still more in favour of New Zealand. Where would we look for bran and pollard in the event of a drought in Australia? The New Zealand Government bought Australian wheat in 1918, which cost them approximately 6s. 5d. per bushel landed in New Zealand without duty, against the New Zealand price, to the grower 5s. 10d. per bushel. Australia knew we were short, and dictated a price that was higher than ours, knowing that we must accept it. This year New Zealand has advanced the price to our farmers to 6s. 6d. per bushel. Australia has responded with an advance correspondingly equal to 6s. 9½d. landed. It appears that, although we have a large surplus of wheat almost at our door, we are forced to pay a high price for it. In normal times, before the war, when a shortage took place in New Zealand it was made up principally with Australian flour, because the Australian miller received a higher price for his bran and pollard, and could thus sell flour at a lower price than the New Zealand miller. Even last year, to encourage the Australian miller to make flour for New Zealand the Wheat Board quoted the Australian miller wheat 1d. per bushel lower than to New Zealand millers. We can expect the same competition as soon as wheat-control in New Zealand is abandoned, and an influx of Australian flour. To counteract this, New Zealand wheat must be bought below the price of Australian to the difference in the value of Australia's bran and pollard as compared with New Zealand. Australia is nearly always short of bran and pollard. Let New Zealand give up wheat-growing and we will require to import at least 53,000 tons of bran and pollard. If we draw it from Australia, where they are always short, we immediately cause the market to advance, and raise the price on ourselves. We predict that if ever the time comes when New Zealand gives up wheat-growing, any saving we make in buying Australian flour will be lost in the extra price we pay for bran and pollard. In times of drought Australia has paid over £10 per ton f.o.b. New Zealand for our offal, but this will be of no use in later years if New Zealand wheat-growing declines; in fact, a drought in Australia under these circumstances will place the New Zealand dairyman in a very awkward predicament. Australian millers have the markets of the world as an outlet for flour, and have large mills to cater for this trade; but when trade is slack it quite often happens that they will sell to New Zealand at £1 per ton less than they sell in their own market. To dump 10,000 tons of flour in the North Island is nothing to these large mills, as they are clearing their stocks and making their profit out of local trade; but it can be imagined what effect this has on the New Zealand trade. Our market then becomes oversupplied, New Zealand mills close down, and then there commences a scarcity of bran and pollard. This refers to the time before New Zealand and Australian wheat was taken over by the various Governments; but if Australian millers can again secure a good price for flour in their own market, and if New Zealand millers are later squeezed out there is no reason why Australia should not get the same good price from New

Zealand. It is interesting to note here that since our Government commenced guaranteeing a price to farmers for New Zealand wheat the New Zealand Government has taken care to protect this wheat by prohibiting the importation of Australian flour. Statements have been made as to the low cost of producing wheat in Australia. The following is a statement made by the Victorian Farmers' Union on the cost of production, in evidence given before the Inter-State Food Commission: John J. Hall, general secretary of the Victorian Farmers' Union, said, "In connection with the price of wheat, farmers cannot afford any reduction in the price of 4s. 9d. per bushel and carry on the industry. It has to be remembered that that payment of 4s. 9d. really amounts to 4s. 2d. net to the farmers. The president of our union (Mr. W. C. Hill) worked out the cost of production on a farm at Colbinabbin as follows: Rental value, 10s. per acre; ploughing, 11s.; cultivation, 6s.; drilling, 3s.; harrowing, 3s.; seed, 3s. 6d.; manure, 3s.; harvesting, 6s.; bags, 6s.; bag-sewing, 1s.; carting, 3s. 6d.; pickling seed, 3d. The total cost per acre was £2 16s. 3d. The average crop for the last two years was 16 bushels per acre, which at 4s. 2d. per bushel net gave £3 6s. 8d. as the value of the crop per acre. The cost of production on the area actually cropped was 3s. 6d. per bushel, showing a surplus of 8d. per bushel. Berrigan farmers have made a calculation which shows the cost to be 3s. 10d. per bushel. Farming implements have increased in price, and although to-day's prices are war-time prices they are the prices under which wheat is being produced. In 1913 the plant for a 300-acre farm cost £490; to-day the same articles cost £559. In the Mallee the average return per acre over a period of ten years has been 7·11 bushels, and the average price for eleven years has been 3s. 9d. per bushel. Excluding 1915, when wheat was 7s. 0¾d. per bushel, the average price for ten years has been 3s. 4d. During ten years the Mallee farmer has been working at a loss of £44 per year." Witness continuing said, "No other general figures regarding the cost of production have been collected. The area under crop in Victoria is decreasing. The most successful wheat-farmers have been those with large families of sons. As the sons grow up and leave the farm there is a tendency to allow the land to go into sheep." Arnold E. V. Richardson, Superintendent of Agriculture to the State of Victoria, said, "The price paid to the farmer for his wheat was not extravagant, and it was only reasonable that the community should be willing to pay to sustain a great national industry. The present price of wheat on the farm was not sufficient to encourage production, and in spite of all efforts in the various States there had been an actual reduction in the acreage under crop in New South Wales and Victoria." With wheat at 4s. 9d. at the seaboard the Victorian farmer makes a profit of 10s. 8d. per acre. Allowing that Australia is prepared to sell at cost price, this wheat cannot be landed in New Zealand under 5s. 6½d. ex ship, and 5s. 8d. at the mills without duty. On the above figures we do not appear to gain at all by depending on Australia. Can the people of New Zealand afford to lose such an important industry, producing annually £2,000,000? A large portion of this sum is being circulated in the form of wages. Wheat-growing is the small farmer's stand-by, and it greatly assists in the rotation of crops. To-day we are not growing sufficient wheat to feed ourselves. In order to encourage the industry we suggest the following alternatives: (1) A duty of £2 10s. per ton on flour and wheat, with a guarantee of a minimum price to the farmer over a term of years; (2) payment of a bonus to the farmer on every bushel of wheat grown; (3) the present system of Government control of wheat, flour, bran, and pollard, eliminating speculation, and guaranteeing the farmer a fixed price for wheat. A great deal could also be done by a Government experimental farm in the wheat districts selecting and producing types suitable to the district. The Velvet wheat is a wheat that is in strong favour with the miller for mixing purposes; it is a strong wheat. We urge that a higher price should be given to the farmer to grow this variety. In our district the Dreadnought wheat is taking the place of Velvet. Dreadnought returns from 40 to 60 bushels to the acre practically as against 30 bushels of Velvet. You cannot take that as an exact comparison; on some farms Velvet suits the land and gives a better return than the Dreadnought. Our idea is that by means of experimental farms the most suitable varieties of wheat for the land can be ascertained. I think that in this district there is the largest growing of Velvet wheat in New Zealand. It should be the duty of the Government to maintain seeds of a high standard. If the Dreadnought can produce good yields, why should not the Government experiment with it and try and improve it; and, better still, find a variety between the Velvet and the Dreadnought that would suit the millers best. I have a quotation here from an American newspaper showing the treatment of soil under various headings, and giving the results of the treatment of the soil with different manures, and the yields of wheat under different treatment.

To Mr. Craigie: The difference in the price of flour with wheat at 6s. and 7s. a bushel—the difference in the price of a ton of flour would be about £2 10s. As to what difference that would make in the price of a 4 lb. loaf, I cannot say what the exact figure comes to, but previous to the last rise the costing was going up. On the basis they were working at about twelve months ago it would be ½d. on the 4 lb. loaf for every 25s. rise per ton of flour. I could not say what the difference in the price of the material to the baker would be to produce the 4 lb. loaf. If we imported all our wheat, at to-day's value it would amount to two millions sterling; it would amount in quantity to 7,000,000 bushels. It would be the means of putting many men out of employment, and would reduce the circulation of money; and if wheat-growing dropped it would have a severe effect on this town.

To Mr. Hudson: I believe in the policy of an import duty being put upon wheat to protect us against the advantage of the Australian miller—the advantage which he has in connection with the offal. I could not say whether it would increase the cost of flour materially or whether sufficient wheat would be grown locally at a reasonable price; a good deal depends on what the farmer is getting for his sheep. If the farmer can make a profit on growing sheep without having

the bother in connection with the labour question, he might be prepared to take a smaller profit on sheep.

To Mr. Luke: The Australian miller has a much bigger outlet for the offal, and without Government restriction the price of bran and pollard in Australia rises to a fairly high level. The big demand for bran and pollard in Australia I consider is owing to the large number of stud farms for breeding sheep, and the dairying industry has developed to a big extent. The climatic conditions are different, and they have to go in for heavy feeding. The first deal made by the New Zealand Government was with New South Wales, but they found that the quality was inferior, and they arranged that future shipments should be from Victoria. From the competition I have found amongst the millers there would be very little danger of the farmers being at the mercy of the millers. The Government would prevent the rigging of the market to the detriment of the small farmer. My impression is that the competition for wheat amongst the millers has given the farmer all that the miller can afford to give him. In addition to employing more labour, wheat takes more out of the land. Quite a number of the small farmers do the ploughing and the bulk of the work themselves, and thus save expenses. I think that in the case of the small farmer who has been growing wheat for the last twenty years it has taken him all his time to come out of it. What I am looking to is the future, and if the future is allowed to take care of itself and Australia is allowed to dump flour into New Zealand, you can imagine what the position will be. A number of the more progressive mills in the Dominion are quite up to date.

To Mr. Hornsby: As to the statement that New Zealand wheat is not good for biscuit-making, I may say that Hudson and Co., of Dunedin, have their own flour-mills and manufacture their own biscuits, and they have a very good name. Aulsebrook and Co., of Christchurch, use largely New Zealand flour, and they have a good name. A fairly big quantity of our flour is sent to Griffin and Co., of Nelson, and their product is known throughout New Zealand. I have found that biscuit-makers can use the Australian flour, but if they can get the New Zealand flour cheaper they will not take the imported flour. I should say that it is not true that New Zealand flour is not suitable for biscuit-making, but at the same time I would not contradict the statement of an expert biscuit-maker if he went into figures on the point. I know that the statement is made that a good deal of pollard is composed of bran. After the flour is taken out of the wheat the balance is separated by the bran and pollard separators: what goes through the sieve is pollard and what goes over the sieve is bran. [Witness further described the process in detail.] I quite believe that there is more bran in the pollard now than there used to be; that has been done to meet the demand. As to the distribution of the wheat that was brought into this country, first of all the millers were asked to put in signed statements of their trade for the three previous years —their trade in flour; and the supply of wheat was issued on the warrants according to the average of the previous three years. Some of the mills bought up all the New Zealand wheat they could. The shortage trouble came along with strikes and the epidemic, and the boats were held up, and the Government could not get enough Australian wheat in to satisfy some of the millers. There has been a shortage. For that reason some of the Dunedin and Oamaru mills have been closed down. I believe there is a boat arriving in Dunedin to-day. I believe that as far as possible the Government distributed the wheat fairly. I think no fairer arrangement could have been made. In some cases, of course, the question of finance comes into the matter. Last year millers had to buy New Zealand wheat during the first four months to last for the twelve months. The northern mills bought largely Australian, and I think were pretty well treated by the Government in regard to the shipments of Australian wheat. I should say that they were rather handsomely treated, if you put it in that way.

To the Chairman: As to the price fixed for flour for 1919 by the Government, I have not got the information officially, but unofficially I understand that the price is £15—that is 10s. less than last year. I cannot say officially whether the difference of £3 is to be made up by the Government, but I understand it is to be made up. The £15 is the f.o.b. price, less 2½ per cent., and the price should be £18, less 2½ per cent. I understand the difference to be made up by the Government would be £2 17s. 6d. That is a new departure. It was no move on the millers part to bring this about. This arrangement is going to give the bakers flour 10s. a ton cheaper than last year. I do not think it will reduce the price of bread. It may be thought that the flour-miller makes a good thing out of it, but I would like to explain that he does not. The risk we take must be remembered. I want to explain that the baker has increased costs to meet. The new drivers' award adds considerably to the cost of bread; and my opinion is that he is entitled to the difference. 120,000 tons are used in the year—that is £360,000. I understand that the prices of bran and pollard have been fixed at £5 10s. bran and £7 10s. pollard, but I cannot say so officially. I could give you the freight on wheat in 1914 and 1919 to Auckland later on. To-day the cost is approximately 8d. a bushel. There is no Government regulation in regard to the quality of pollard we put through; that is left entirely to the miller and the consumer. Dreadnought wheat has been on the market about four years. I do not know where it originated; it is of the Tuscan variety. I should say that the men who have been fortunate enough to get good yields of Dreadnought wheat have probably made a good profit. It is difficult to say whether it will be largely grown in this district in the future. New varieties sometimes come in, and then after a few years they disappear. As to Australia discriminating against New Zealand, they publish it in their official quotation. The fact of Australia raising the price when the New Zealand price was raised may have been a coincidence, but you have to draw your own conclusion. The Wheat Board is run by men who know their business, and if I were on that Board in Australia I would say, "New Zealand is short; charge them more." The duty asked for on flour of £2 10s. a ton is the same as Australia is charging us, and the duty on their bran and pollard

is the same as ours. In the figures I have given as to growing wheat and sheep I do not show the net profit to the farmer. I do not pretend to enlighten the Committee as to whether it is more profitable for the farmer to grow wheat at these prices or not.

To Mr. Craigie: I would not object to giving 6d. per bushel more for Velvet wheat, because we like to have it; it strengthens our flour; it makes a livelier flour.

T. McMurtrie, North Otago Union of Flour-mill Workers, examined.

The wheat-growing and flour-milling industries mean the distribution of an enormous amount of money. In comparison with sheep-growing there is a very large additional amount of labour employed in wheat-growing and flour-milling. There is the ploughing and harrowing of the land, the sowing and reaping of the wheat, and then there is the threshing and the milling. The flour-mill in which I am working employs about fourteen hands, and there are three or four mills in this district employing about the same number of hands. If that labour is thrown out of employment it means that the men will have to look for billets elsewhere. I urge that wheat-growing should be continued.

To Mr. Craigie: I think it would be disastrous to the employees if the industry were stopped, and the consumer would have to depend on the Australian market, and strikes and droughts have to be reckoned with.

To Mr. Hudson: If there was no other remedy I would certainly advocate a moderate duty being put on imported flour. I do not know the number of men employed in the flour-mills of New Zealand.

To Mr. Luke: In a great many instances the wages remain the same as they were before the war; a bonus has been given in some cases. Our union is now before the Arbitration Court asking for a new award. What I have stated is the view of the union which I represent.

E. Evans, North Otago Union of Flour-mill Workers, examined.

I endorse what the previous witness has said. The statements which have been made come from the flour-mill workers; we speak on behalf of them. There are between thirty and forty members in our union.

TIMARU.

Friday, 28th February, 1919.

J. Talbot, South Canterbury Farmers' Union, examined.

I have been connected with the wheat-growing industry for the last fifty or sixty years. I should like to say that we do not come to you with any thought-out or deliberate opinions of the union as a whole; our opinions may be looked upon as individual opinions. The wheat position appears to me to be this: For a considerable number of years before the war started the wheat-growing industry was in a languishing condition in Canterbury. This is the centre of one of the most important wheat-growing districts. In 1913–14 the area under wheat dropped down to something like 160,000 acres, which was altogether inadequate to supply the demands in an ordinary season. It would take from 250,000 to 300,000 acres to do that. Last year the area was not sufficient to meet the demand. Before the war started we were in a languishing condition, due to the large importations of wheat from Australia. There they are able to grow wheat much cheaper than we can, and also keep their mills going and send out the offal and flour, and completely cut us out. Since the war started, to a very large extent the cultivation has increased owing to the Government's action, and more especially from motives of patriotism and an endeavour to keep the country going. Now, the question arises whether it is worth encouraging the industry under the different conditions that will arise, and what is the best thing to do under the circumstances. The question will be largely, Will the steps which have been taken by the Government induce the cultivation of a sufficient quantity of wheat now that the demand from patriotic purposes has dropped out and as we go back to normal conditions?—that is, whether the offer and the conditions now stated by the Government of 5s. 6d., 5s. 8d., and 5s. 10d. for next year's crop is going to be a sufficient inducement to carry on the cultivation of a sufficient area for our supplies.

The Chairman: Has that offer been made by the Government?

Mr. Talbot: I understand it has been made for next year's crop. Whether the Government is making any further reply from the farmers I do not know, but I understand that that is their offer, and I presume it rests with the farmers to say whether that is sufficient to induce them to grow wheat or leave it alone. I am inclined to think that this offer is not going to be very enthusiastically received. There are several reasons for that. There is considerable distrust with the Government's actions altogether in the way they dealt with us this year, which leads us to have a very considerable feeling of doubt as to what may be done during another year. My reason for saying that is that an agreement was reached at the conference held in Christchurch in April, at which the Government offered to give us a minimum price of 6s. 4d. for this year's crop, with a free market.

The Chairman: Will you tell us what Minister made the offer, and how the offer was made?

Mr. Talbot: It was made by the Minister of Agriculture. There was a large conference of representatives of the Farmers' Union, and they all had their mandate from their own union to ask for a straight-out price—7s. a bushel, without a free market. The Government, through Mr. MacDonald, said they could not give that, but they would give us 6s. 4d., with a free

market. That was 6s. 4d. as a minimum for any grade. Under that offer, if the market had been free, the prices for the better varieties, except the Tuscan, would naturally have been higher. I asked at that conference whether there would be any difference in the minimum price guaranteed for different varieties, and the reply was that a free market would adjust itself. Some time after the agreement was made the Government bought a large quantity of wheat in Australia. Also, I may say, that at that conference we asked that the present duty be increased to that of a parity with Australia. 9d. a cental is the duty imposed on Australian wheat coming in here, and the duty the Australians impose against us is 1s. 6d.; and we thought that the duty should be equal. The Minister said that he could not promise that that would be done—that the tariff would be adjusted so as to make it equal with Australia. But there was no question in any one's mind that the duty ordinarily ruling here of 9d. a cental—that there would be any interference with it. This wheat was bought in Australia, and it appears that it is going to be sold against our duty here—that is, this year. Instead of that, the Government found they could not control the price of bread, and so on, if they did give the free market, and threw over the whole thing and made it a straight-out price of 6s. 6d. for all grades. By way of showing the injustice of that, in Australia the price is for next year—they are offering 5s. 6d., 5s. 8d., and 5s. 10d. If there is any justification for that difference next year there certainly was justification this year here. The action of the Government this year will have a deterrent influence, in my opinion; and the farmers who may care to go in for wheat-growing next year will not put very much reliance on anything the Government may say they will do. There is another reason why wheat-production is not likely to be gone in for enthusiastically, and that is the very large cost of production. Nearly everything has tremendously increased in price connected with the production of wheat. Another phase is the very long time it takes to get a return in wheat-growing. If we take it up from the point of view that wheat is going to be the first consideration in farming operations, the preparation requires to be started in, say, November, and from that time on for the next eighteen months there is nothing but constant expenditure; not a halfpenny return comes in until the next April twelve months—nearly a year and a half before there is any payable return. It does not compare with stock-raising or dairying. The expenditure is a very heavy one all along. I might refer to another aspect of it, and say from the public point of view it is sometimes said that we must grow wheat because we must renovate our land—that we must plough our land and renew it. That is true, but it is wrong to put it in that way. The consumer is able to get wheat so cheaply for the reason that we do require to do that. It is grown more cheaply because we have to plough it in any case, but if it is a losing game then wheat has got to be left out. And I think that is a position that is very likely to take place in the future unless the prices are considerably higher than we have been used to. It is said—and I notice that the Minister has been quoting prices for wheat for some years—and, by the way, he tells us that in 1917–18 we got 6s. 4d. a bushed. Where he got the figures from I do not know. 5s. 10d. was the price f.o.b., which would be equal to about 5s. 9d. delivered in the towns. If we consider now the price of wheat is 5s. 6d. for next year, it must be measured largely by what that money is worth. As far as can be ascertained, the exchange value of money has dropped down pretty well a third, so that the price offered for next year of 5s. 6d. or 5s. 8d. would only be equal to about 3s. 8d. before the war. That is based on what is stated to be the ascertained value of the sovereign. Farming requisites have not only increased equal to that, but more than that, and in some cases the cost has been doubled and trebled. All these things have to be borne in mind in considering whether or not the inducement now offered is sufficient. I take it that the wheat-growing industry is of the highest importance here. It used to be said in pre-war times that if we could not grow wheat to pay us, then do not do it. If it is thought that that is the view to take nothing further can be said. I pointed out many years ago that it was of the highest importance here: that we were so situated it would be very difficult to get wheat except from Australia unless the Australian crop was a failure. So long as they get a good season over there they can beat us; there is no use attempting to grow wheat against Australia if they have a fair season at all. It is sometimes said that farmers will not grow wheat on purpose to be awkward—to throw the public into an awkward position. That is not the case. That has never entered any farmer's mind, except that he will use his land to the best advantage and raise the produce that the world's markets require. If it is thought worth while, and if the State wishes to control the price of bread, then I think something will have to be done in the way of specially encouraging and seeing that the farmers do get a payable price for growing wheat, and then there is no doubt they will grow it. Another disadvantage with regard to wheat-growing is that it requires larger capital in order to take up the wheat-growing industry. Smaller settlement is greatly talked about, and perhaps rightly so, but if you are going to go in for wheat-growing successfully the farms must not be too small; they must be from 300 to 500 acres at least. That means, where you have got £20- and £25-an-acre land, a pretty considerable amount of capital is required. You can go into the dairying and pastoral industries with a good deal less capital. Financial firms would far rather finance either of the other industries. It is far safer to advance to a good man dairying or a man engaged in pastoral work than in the precarious occupation of wheatgrowing. There are so many chances of failure in grain-growing: it is a risky game all along the line. This year the price being paid, 6s. 6d., is a good one, and from what I can see the crops are going to be paying crops; but that has nothing to do with the breach of faith on the part of the Government. Last year the price was 5s. 9d. and 5s. 10d., but the crop was a failure and the losses were very serious indeed; but the farmers did not squeal much, and the wheat was delivered according to the bargain. Although there may be a good crop this year, and it is going to be a payable one, it will only make up for the losses we have suffered quite recently. The crop that we are now harvesting is likely to yield well, and that may have some influence on the crop next year—possibly it will.

But I doubt very much, as I said, that the inducement that the Government is offering in these prices is going to create very great enthusiasm, and I am doubtful if the area grown this year will be repeated.

To Mr. Craigie: Certainly I think we should grow enough wheat for ourselves in this country. My view is that either one or two courses is open: either to guarantee a sufficient minimum price with a free market, or to throw over the whole control, and let us go back to the old state of things—which I do not think the State will do—and give us protection from Australia up to, say, 5s. 6d. a bushel, with perhaps a decreasing duty after that.

To the Chairman: As to Australia, I mean, to prohibit altogether until the market rises to 6s. here; the duty should then decrease; it should be subject to a sliding scale of duty.

To Mr. Craigie: I think I would rather have the minimum price, providing it is sufficiently strong. The trouble is this: that the market will be a fluctuating one. I think by having a minimum price you will have a minimum price and a certainty. The position in regard to the necessity for differentiation in regard to the different varieties of wheat has been fully recognized. I should think the cost of production now as compared with five or six years ago is nearly double. If you go in for grazing you must have a larger area of land; you could not get a living on a small bit of land. I do not think that compulsion of farmers to grow wheat would be practicable.

To Mr. Sidey: I do not see how it is possible in respect to the cost of production to go back before long to pre-war prices. It was generally recognized before the war that something over 4s. a bushel paid to grow wheat. As I have said, I think it would require 6s. now. I reckon that it would require quite one-third more—that is an average price. I think it would be better to have a two-years guarantee at a minimum price; from the farmers' point of view I think it would be a very good thing. If the Committee suggested a three-years guarantee I should think 6s. should be the minimum price. But I would like to say that I cannot speak authoritatively. We have not had a meeting of the farmers: I have given you my own opinion. I think 6s. and an open market. Abandoning the open market, and taking a three-years term, I would hardly like to say what the price should be. Too much encouragement of wheat-growing might result in doing much mischief: it might result in turning over land to grow wheat that should be used for other purposes. I do not think that 6s. would be too much. I think a minimum price of 6s. would be a fair price. It would be possible to establish granneries so as to tide over the surplus of one year to the next, but it is not a good policy to hold wheat very long. It might be held for two or even three years, but it has been shown in Australia that it has deteriorated very much. I do not think that financial institutions care to make advances to farmers purely for wheat-growing purposes.

To Mr. Hudson: If the Government commandeered the wheat I think the price should be 7s. 6d. or 8s.

To the Chairman: Circumstances have altered since April last. If the price offered by the Government were sufficiently high, then I presume that a straight-out price would be better, but I could not name it. I do not think the industry can continue without either Government assistance or Government protection against Australia. Bread is still the cheapest article of diet, but there seems to be such a tremendous difference between the price of wheat and the price of bread. The farmers will grow wheat if you will pay them. I do not see that there is any moral obligation in connection with it. Take a £20,000 farm, at something like £20 an acre: the land-tax alone is 3s. an acre; there is no concession made to the farmer in the way of taxation.

A. G. HART, Farmer, examined.

I take it that this Committee wishes to collect evidence from those engaged in important industries, which are necessary if this Dominion is to carry on and pay its huge indebtedness. As far as the agricultural industry is concerned it will be necessary to bring about intensive cultivation in order to increase our production, and it is going to be very hard to give advice when we realize that the general trend of farmers at the present time is to drop cultivation as far as possible and go in for permanent pasture. This, at any rate, is the opinion of the grain-producer. There are three reasons for this, and they are—(1) Unfavourable climatic conditions, which have caused trouble and loss to the farmer; (2) unsatisfactory and expensive labour conditions. The farming industry was depleted of its competent men to a greater extent than any other industry.

Mr. Hornsby: I do not think that is correct.

Witness: We take that as correct. Our most able and competent men went to the front. It cannot be denied that the men who were left, competent and incompetent, took advantage of the occasion, and consequently the labour with which the farmer has been trying to produce wheat has been both expensive and unsatisfactory. (3.) Panic legislation and political jobbery by the Government.

The Chairman: Draw it mild!

Mr. Hornsby: It is easy to make assertions but difficult to prove them. Give us proof.

Witness: I will give you proof. When the Minister of Agriculture met the farmers in conference last April he agreed to 6s. 4d. as a minimum price for wheat, and he also promised a free market. It is generally understood there are three varieties of wheat—(1) Lower grade, or Tuscan; (2) Velvet, or kindred varieties; (3) Pearl and red chaff. Our Chairman says that Mr. MacDonald broke faith, but I hardly put it that way. The Minister offered us 6s. 4d. as a minimum, with a free market; but he took away the free market by giving us 6s. 6d., and the grades of wheat were dropped altogether. I claim that that is a breach of faith.

To the Chairman: Well, I may have been wrong, and if so I withdraw it. The Minister also promised to get the Government to put the Australian tariff on wheat on a level with our own.

He gave us to understand that he was at one with us. He said he agreed with every word we had said, and he added that he believed Mr. Massey did the same. We agreed to the 6s. 4d., believing that the Government would help us with the tariff. But after the farmers had got their crops safely in the Government broke faith with them by adding 2d. per bushel to the minimum and making 6s. 6d. the highest price a farmer could get. As a matter of fact, for 2d. per bushel the Government bought our free market, and instead of getting more duty on wheat it has been taken off altogether, or suspended for a time. That is one instance for you, Mr. Hornsby.

Mr. Hornsby: You do not call that political jobbery, do you?

Witness: I do, but I may have used the wrong word. New Zealand farmers have to pay heavy taxes to grow wheat, while the Australian farmer can trade his wheat in New Zealand without paying any taxation. Then, the North Island farmers have been given 4d. per bushel more than the South Island farmers, which is neither just nor fair. That is another piece of jobbery. The next point is this: When the farmers were asked to put in wheat they were informed by Mr. MacDonald that the price would be governed by the quantity sown, but now that the wheat is grown and pretty well harvested we are told that the price will be based on the price at which wheat could be procured from Australia, duty-free. If that is not political jobbery I would like to know what is. When war broke out we had 166,000 acres in wheat, and owing to the appeal for patriotic wheat the area was last year increased to 300,000; but now that the war is over farmers are going to farm so that they can pay their way and meet the big and unjust land-tax, which is a tax on industry and on a man's debts. If grain-growing is to be encouraged there are two ways in which the State can help, namely—(1) put our duty on a parity with that of Australia, and keep it on; (2) fix a minimum price for all milling-wheat of good quality, and give the farmer a free market to dispose of his wheat. Before the war 6s. per bushel would have been a fair minimum price for wheat, but now the cost of producing wheat has doubled. In the farming community it is estimated that the cost of producing wheat has increased 100 per cent., about 80 of which is taken up in the increased cost of labour and 20 per cent. in the increased cost of things necessary on the farm. Oil, bags, twine, and everything have gone up. At the present time it costs at least £7 per acre to produce a crop of wheat, and as 25 bushels is a fair average crop, at 6s. per bushel a man would net 10s. per acre if he was lucky enough to get the average. The Minister is fully aware of the fact that more than two-thirds of the farmers lost money last year on growing wheat. The whole trouble in the past has been that at times farmers have had to sell wheat at a good deal less than it cost to produce it, and the consumer has been fed at the farmer's expense. This, however, must stop. The farmers have never shown that they wanted to shirk the position, but the Government have never met them in a reasonable and fair spirit. I was going to suggest that the minimum price should be 5s. 6d. per bushel, with a free market. Some of my colleagues may think it is not high enough. I think, however, we would accept 5s. with a free market if we were only dealing with some one whom we could absolutely trust. I quite agree that the people must have bread and that the farmer must provide it, but it is wrong that the whole burden of producing the bread should fall on the farmer's shoulders.

The Chairman: I do not think that is the case. The Consolidated Fund will have to pay £2 17s. 6d. for every ton that is milled, and consequently the farmer is not bearing the whole burden.

Witness: They have not done it yet.

The Chairman: They are doing it now.

Witness: I would not like to say they have done it yet.

The Chairman: I want you to be sure of your statement when you say the farmer is bearing the whole burden.

Witness: From what has been said it looks like threatening the farmer that if he will not grow wheat he will be made to grow it.

The Chairman: No one on the Committee has threatened it.

Witness: Well, I may have taken it up wrong, and I beg pardon. I say that it is surely better for the Government to pay for wheat grown in New Zealand than to send gold to foreign countries and make up the loss out of the Consolidated Fund. If anything has to be taken out of the Consolidated Fund the farmer and those labouring with him should be entitled to get something instead of sending it all out of the country. When Australia was short of wheat the Government there did not suspend the duty—they kept it on, and asked the farmers to grow wheat, and they got it. A question was put to Mr. Talbot in connection with the Government's offer for next season's wheat. The Farmers' Union have had nothing authoritative on the matter, but at a meeting of the union in Christchurch a few weeks ago Mr. MacDonald was asked whether the offer of 5s. 6d., 5s. 8d., and 5s. 10d. for next season's crop would be ratified. The Minister replied, and, of course, left the question on one side altogether.

The Chairman: There was no answer?

Witness: He never answered.

The Chairman: Then we can understand that no definite offer has been made?

Witness: No, no definite offer has been made, and I doubt whether anything definite has been done as far as this year's wheat is concerned. The merchants in Timaru have no authority to buy wheat at any price.

The Chairman: It will be gazetted almost immediately, and will come into force on the 1st March.

To Mr. Craigie: Three years ago the yields of wheat in South Canterbury were small. Many were 15 bushels to the acre, and I heard of some that were down to 6. Others did not get their seed back. I am afraid that, no matter what is done between now and sowing-time, the return

this year must be very low, because there is hardly any preparation for wheat. As far as next year is concerned, it is six months behind the time to start to fix the price now. Farmers are beginning to find out that by leaving wheat-growing alone they can do without manuring and can carry more sheep.

To Mr. Sidey: If there was no wheat coming from Australia I believe we would be getting 7s. 6d. for our wheat to-day if there was no interference.

To Mr. Luke: Fifteen years ago I drew a run of 312 acres in a ballot, and I have since bought 110 acres. For the last five years it has not been a successful occupation to grow wheat.

To Mr. Hudson: If you will guarantee the season we will guarantee the wheat. If we had had 7s. per bushel for our wheat for a number of years past, except this year, we would not have shown anything to credit. If we are going to have seasons like we have had for the past four years 7s. would no more than pay us a maximum price.

To the Chairman: The farmers in the North are getting 4d. more than the farmers in the South. Mr. MacDonald, the Controller of Wheat, was asked in Christchurch why that was so, and he said, "The position was that last season the North Island grew between 8,000 and 9,000 acres of wheat. Estimating the yield at 30 bushels, this would amount to approximately between 240,000 and 270,000, or barely enough to satisfy North Island requirements for ten days. It is therefore claimed that practically the whole of the flour ground in the North Island must be from wheat grown in the South Island, and the flour-miller must get the price for his flour based on the cost of wheat at his mill. This necessarily must include the cost of freight between the two Islands, approximately between 5d. and 6d. per bushel. If the North Island millers were allowed to buy North Island wheat at the same price as South Island wheat at port of shipment they would make, if the wheat were of the same quality, an additional profit equivalent to between 5d. and 6d. per bushel. Thus, if the North Island yield were 250,000 bushels and the freight between the two Islands is calculated at 5d., the North Island millers would gain in addition to their ordinary profits a further sum of £5,208 6s. 8d. It was thought better that this sum should go to the pockets of the producer and not into the pockets of the millers. If the North Island wheat were of the same quality as the South Island wheat the difference in price should have been between 5d. and 6d. per bushel. So it is inferior in quality. The difference in price allowed the North Island farmer was put down at 4d. in order to give the North Island miller an inducement to use the wheat grown in his own district, otherwise he might have bought all his requirements in the South, and inferior North Island wheat would have been left on the Government's hands."

The Chairman: I have a letter from a North Island farmer which shows that he did not get the 4d. difference. He received 5s. 10d., but out of that he had to pay the freight.

To the Chairman: I believe the cost of labour has increased by 80 per cent. It must have been more last year. I include in the labour the cost of threshing, which in some cases was over 1s. per bushel. I should like to see a heavy duty against Australian wheat.

G. L. TWENTYMAN, Farmer, examined.

I know of mercantile houses that have refused to finance people going on to wheat land. If wheat-growing pays a farmer he will grow wheat. It is my intention to grow very little wheat under present conditions: I am heartsick of it. It is a maxim among farmers, "Grow wheat and grow poor," and I must grow something else. We have been badly treated by the Government from the day Mr. Massey asked us to grow wheat for patriotic reasons. I saw the Minister of Agriculture in Timaru a month ago and I asked him, "What price am I to get for my wheat if I put it in this year, and what price am I to get for my wheat now in the paddock?" He said, "I cannot answer either question, but I will answer them as soon as I can." The questions have not been answered yet, and therefore I take it that the 5s. 6d., 5s. 8d., and 5s. 10d. have not yet been fixed. The price I expect to get for my wheat this year is 6s. 6d., and as I have grown the wheat in response to the request of the Government I look for its fair market value. The fair market value is the cost of delivery of Australian wheat in Timaru, plus the ordinary duty. In other words, I expect to get 6s. 10½d. The Minister did not dispute my figures when I laid them before him. A peculiar thing in connection with the price of wheat is that pigs will pay better than wheat: they will pay 50 per cent. more. I think there is an exaggerated idea among a good many people as to the profits of farmers generally and as to the profits of growing wheat.

To Mr. Craigie: Last year my wheat in November and December promised 50 or 60 bushels, and it threshed out at 30. 5s. 6d. and an open market would not induce me to grow wheat in the next twelve months, though it might induce others. There is no price that you could offer that would induce me to do it. We ought to know about October or November what we are going to do in the following year.

To Mr. Luke: I would prefer to grow wheat for bacon than for wheat. It would pay me better to hog my wheat. It is probable that, in small quantities, the pig will pay better than wheat for years to come.

To the Chairman: I am growing 15 or 20 acres of wheat, as much as anything for the straw. My next-door neighbour owns one of the best wheat-growing farms and he has not a single acre of wheat this year.

The Chairman: If the farmers are not growing wheat it is all up with the wheat business.

Witness: It has not been worth while growing wheat in the last four years.

The Chairman: I am sorry to see such a pessimistic tone with the farmers.

Witness: The tendency is to go in for grass instead of crop, and can you wonder? It is my intention in years to come to go in for stock-farming and to drop the grain almost entirely.

The Chairman: You know that it is the duty of the Government to see that the people get bread at a reasonable price?

Witness: It is my duty to pay my debts and to provide for my family. People do not give exorbitant prices for bread to-day. It is nothing like the price of meat.

The Chairman: You want 6s. 10½d., and that with one of the best harvests you have had for years?

Witness: I have not got a good harvest. The blight is in the crop.

The Chairman: In order to make you satisfied, how much per bushel do you want in the future?

Witness: It is hard to forecast and say what is a fair thing, but I do not think I should be asked to take less than the fair market value.

The Chairman: And on what basis would that be fixed?

Witness: On the cost of putting the Australian wheat in the trucks, with the ordinary tariff added—that is, 6s. 10½d.

The Chairman: And what about next year?

Witness: Personally the price for next year does not interest me, because I expect to have so little to deal with.

The Chairman: But what should be the price to encourage farmers to grow?

Witness: I cannot see that we can grow wheat cheaper next year than this year. 6s. 6d. is not too much this year, and we should not be asked to take less next year.

To Mr. Sidey: I have a farm of 346 acres—some of the most fertile land in South Canterbury. It has grown 80 bushels to the acre.

A. S. Callaway, Electrical Engineer, Timaru Borough Council, examined.

I wish to speak about the future of South Canterbury industries. The Committee appointed by the Board of Trade to consider the question of electric-power supply for Great Britain reported that in considering a comprehensive scheme of super-power-stations they found that in Greater London alone seventy generating-stations were operating fifty different types of systems. The linking-together of these systems for the purpose of more efficient operations from a super-power-station will be very expensive and presents great difficulties owing to the absence of any attempt to standardize pressures and frequencies. In view of the suggested comprehensive water-power scheme for New Zealand linking up all the smaller supply-stations, I would point out that at present fifty electrical undertakings in the Dominion are at present working under sixteen different systems, and I would suggest that the question of standardizing existing systems and any that might be undertaken before the comprehensive scheme is in operation should receive early consideration. If greater uniformity obtained it would result in the trade and consumers being more satisfactorily supplied with machinery and accessories from stocks more easily carried, and should hasten the time when our electrical requirements may be manufactured in the Dominion. The present system of issuing licenses to electricians to carry out electrical work on passing examinations set by the Engineer in charge of electric-supply undertakings might be improved by having examinations conducted by an Inspector of Machinery and certificates issued as is at present done with steam engineers. The power at present employed in South Canterbury —steam, gas, oil, and turbines—is 4,241 horse-power. If the total amount of power was supplied from a hydro-electric source the saving of coal or its equivalent would be approximately 15,000 tons. In Timaru there is no need to stress the desirability of going on with the hydro-electric development. We have a municipal system which has outrun its usefulness on account of being a direct-current plant, and the area of transmission is too great. We are at present supplying power to the extent of 560 horse-power for industries. We are still able to compete with other forms of motive power, but we urgently require Lake Coleridge, as we have applications for 200 horse-power which we are unable to supply. We do not know the exact date that the power from Lake Coleridge will be here, or the price at which it will be delivered, consequently we are in the dark to some extent as to what our future will be. With the Lake Coleridge scheme in Christchurch the cost of producing flour is about 1s. 2d. per ton less than the cost of an electrically driven mill in Timaru. To show the growth of electricity in New Zealand may I quote these figures: In 1895, out of 1,723 engines running there was only one electric motor; in 1910, with 4,680 engines, there were 1,084 electric motors in operation; and since 1910 the growth has been considerably more rapid. An authority on growing corn by electricity states that installations have been established by the Board of Agriculture in Britain, where farmers can have the whole of their seed-corn treated by experts. The increase of yield from seed so treated is from 20 to 80 per cent. Coming more particularly to South Canterbury, there has been a private installation put in in the Mackenzie country, costing £2,500. Prior to the installation being in operation the owner's coal was costing him £6 3s. 6d. per ton, delivered on the station. The saving in coal alone through using electricity is paying interest on his capital. The same owner is embarking on a scheme in another station, costing between £3,000 and £4,000, and a big factor that has induced him to do this is that he can save £400 a year on the carting of his wool. He intends to scour the wool on the station.

To Mr. Craigie: If we get the Lake Coleridge power there will be other manufactories started in Timaru. It would be a mistake to have isolated plants and let local bodies go in for any scheme they liked. We would be inviting the trouble that they have in Great Britain now, with their multiplicity of small and therefore inefficient stations all over the country. The tendency to-day is to create as large individual stations as possible and to link up the whole country. In that way there would be a great insurance against any breakdown.

To Mr. Luke: I should like the weight of the Committee put on to the powers that be to hurry up Lake Coleridge to be available for South Canterbury.

To the Chairman: Timaru has an existing plant of 275 kilowatts. We have made profits out of it, accumulating about £3,000. Local bodies should not be allowed to go in for headworks that cannot be used later on.

F. BARKAS, Timaru Chamber of Commerce, examined.

A sub-committee of the Chamber of Commerce asked me to get together some information with regard to the railway tariff. There have been grumbles with regard to the railway tariff for some years past, and the object of the Chamber of Commerce was to get some definite statement of the grounds for these grumbles. I put a letter in the paper asking any person or firm having information with regard to any portion of the railway tariff that is prejudicial to the expansion of the industries in the town, or if suggestions could be made that would be for the benefit of the country settlers in this respect—I asked if they would communicate with me. The principal anomaly as far as Timaru is concerned is, and has been for many years, I understand, that the railway tariff has not been scientifically adjusted for a great number of years. There have been tinkerings and alterations as pressure or temporary necessity has arisen. The main anomalies with regard to the industries of Timaru are these: that Timaru, with its improved harbour—a harbour which the Chairman of the Harbour Board informs me has now the capacity of the Hull docks, and is capable of a very large handling of shipping—has made Timaru a possible centre of distribution, which was not the case a few years ago when the railway tariff was established. At the present time distributors from Christchurch can send "A," "B," "C," and "D" classes of goods as "D" goods to Timaru—on the "D" goods rate, which is at the present moment 26s. 6d. plus 10 per cent. plus 10 per cent.

The Chairman: Has Timaru not a similar privilege?

Mr. Barkas: No; if a Timaru resident wishes to send goods to Christchurch he pays 49s. 4d. plus 10 per cent. plus 10 per cent.—that is, the "A" rate. As typical distributors and industrial producers I take Messrs. John Jackson and Co., wood-workers, and Mr. A. Hutchison, baking-powder manufacturer. These firms have furnished me with letters, which I hand to the Committee. Both these firms are distributors of the "A" class of goods. Messrs. Jackson and Co. pay 59s. 8d. per ton to send their goods to Christchurch; and exactly the same class of goods are sent from Christchurch to Timaru for 32s. 1d. per ton. If we send goods to Oamaru, which is fifty-three miles, with very easy traction, the charge is 18s. 2d. per ton on certain classes of goods, and if Dunedin sends to Oamaru, which is seventy-eight miles, with pretty heavy traction over the Blueskin, the rate is only 12s. 6d. Those are the two points that are enlarged upon in Messrs. Jackson and Co.'s letter. They also say, "Another matter which we should be glad if you will bring under the notice of the Committee is the Customs tariff so far as it affects our wood-bending branch of the business. Under the heading 'Carriage and cart makers' material' bent wheel-rims are admitted free. The ash or hickory strips of timber to bend same are rightly admitted free, but we contend that the bent rims should be dutiable in the same way as shafts, spokes, and felloes (dressed) are subject to 20 per cent., as the timber for making the rims is dressed before being bent. The object of admitting duty-free certain goods used in the manufacture of vehicles and parts thereof was presumably to assist local industries to compete with the imported article, and thus find employment for our own people. Many years ago we established a wood-bending department, but both railway and Customs tariffs prevent us extending this business as it could be done if the disabilities under which we work were removed." In his letter Mr. Hutchison states, "Some time ago the manager of the Timaru Baking-powder Company brought under the notice of one or other of the members of the Chamber of Commerce that we as manufacturers were greatly handicapped in open competition by the railway charges on our manufactured goods. Baking-powder from Timaru or Christchurch is charged as under: Class 'A,' 49s. 4d. per ton, as compared with 26s. 6d. per ton Christchurch to Timaru, plus 10 per cent. plus 10 per cent. in both cases. It is only between these two places that any difference in freight does exist." [Letter handed in.] The only other response I had to my invitation was one from a back-country settler. It is a very interesting letter. He says, "For several years now, and more especially the last two or perhaps three years, there have been hauling-engines travelling from here to Timaru and back for the purpose of taking wool and grain, and back-loading manure, coal, benzine, and other material. G. S. Meredith and Co. had two engines on the road hauling wool from here (Waihaoringa) to Timaru, and back-loading manure from Smithfield and Pareora. Cummings Bros. had one engine, and were trying to procure trucks to put the second engine on hauling. One of these plants has been known to lift wool out of the railway goods-sheds, Waihao Downs, and take it on by road to Timaru." The letter contains other interesting information. I hand the letter in for the perusal of the members of the Committee. Another suggestion that has been made is that the Railway Department should secure motor-lorries. Now that the war is over they will probably be procurable at cheap rates, and it is suggested that a system of collecting goods might be established, to be redistributed by railway. [Letter handed in.]

To the Chairman: I am aware that Timaru participates in some advantages of special tariff rates. The request that is now made is that the anomaly drawn attention to should be removed. We want the same facilities granted from Timaru to Christchurch as are granted from Christchurch to Timaru.

Mr. Hornsby: I take it that your chief aim is that this Committee should recommend that the whole railway tariff should be scientifically adjusted, and that the whole country should have an understandable railway tariff?

Mr. Barkas: If you ask my individual opinion, that is exactly it, only much better expressed than I could do it myself.

Mr. Hornsby: There are many anomalies existing, and the only way to put them right is to have the whole thing readjusted and placed upon a business and scientific basis?

Mr. Barkas: That is exactly the opinion of the Chamber of Commerce. It is the opinion of the Chamber of Commerce that the railway tariff should be scientifically adjusted to the needs and for the benefit of the country.

Mr. Hornsby: At present it is a Chinese puzzle?

Mr. Barkas: There is no question about that.

To Mr. Craigie: The Chamber of Commerce has many times represented these grievances to the Government, and the reply has usually been that the matter would be taken into consideration. There is no doubt that the question of road transit, and the added convenience of road transit, should be taken into consideration. They tell me that the railway tariff was made between thirty and forty years ago. Since the railway tariff was made there has been a great improvement in connection with traction-engines. Although the conditions have changed, the Railway Department has apparently remained in the old groove.

To Mr. Sidey: I think sea competition will have to be taken into consideration.

To Mr. Luke: If you look at the report of the Engineers, you will find that Lyttelton Harbour has just about reached its capacity. I think you will find before long that there will be three main ports on the east coast of the South Island—Lyttelton, Timaru, and Port Chalmers.

To Mr. Craigie: Before the war the freight overseas from London to Port Chalmers, to Timaru, and to Lyttelton was the same.

A. WASHER examined.

The question I wish to bring before you is the fishing industry. I am not connected with it, but I have taken a great deal of interest in it, and I have got a great deal of information from the fishermen. I suppose that you are aware that next to Japan New Zealand has some of the best fishing-grounds in the world. I am going to ask if you can assist this important industry. Fishermen find that it costs a great deal of money prospecting for fishing-grounds. The fleet which we have here at the present time might be called a mosquito fleet; the boats are small, and are scarcely capable of going out any distance. Can the Committee help in getting the Government to engage a trawler, with some responsible person to take charge and report upon the fishing grounds and industry? Some years ago the Government asked Professor Prince, of Canada, to report upon the fishing industry of New Zealand. I remember reading a statement in the paper that he had reported that some forty miles off the coast of Timaru there are some of the best fishing-banks off the coast of New Zealand. Our boats are scarcely able to go out such a long distance. We suggest that the Government should make advances to our fishermen on the same principle as the advances made to settlers. That would enable the fishermen to get larger boats and better fishing-gear. An increased supply of fish would mean a reduction in the cost of living to the people. The industry might also provide employment for a number of returned soldiers. As to Timaru, we have splendid markets in Christchurch and Wellington, but the question of reconsignment at Lyttelton is at present a drawback in the cast of Wellington. I think also it would be a good thing if the Government could see its way to reduce the duties on fishing requirements. The railway charges on crates of fish might also be reduced; at present the charge for the carriage of fruit is much lower. In New South Wales the Government expended a considerable sum in connection with fishing-trawlers.

To Mr. Hornsby: I believe that in some parts of the Old Country they have special insulated carriages.

To Mr. Craigie: I think the Government might also consider the question of assisting in connection with insurance on the boats.

W. R. PEARSON, Timaru Chamber of Commerce, examined.

I have been asked by my committee to report on the island fruit trade as affecting Timaru and districts. In the South Island we have been at a great disadvantage in securing fruits during the war period, the principal cause, no doubt, having been the scarcity of freights to carry the produce. We have paid as high as 7s. freight and railage per case from Auckland within the past year. Passing the war period and taking in the previous six years, we have found the island fruit trade very unsatisfactory—the faulty packing and want of up-to-date steamers to carry the fruit being, in my opinion, a great drawback to the development of the island trade. Some exporters' brands, owing to the excellent quality packed, from both the Cook and Fiji groups, obtain keen competition in the markets here, but these are only a portion. A great quantity of bananas arrive in New Zealand that should never have been packed for shipment. I have handled bananas as a wholesale merchant for the past ten years, and in very many instances have had to repack whole lines, owing to the mixed quality in cases. In striking contrast to this trade is the organized supplies of stone-fruits from Central Otago: every case is packed according to grade, and the top layer in any case represents the quality of the whole case. When the firm of Morton and Pearson started in business ten years ago the total quantity of case stone-fruits arriving in Timaru from outside districts did not amount to over 2,500 cases for the four months January to April. Now, owing to our system of distribution and making the price within the reach of all consumers, coupled with the splendid system of packing adopted by growers, the consumption at the present time is over 20,000 cases for the same period. I submit there is no reason why similar results should not obtain in regard to the handling of the

Cook and Fiji trade, and so enable the Dominion consumers to obtain ample supplies of bananas and oranges of good quality at reasonable rates. I would respectfully suggest to the Commission that, as the Cook Islands are part of our Dominion, special attention should be given to fostering the fruit trade there. An expert should be sent there to make a full report on the whole system, and his recommendation, as far as possible, should be put into practice. I would further suggest that the Cook Island fruit be carried at the same rate on our railways as New-Zealand-grown. I feel certain that with careful business supervision the Cook Island trade can be increased tenfold, and so give our public ample supplies of the best fruits at prices within the reach of all. As regards apples, South Canterbury is well suited for growing apples, several well-established orchards in the district producing fruit of excellent quality. Late varieties, such as Lord Wolseleys, Sturmers, Ballarats, and Washingtons, give very good results, and keep well into the late months of the year.

To Mr. Hudson: I understand that a considerable quantity of bananas arrive in New Zealand which would be prohibited from sale in the Sydney and Melbourne markets. I could not say whether any disease coming in would be a menace to the local trade, but I think it would be worth while for the Government to go into that matter.

To Mr. Sidey: I recognize that the shipping difficulty is a grave one, and should be rectified.

To Mr. Craigie: I am satisfied that if the same conditions existed at the Cook Islands as obtain here in regard to the grading and inspection of fruit the island fruit trade would increase tenfold. I think the Government should inquire into these matters.

H. W. MENERE, Furrier, examined.

I represent a new industry—the fur business—and I think the Committee can assist me in regard to raw skins. At the present time a skin to be manufactured into a fur lands in this country free of duty. If the skin is dressed or tanned the duty from the British dominions is 25 per cent., and from America 33 per cent. What I want is this: The same duty applies to a made-up article—finished, satin-lined, and completed—as to a tanned skin, and we have to do practically the same amount of work on a tanned skin as on a raw skin, yet there is no difference between the tanned skin and the made-up article. The duty on fur goods is 25 per cent. I would like to get the tanned skins in at the same rate as the raw skin. The skins have to be dressed, and there is not a skin-dresser in New Zealand. If we can import dressed skins at a lower duty and make them into furs here with New Zealand labour it would greatly assist us. I suggest a higher tariff on the made-up article and a reduced tariff on the tanned or dressed skin—that is, the tariff on the raw skin. I do not see why we should not get dressed skins in free, the same as raw skins, because there is no one here to do the dressing. On Saturday I imported sixty-three skins from New York. Three were dressed, and the duty cost me £19 18s. 6d. On the sixty raw skins the duty was £2 15s., and I have as much work on each skin as on the dressed skins. Unmade tanned skins should be placed in the same category as raw skins—free. It pays me better to import furs made up from Australia, finished and completed, than to import from Australia the tanned or dressed skin. It pays me to get them made there, and I would like to get them made here. Then, can you assist me in regard to cottons and silks for the finishing of these articles? Is it possible to reduce the duty on the silk and cottons used in the manufacture? I also ask the Committee to assist me to get the machinery from America. Rabbit-skins are undoubtedly going to pay the farmer as well as sheep. A raw rabbit-skin is worth 5s. in America to-day. Mr. R. S. Black, exporter, of Dunedin, told me he got 20s. per pound for raw skins. Our rabbit-skins go from here to Belgium or France, where they are dressed, and sent back as Coney seals. I have opened a branch in Christchurch, and I intend to open in other places in New Zealand. I would like the machinery to come in free. I employ ten hands, and if my requests are granted I could employ a hundred. It would be a good industry. I am sending six rabbit coats to England on the 11th.

CHRISTCHURCH.

MONDAY, 3RD MARCH, 1919.

THOMAS WADDELL, Engineer, further examined.

The Chairman: Mr. Waddell, who has already given evidence before the Committee, informs me that he is in receipt of information that the Railway Department proposes to export steel scrap, which he is willing to purchase and use in his foundry in Christchurch. He is importing an electrical plant for the utilization of such scrap.

Witness: The Railway Department has informed me that the scrap is not available, but I am informed that the Railway Department has applied to the Controller of Customs to export 400 tons.

The Chairman: I suggest that we telegraph to the Minister of Customs on the matter, setting out the desire of the Committee that the scrap should remain in the Dominion. Mr. Waddell is open to purchase it for cash, notwithstanding that his plant is not yet erected.

To Mr. Hudson: My price for the scrap is 35s. per ton in Wellington. I have no idea what the Department has been offered for the scrap for export. It is evident from the correspondence which I lay before the Committee that the scrap has been sold to Burns, Philp, and Co.

G. J. ANDERSON, M.P., examined.

I wish to point out to the Committee that there are a number of valuable minerals and deposits of various kinds in the Waikaia Valley, the Charlton district, and the Waikaka district. There are, to my knowledge, two deposits of shale—one at Waikaia Valley and the other at Brydone. That in the Waikaia Valley is the more important. Some of the witnesses who would have given evidence in Gore would like to put their evidence in writing and forward it to you.

The Chairman: We are willing to accept any suggestions that the people of Gore may make, and will give them every consideration.

C. MORGAN WILLIAMS, Farmer and Produce-merchant, examined.

This year the acreage in potatoes is less than it has been in the past. The tariff is no great assistance to the potato-growing industry. We have a tariff of £1 per ton against Australian potatoes, and in Australia there is a tariff of £1 against New Zealand potatoes. I suggest that by offering to remove our duty we might establish reciprocity with Australia. It would be of advantage to the grower and to the public. The potato-grower during many seasons has had to face unremunerative prices. The price went extremely high at the end of last season, but the growers did not get much benefit, because they had few potatoes to sell. The North Island was almost entirely supplied by Australia, and the only party to gain by the duty against Australia was the Treasury. This year the Government has put an embargo on the export of potatoes, and that is about the worst form of protecting the consumer that could be imagined. My remedy is this: If we want to protect the consumer we should have a system of State purchase and distribution, like the wheat purchase, under which the grower would be guaranteed a fair remunerative price before he planted his crop. If the State is going to interfere at all, that is what should be done. During the war many new processes of utilizing potatoes have been discovered. In England steps have been taken by the Government to help people in the potato-growing districts to obtain machinery to make potato-flour. Glucose can also be manufactured out of potatoes.

To Mr. Sidey: I advocate the removal of tariffs on all the necessaries of life. The New Zealand tariff on potatoes should be taken off although Australia leaves her tariff on.

To the Chairman: Among the necessaries of life I include clothing and boots. The importation of those lines without tariff would not ruin local industries. In the case of large industries I suggest State control, with free trade as a simultaneous policy. I advocate that natural industries in New Zealand, such as the woollen industry, should be put under a system of State ownership, and that other industries, such as the making of lead-headed nails, which employs ten persons, and other industries which have only been brought into existence by reason of a protective tariff, should be allowed to fall into decay if they cannot stand on their own footing.

JOSEPH SMYTHE, Director of the Parapara Iron-ire Company (Limited), further examined.

Mr. Reed, in his evidence in Wellington, said that Parapara would not be a profitable undertaking at the present time. In reply I wish to quote the evidence of Mr. Blow, given on the 4th November, 1912, before a parliamentary Committee. Mr. Blow said, "Iron-ore can be delivered into the furnace at 3s. per ton. The New Zealand market is more limited than the Australian one, but is sufficient to keep a small plant going. I personally mentioned the matter to Mr. Hoskins when in New South Wales about two years ago, and Mr. Hoskins stated in reply that the importations of iron into New Zealand are sufficient to justify the establishment of smelting-works in the Dominion. Moreover, the local demand in New Zealand would be greater than the output of Mr. Hoskins's own furnaces at Lithgow, which only put out about 800 tons per week, or about 40,000 tons per annum, whereas the New Zealand demand runs into about 140,000 tons a year, and will largely increase in the future. To enable the company to deal with the whole of the New Zealand trade and to make the venture of much practical use to the Government it will be necessary for them to put down a converter plant for the production of steel and to establish rolling-mills. The Government is not a large user of pig iron, so that if the venture did not go further than the manufacture of pig it would be of no great benefit to the Government; but if the iron is converted into steel, and if steel rails and fish-plates are rolled, and also rods, bars, angles, plates, joists, and girders for use in bridge-building, the Government would be fairly large purchasers, providing the price and quality are both satisfactory. . . . . As regards pig iron, I think the company could ship as cheaply as most of the makers of the Old World," &c. In answer to Mr. Roderick McKenzie, Mr. Blow said the iron-ore can be delivered at the furnace at Parapara at about 3s. per ton. Westport coal or Seddonville small would be used. It would cost 9s. or 10s. f.o.b. Then Mr. G. H. Allan, manager, Parapara Company, reported, "There are altogether nearly 2,000 ft. of underground levels, ranging from 100 ft. to 200 ft. vertical, below the surface, practically all solid ore, every foot of which had to be extracted by explosives. On the Cadman lease, in addition to the tunnels, open faces of ore have been exposed more than 250 ft. below the top surface indications, thus showing that here also the quantity of ore is most considerable. The removal of overburden between these two points—which are about half a mile apart—shows the continuity of the iron. It is safe to assert that development-work of the past two years has increased the ascertained extent of ore-body in much greater proportions than hitherto known." Mr. Allan estimates the ore on Washbourn's Block at 80,000,000 tons, and on the Cadman area at 165,000,000 tons, and is prepared to substantially demonstrate the fact. Mr. Harley E. Hooper, metallurgical chemist at Broken Hill, states, "About a mile to the west of the western end of Washbourn Block, on a portion of the property known as Riley's, are some immense detached blocks of practically

pure calcite. A typical sample taken from a number of blocks returned on analysis—Lime, 55·64 per cent.; carbon dioxide, 43·72 per cent: total, 99·36 per cent. I cannot speak too highly of this grade of limestone, and it would be considered absolute perfection for iron or any other smelting requiring a lime flux." He visited the Oti Mataura coal-workings, the analysis for sulphur being 0·496, 0·510, 0·521, 0·603. Regarding coke, he says, "The coke made experimentally was coherent, of a good silvery grey and a bright lustre. There are considerable quantities of the finest silica sand I have ever met with in the vicinity of iron-ore. This carries 99·4 per cent. silica, and would be necessary for making the refractory materials in furnace-construction. Fireclay could probably be found near the coal-seam." I have handed in two copies of the Queensland report, and I also submit figures showing the cost of production of 18,900 tons of pig iron at Parapara, based on estimates furnished to the Queensland Government by E. C. Saint-Smith and F. C. Richard. The overhead charges come to £9,820, and the smelting and management charges to £28,211. In regard to coke-production, the cost of coal was £35,426 (31,490 tons at 22s. 6d.), less by-products £17,650, leaving the cost of the coke at £18,000. In our case we have allowed for all their charges except coal, which would cost us up to 15s. per ton and 7s. 6d. for freight. It has been said we have no coal in New Zealand that is fit for coking, except in one or two places, but I contend that almost any coal which is a bituminous coal is fit for coking in a recovery furnace. The cost is so excessive in a beehive furnace that the United States Government have brought in an enactment that no further beehive furnaces shall be erected: they must all be recovery furnaces. It will require 1·38 tons of coal to produce 1 ton of coke. Then, we have no transport charges, as in New South Wales, and altogether the figures show that we can produce the pig iron for £3 4s. 2½d. per ton. Added to the capital account will be the cost of providing wharfing and berthing facilities and machinery for unloading coal-vessels. This can be done by erecting a wharf 67 chains long into Golden Bay from the present railway formation, which will provide 30 ft. of water at low tide; or a better way would be by dredging the Parapara Inlet, which is now filled up with quartz tailings. A depth of over 30 ft. could be procured by dredging. If we had had a wharf at Parapara years ago something would have been done with the Parapara ore. Long ago we had inquiries for iron-ore from England and Japan, and the trouble was to get it away. As to the value of the ore, from thirty-four assays made through Dr. Bell thirty-four went from 50·29 to as high as 58·18, and the average for the thirty-four assays was 51·79.

H. P. BRIDGE, Secretary, Parapara Iron-ore Company (Limited), further examined.

The last time I was here we spoke about obtaining the assistance of an employee of the Broken Hill Company to report upon Parapara. The following correspondence took place on that question. [Correspondence read, and handed in.] I desire to suggest that the only reason for the refusal is that they look upon us as a probable competitor.

Mr. Sidey: I said that the last time you gave evidence.

Mr. Bridge: The following is a copy of a letter which we sent to the Prime Minister on the 21st January, 1916. [Letter read, and handed in.]

The Chairman: We would like to have your up-to-date proposals as to what should be done.

Mr. Bridge: I desire to conclude by referring to the fruit industry. The Government have been trying to foster the fruit industry in Nelson. If our works are established at Parapara there will necessarily be a number of workmen and their families, who will be available for fruit-picking and also in connection with the hop industry.

The Chairman: What are your up-to-date proposals in connection with the working and development of the deposits?—First of all, we do not want to run before we can walk. We want the Government to assist us in getting an expert from England to report; and after that, our proposals are that the Government should issue these bonds. We will be able to negotiate them, and then we will be able to supplement that with so-much cash, and we hope that the industry will be established.

The Chairman: You want a Government expert to advise you as to the value of your interests, so that you can get the highest possible price for those interests from the Government?—No, not necessarily. We have our own ideas as to what our values are. We have put in a great deal of time, energy, and money into the enterprise.

The Chairman: That is admitted; but is it not possible for the company to come along with a concrete proposal as to what should be done, so that something should eventuate?—In that letter we have only raised the position as to the importation of an expert. The only modification is that the Government should get an expert from England instead of somebody from New Zealand now that Australia has refused.

Mr. Luke: Is it conditional upon the Government putting this money into the concern whether you carry on or not?—If the Government will not grant us this assistance then we will look for it elsewhere, and, we think it probable, with good chances of success.

The Chairman: This is the point we want made clear, if we can get it: we want to know from the holders of these iron-ore leases, in the event of a company or joint undertaking being gone on with, what their interest in this property is. In the letter to Mr. Massey they do not state that, and evidently the witness is not prepared to state what they should be?—No, sir.

Mr. Luke: Inferentially the position they take up is that unless the Government is prepared to put down the amount stated it is not likely that anything will be done; and I think Mr. Massey would look at it in the same way.

Mr. Smythe: We were asked to stand down and not attempt to float the company in London, because the British Government did not want us to attempt to float a company in England.

Mr. Luke: It seems to me that a consideration of your finance is for the Government to put something into the concern first and foremost.

Mr. Smythe: We want to go to the outside public.

Mr. Luke: Why have you not gone before this time?

Mr. Smythe: Because we did not think New Zealand was ripe for it.

The Chairman: This protection is for the war period only.

Mr. Bridge: The protection is for the duration of the war and for six months thereafter. We have it in writing—a certificate under the signature of the Minister.

The Chairman: You can see that unless something is done your interests will be prejudiced.

Mr. Smythe: Yes.

Mr. Bridge: The company has put in a great deal of work.

Mr. Sidey: The reason we asked for the production of the letter was because we understood it contained the terms.

Mr. Bridge: It does, with the exception of the expert.

The Chairman: In Mr. Blow's evidence he states that the protection is for the period of the war and no longer.

Mr. Bridge: He is wrong. I can satisfy you in regard to that.

The Chairman: If the company is not prepared to state to the Committee what it requires in consideration for its interests in the lease the position is going to be very difficult.

Mr. Bridge: We have not considered that matter at all.

Mr. Smythe: We did not know that the Committee were coming along with an offer.

The Chairman: We want to ascertain the position.

Mr. Smythe: I think if you will give us an opportunity we can follow that up later on.

Mr. Hornsby: That is necessary. This Committee must make a recommendation.

Mr. Luke: You want the Government to be a joint partner: you want the Government to put up their "stiff" first, and on the strength of that you can float the rest.

Mr. Smythe: That is quite true.

Mr. Luke: Are you marking time consequent upon the difficulties brought about by the war?

Mr. Smythe: No; we were asked by the Government to stand down in the meantime, and we have simply been hung up for that reason. Now that the war is over we have to see what we can do.

The Chairman: I suggest to the company to make the position clear as to what it would take to get quit of its interests.

Mr. Hudson: The witness specially stated an English expert—what about an American?

Mr. Smythe: It would include an American.

The Chairman: We will be glad to receive any further statement you may have to make in writing before we deliberate. You are not under an obligation to do it, but if you wish to do so we shall be glad to receive any statement—that is, if you think you are justified in letting us have that information. We do not want you to be prejudiced at all.

[Subsequently the following telegram was received from Mr. Bridge: "Our protection duration war only. Sorry misinformed you."]

L. W. A. MACARTHUR further examined.

The Chairman: I want to tell you the position. In your statement before the Committee you mentioned that the Government had not given you facilities for the formation of this Marine Solar Salt Company and with respect to the commencement of the work?—We have not got it yet. We want to go to the public with some provisional or conditional lease. We have no *locus standi* to go upon to the public.

The Chairman: The latest telegram is to this effect: the Secretary of the Treasury advises that on the 14th instant the Minister of Finance approved of authority to raise £30,000 capital Marine Solar Salt-works. The Committee understands from the Minister of Marine that there is no objection by his Department now to issue a permit; and from the Attorney-General that he is willing to issue the certificate. So there should be no further trouble in that respect as far as I can see.

Mr. Macarthur: We must have something definite.

The Chairman: As far as the Committee is concerned we can do no more.

GREYMOUTH.

WEDNESDAY, 5TH MARCH, 1919.

E. A. WICKES, representing Grey-Hokitika Sawmillers' Association, examined.

Later on, the chairman of our association will give the Committee evidence on many other matters. My evidence will be confined to suggesting some other method of using up the waste timber of the sawmills. Doubtless as you passed our mills you saw a tremendous lot of slabs being destroyed by fire. Probably 33⅓ per cent. of all the logs cut go into what are called slabs, and are absolutely wasted. When Mr. Frostick was round here representing the Efficiency Board some year or two ago we brought before him the question of whether these slabs could not be converted into charcoal for the use of gas-producers, insulation, and other purposes. He took the matter up at our request. The first difficulty we had to overcome was whether or not the rimu and white-pine slabs could be converted into good charcoal. Through the Efficiency Board the Government experts were approached, but they had not anything very definite to tell us; they thought it might make charcoal, but we could not get any definite statement from them that

the wood could be converted into charcoal. We knew that in Australia the charcoal industry is a very big one. I had occasion to go to Australia last year, and when I was there I interviewed the people who have brought the charcoal industry to the position it is in in Australia—that is, the Australian Patents (Limited), with their patent charcoal-retort. We had with us some white and red pine in slabs. These slabs were sent to them, and they submitted the timber to tests, and the results were highly satisfactory. The tests proved that our red- and white-pine slabs would make just as good charcoal within a decimal as the charcoal being produced from the Australian timber. In August last we got that information, and we made inquiries throughout New Zealand with regard to a market for charcoal in the Dominion. We were quite prepared to buy a retort and erect it at one of our mills and produce charcoal; but so far we have not been able to find a market. When charcoal is produced in Australia it is screened, and the very fine stuff is used for insulation purposes. Here we are met with the use of pumice for insulation, which they have not got in Australia. That insulation costs about £3 10s. a ton, and we could produce charcoal for that grade at a lot less. We ask your Committee to put the question to the people who come forward as to whether, if charcoal is produced, they would be buyers of it. The following is a copy of a report which I sent from Australia in regard to this question of the utilization of our timber for the making of charcoal:—

"468 Collins Street, Melbourne, 3rd July, 1918.

"The Pine Export Company (Limited), Greymouth, N.Z.

"DEAR SIRS,—

"*Re* charcoal from red and white pine: Since arrival in Melbourne this matter has received every consideration, and am pleased to report that the woods mentioned are quite suitable for making excellent charcoal. Immediately on arrival I interviewed the patentees, who, in addition to manufacturing the retorts, have several working plants, the nearest being at Lancefield, about forty miles from here. I was fortunately able to secure from the captain of the 'Kaiapoi' three bags of slabs we had given him for firewood in Greymouth. These the manager (Mr. Cottrell) had tried by his burner in one of the retorts, and, although the full retort gives much better results than the paltry three bags, the burner was very pleased with the sample of charcoal produced, and affirms that as the slabs come from saw in their green and sappy condition they will make even a better charcoal than what he tried.

"The next stage was to ascertain the virtue of the charcoal made. To this end we submitted portion of the sample to Albert H. Koch, certified analyst of this city, and his report was perfectly satisfactory, the charcoal made from mixed red- and white-pine slabs being almost equal to that made from the Australian hardwoods. You will see on reference to their circular that they are proud of their claim that charcoal averages over 95 per cent. of carbon, while the sample made from our wood, and analysed by the chemist, goes 94·5 per cent. I am now discussing with these people the proposition of supplying us with one retort—say, No. 3—lending us their burner to bring it over and erect it, to give us the sole agency for their retorts throughout New Zealand, and the right to manufacture these retorts on a royalty basis. Three tons of wood will produce 1 ton of charcoal. There is a great demand for it at from £2 5s. to £3 10s. per ton on trucks at the works. After the charcoal is burnt it is screened. The larger pieces are sold for general purposes at from £2 5s. to £2 10s. per ton (forty bags to the ton, bags charged extra—that is, 7d. each), and the screenings are sold at 1s. 8d. per bag for insulation purposes. It will all depend on what the demand for charcoal in New Zealand is as to how many retorts can be kept occupied. If my working-out is correct the conversion of our hitherto waste slabs into charcoal will mean 4s. per 100 at the mill for all we find the market for. Will you please immediately institute inquiries throughout New Zealand to ascertain what demand there is for charcoal, and what prices they are paying?

"Yours faithfully,

"EDMUND A. WICKES."

"479 Collins Street, Melbourne, 2nd July, 1918.

"ONE sample of charcoal, received 27th June, 1918, submitted by the Brisbane Retort and Charcoal Company, Melbourne (identification marks nil), for analysis as to percentage of carbon and presence of any mineral matter.

"Result of analysis: The samples of charcoal received by me for analysis on the 27th June, 1918, and submitted by the Brisbane Retort and Charcoal Company, Melbourne, yielded the following results by analysis: Total carbon, 94·5 per cent.; total ash, 5·5 per cent. 'Total ash' consists of soluble alkali (soda), 1·2 per cent.; insoluble matter consisting chiefly of silica with a little iron, 4·3 per cent.; water-soluble extract (included in ash), 0·8 per cent.

"The analysis indicates that this charcoal would yield 94·5 per cent. of available carbon, the balance of 5·5 per cent. consisting of mineral ash ingredients (alkali, silica, iron, &c.). The analysis was made on a dry portion of the sample.

"ALBERT H. KOCH, Analyst."

I may say in conclusion that we have coke fairly cheap, and the demand would not be so big, except this: that they say charcoal gives a better result than coke—that is, as fuel used in connection with suction-gas-engine plants. We would be prepared to erect a retort at our mill as long as we can find a market for 10 tons of charcoal per week.

To the Chairman: I have given the price of the charcoal at our mill; I will forward to the Committee a statement in writing as to what the price would be f.o.b.

To Mr. Hudson: We will certainly try the experiment if we can get a market of 10 tons a week. Just imagine for a moment what it would mean in the cutting of 60,000,000 ft. of timber on the West Coast! Fully 20,000,000 ft. at present goes up in smoke after the timber goes through the mills: it is now useless.

To Mr. Veitch: The cost of the plant would be about £300.

To Mr. Forbes: I know that charcoal is very much used in France. I think it is used to some extent as fuel, to mix with lower-grade coal. It is quite possible that it might be used here in the same way. The shipping shortage has been one of the causes of the lessened supply of coal, and it seems probable that the difficulty will not be overcome before the next winter. The completion of the Arthur's Pass Tunnel will alter the conditions considerably—at least, in the case of a considerable section of Canterbury. I think when the railway is completed through to Canterbury the slabs will not be burned as they are now—they will go over as firewood. In addition, the slabs can be turned into charcoal at the price I have stated.

To Mr. Craigie: What we want at present is a market.

[Subsequently witness supplied the following information: "In reference to my evidence with regard to the inauguration of the charcoal industry, it has now been ascertained that the freight per ton from the mill to Greymouth is 4s. 3d., while the wharfage on same is 3s. But to further assist in the establishment of this industry my company will be prepared to adhere to the prices quoted in the written report read by me, and bear the cost from the mill to the ship themselves. The prices at which we are prepared to make the charcoal and place it f.o.b. Greymouth will be as follows: The larger pieces for general purposes, £2 10s. per ton; and the screening for insulation purposes, 1s. 8d. per bag of 40 lb. (bags in both cases being charged extra and subject to return.]

D. Tennent, representing Grey-Hokitika Sawmillers' Association, examined.

We wish to enter our protest against the absurd statements made indiscriminately *re* sawmilling and sawmillers. For instance, recently in Christchurch a contract was stated to have been made for £5,000,000 for timber on the West Coast. Export figures for whole Dominion average about £500,000. The total output for the West Coast is approximately £300,000. As regards prices charged by millers, no sawmiller adhering strictly to sawmilling has ever amassed a competency on the Coast. The heaviest charges and the surest profits have been made by commission agents handling the millers' output; and whereas these charges may be quite reasonable when applied to other lines of business, there is no room for them in timber. For instance, a company inviting quotations for butter-boxes on behalf of the dairy factories stipulate that they be covered for 5 per cent., plus the usual 2½ per cent., which would equal 1s. 6d. per 100 ft. on the timber supplied; whereas it is safe to say that no miller on the Coast has netted 1s. per 100 ft. on his output over any term of years. We need hardly indicate where efficiency lies in this matter. The farmer should cut the agency. In view of the past experience of millers in connection with American imports, we must strongly urge the continuance of the 2s. per 100 ft. import duty, and also of the preferential railage charges as at present existing. When it is remembered that America annually produces 4,000,000,000 ft. of timber, of which she only exports 5 per cent. (in 1913 Australia took 170,000,000 ft.), it can be easily understood how easy it is for her to wreck our business should she care to try. Prior to the war, freights from Puget Sound to Lyttelton were 2s. 9d. per 100 ft., whereas from Grey to Lyttelton they were 4s. 3d., a margin of 1s. 6d. per 100 ft. in favour of the American. We would also urge that it is essential to conserve our export trade to Australia by every possible means. From every point of view this is necessary. Without it, 50 per cent. of the white-pine now sent to Australia would be left to rot or be burnt by the farmer and others; and as the market is wider and more varied than in New Zealand, the export of rimu as at present conducted means more railage, royalty, wages, and an amount of general trading that is sorely needed here.

Railway charges: In these millers are too heavily assessed. They provide their own sidings at whatever price the Railway Department cares to charge, usually about £400. Then they are charged annual rent as an access rent—£25 per annum it is here. Then, to facilitate loading and enable wagons to be expeditiously handled millers have at great cost erected skids at these sidings, for which they are charged by the railway, which gets the benefit, 6d. per foot frontage for a depth of 35 ft. On top of this the County Councils assess their taxes on the rent charged by the railway on the so-called stacking-site, and in some cases the rates alone are almost as much per annum as the actual freehold value of the land. In view of the fact that in all these items the sawmillers accept all the risks and the railway has a lucrative trade found for it, we think a considerable reduction should be made on these charges. Further, the regulations governing the carriage of timber are too drastic (see *Gazette*, 15th February, 1912, p. 726). Sawmillers are entirely dependent on the accuracy of their yardmen for the correctness of their consignments, and, considering how easy it is for any one to make an error when handling such a multiplicity of figures, the *Gazette* referred to is a decided injustice. It would not be so bad if when a mistake occurs against a miller the Department would correct it, but in this the Railway Department fails to reach the usually accepted standard of British commercial morality. We would further urge, *re* railway matters, the early completion of the Otira Tunnel as one of the best means of efficiently dealing with the West Coast products. Through railage to the east coast means saving thousands of pounds' worth of waste timber—often suitable for farm out-buildings, fencing, firewood, &c.—which is now burnt in the mill slab-fires. Further, we would urge that in towns of similar size and larger than Greymouth the railway tickets should be procurable apart from the usual railway office. This could probably be done through returned disabled men who may have to add light work to their pensions to enable them to make a livelihood, and the advantage to the travelling public is apparent to all who travel on our railways. Further, we urge that a crossing-keeper be placed at Tainui Street, which would also mean light employment to a returned disabled man.

To Mr. Luke: The men working at the sawmills have plenty of work. We have suffered from the want of men for a long time. The mills are understaffed at present. We could double the output with the plant we have.

To Mr. Craigie: As to the depletion of our forests, I understand that the Government is taking up the matter of afforestation; we consider that should be done. The bush we are felling is not growing again to the extent we are knocking it down. We think that the Government should institute a proper afforestation scheme. The West Coast is the best place to develop it. The growth of New Zealand trees is too slow; I think the birches are the best of native timber for the purpose so far as growth is concerned. That is shown by the secondary growth of beech or birch on the Midland Railway route.

To Mr. Hornsby: There is a considerable quantity of white-pine exported from this district, but it is a gradually decreasing quantity. I believe there are some *Pinus insignis* boxes used for butter in the cold stores at the present time. I do not know of any timber ring. Prices are now fixed by the Board of Trade. They have better facilities for handling long lengths of timber at Puget Sound than we have. Oregon pine does not compare with our red-pine for panel-work. I think that 30,000 acres of forest on the West Coast has been set apart in connection with the paper wood-pulp industry. I understand that the tests which have been made have given satisfactory results.

To Mr. Veitch: Since the war started our prices have gone up 52 per cent. and our costs 56 per cent. When the tunnel is completed timber will be much less in the Canterbury District to as far south as Ashburton than it can be delivered at Lyttelton to-day.

To Mr. Sidney: Sawmillers, like everybody else, prefer the home to the foreign market. I think that if the right kind of trees are planted we will be able to overtake the shortage of timber. Most of the timber areas were Crown land. Probably about 75 per cent. of the output of timber has gone to Australia because of the shipping shortage here, and because boats were available to take the timber to Australia; but we hope to see these figures reversed.

To the Chairman: I think the royalty on red-pine was raised from 6d. to 9d., and white-pine to 1s., per 100 ft., off the saw. For butter-boxes 12 in. wood is required. We are prepared to quote for large quantities provided the whole output of the log is taken; we could not do it otherwise. The freight from here to Lyttelton is 4s. 3d. per 100 ft. It was 4s. 3d. in 1913, and it is the same price now. The wharfage at Greymouth is included in the railage. There will be a saving of about 30 per cent. when the Midland Railway is completed. The completion of the railway will affect the business of the Port of Greymouth; but the North Island trade will still remain: it will only affect the South Island as far south as Timaru. In taking our trees we clean up anything that will cut 6 in. The average mill aims at an output of 10,000 ft. a day.

To Mr. Forbes: When the timber is cut out the land will be surrendered to the Crown. Some of the land will be suitable for settlement when cleared, and considerable areas for sheep-grazing. The second growth usually contains a lot of rubbish to begin with, and in some cases beech grows readily. When the red-pine is cut out the white-pine usually dies from exposure through losing the protection of the other trees. We want the Australian market as an overflow market of the New Zealand market.

J. PERRING, Farmer and Contractor, examined.

There is a crying need for a State demonstration farm on the Coast to assist in the development of the land. Some places in New Zealand possess these farms which do not need them as much as we do. We have half a million acres of land that might be made into first-class ground with proper treatment. It could be made to grow clover 2 ft. high. Most of the ground is bush land at present. I am prepared to give the Government 40 or 50 acres to go on with the demonstration farm to develop the country for the good of the people. I would also give them the use of the horses that are there and a complete bone-crushing plant, engine included, with what implements there are on the place.

To Mr. Hornsby: The land is situated about a mile from Kumara Junction. I have some land myself, but the extent of the territory I am speaking of is about half a million acres, much of which is easily accessible. There is some swamp land. It contains a cement bottom of from 6 in. to 6 ft.

To Mr. Luke: At present the land is being used mostly for grazing. The district does not lend itself to haymaking, but there is no question of the ability of the ground to grow grass. I have also grown good crops of turnips. Why, however, should the farmer be called upon to solve the difficulties? It should be pointed out to him how and where to proceed. I have put up a bone-crushing plant which cost £400. The ground is a mile from Kumara Junction.

Witness: I would also like to point out the drawback which families have to submit to owing to the high price of motor tractors. The Fordson is sold in America for £50, but we have to pay £300 or more for it. Tractors can plough 7 acres a day, whereas two horses plough an acre.

To Mr. Hudson: If there was a State form on Canterbury Plain it would be of no value to the ground of which I am speaking. The West Coast would require more than one State farm, but one is enough on the country to which I have drawn your attention. If such a farm were established it would give a fillip to the Coast.

To Mr. Forbes: There has been talk of establishing a farm at Totara Flat, but that would be of no use to the land at Runanga. The land is owned by the Government. There is practically no settlement going on on the land now.

JOSEPH TAYLOR, Mine-owner, examined.

I have been requested by the Chamber of Commerce to place before the Committee some of the disabilities under which the gold-mining industry is labouring. During the war costs went up until they are about breaking-point, and I think that for some time prices will be high. Wages

have gone up from 33 to 50 per cent. Material has easily increased from 100 to 200 per cent. We think the Government should do something to assist the industry. Most of the gold-mining at present on the West Coast is what is termed low-grade ore, and therefore it makes it the harder to get along with. There is barely enough to keep the pot boiling, and often not that. I suggest that a subsidy might be given, and a reduction of freight, taxes, and rent. The value of West Coast gold is £4 1s. We get net from the banks £3 18s. to £3 18s. 3d.

To Mr. Luke: The output of the mines has decreased. The labour problem is a difficulty, and partly accounts for the decrease. The same condition of things is seen in quartz-mining.

To Mr. Craigie: Explosives have doubled in price, and are 50 per cent. less in power. We want the full value of the gold, remission of taxes, and less royalty on the land. These matters would be of some help. We would like a subsidy as well. There are nine hundred men employed in the industry on the Coast.

To Mr. Veitch: A few new mines have started in the last two years at Reefton. Gold-mining is languishing. Our real difficulty is that everything we buy is going up in price, but the price of gold is fixed by law.

To Mr. Hudson: If we receive £4 1s. and if the rent is reduced to some extent a subsidy would be necessary, at any rate, in some cases.

WILLIAM PARFITT, Grocer, examined.

In connection with gold I wish to say that we think it is an Empire concern, and not merely a West Coast concern. We think the Imperial Government should be asked to subsidize it. At present our gold-mines are running at a loss. About twelve years ago I was interested in a dredge on the No Town Creek. It took 12 oz. or 13 oz. per week to run it, and now it costs from 21 oz. to 23 oz. Some of the mines will have to close down. If you could see your way to help it would mean work for a number of returned soldiers. In our gold-bearing districts we have large areas of land which, at a value of £3 15s. per ounce, would hardly pay individual miners to go out prospecting, but with the increased price it would pay them.

To Mr. Hornsby: I am not aware that the British Government has turned down a proposal to increase the value of gold.

JOHN WELLINGTON CALLWELL, Company Secretary, examined.

There can be no two opinions as to the policy of providing by the most economic means a permanent supply of home-grown timber for the Dominion. There are different opinions, however, as to how this is to be attained. It is understood that in some official quarters the view is held that the natural bush of New Zealand can be dealt with as cultivated forests are treated in other countries: that mature trees can be taken out from time to time, leaving the others to grow, and that the forest will so be an inexhaustible asset. This idea seems to be based on a lack of appreciation of the difference between mixed bushes such as exist in New Zealand and the artificially grown forests of Europe. In the latter there are some hundreds of trees per acre, frequently all of one kind; while in even a good rimu bush there may be only fifteen to twenty trees per acre, with no smaller rimu coming on, and the interspersed trees of other kinds are useless. Whatever theories may be advanced in support of the proposal to "cultivate" rimu bush, and whatever justification they may have in other parts of the world, the experience on the West Coast is that once the millable timber is taken out there is no serviceable renewal of valuable timbers, and that their place is taken by small useless growths. The economic way to handle the cut-out bush appears to be to use such land for settlement purposes as soon as possible; but there is a very large proportion of the rimu country which under present conditions cannot efficiently be converted into grass land. It is well worth while to inquire whether such country cannot be profitably converted into permanent artificial forest, planted with such foreign timbers as are found suitable to the soil and climate. Even supposing that it were possible to promote the renewal of cut-out rimu bush, the results which could be obtained would in no way compare with the quantity of timber per acre to be secured from a similar area artificially planted. Page 109 of "Forestry in New Zealand," prepared by the Department of Lands, 1909, states that in Britain the average quantity of timber produced per acre from five species on a fifty-year rotation is 32,000 ft. Seeing that the five species included oak and other comparatively slow-growing trees, it may be fairly assumed that with a good proportion of *Pinus radiata* the result to be obtained in the more favourable climate of New Zealand would be double that above mentioned, or, say, 60,000 ft. per acre. It is evident that artificial planting on the above figures would give results some hundreds per cent. better than could possibly be realized from any system of renewal of native bush. The cost of protection of the native bush, which would spread over many years, whereas the quick-growing timber would smother all extraneous growth after the first few years, would alone balance the cost of establishing the artificial forest; added to which is the slow growth of the rimu, and the quite problematical results to be obtained, while in the case of planted trees the out-turn may be calculated with some certainty. It must be admitted that in the past successive Governments have not done all that was possible in the direction of tree-planting, and that if this national work had been carried on as it should have been for the last thirty years there would be no risk of the supply of native timber giving out before the artificial plantations come into profit. It is respectfully suggested to the Commission that it should represent to the proper authorities the urgent necessity for largely extending the scope of the present planting operations. The expenditure on establishing artificial plantation from 1896 to 1918 was £270,881, and the area planted 32,358 acres. For the year ending 31st March, 1918, the expenditure was £28,276, including £3,249 for purchase of lands, and the area planted

2,653 acres. No doubt it will be said that labour conditions have hampered the work, but in view of its national importance it is urged that the annual area planted should be multiplied by five, even if other public works have to be neglected. As to the general question of forest-conservation, it is submitted that no good purpose can be served by retaining the native bush for the use of future generations. The future can be best served by using the present natural bush to the best advantage, and as early as possible replacing it with farms where the land is suitable and with planted forest where the land is inferior. The findings of successive Commissions—the Timber Commission, the Forestry Commission, and last of all the Board of Trade inquiry—all tend to support this view, for each of them recommend no interference that would hinder the fullest development of the sawmilling industry. It is also submitted that inquiry should be made by a practical man actually engaged in planting as to the suitability of the West Coast for planting operations, and as to the respective merits of artificial planting as compared with the theory of renewing the natural forest as put forward by certain experts. In favour of the West Coast it may be mentioned that the worked-out bush land here is generally of very low value, whereas I understand land is being used for planting in Canterbury worth £5 per acre for grazing purposes. This district is free from rabbits, from drought, and from serious frosts, and the cost of fire-prevention would be a small fraction of the cost in Canterbury: In conclusion, if any change is contemplated in the control of sawmilling areas, it is desired to represent to the Commission most respectfully but most emphatically that no change should be made unless upon the advice of thoroughly practical men with a first-hand knowledge of West Coast bush. In support of my last statement I refer the Committee to the Report of the Royal Commission on Forestry in New Zealand in 1913, page 37. Let me add that the return from rimu forests in their native state averages about 14,000 ft. per acre. An estimate of how long the native bush is likely to last is contained in the State Forests report for 1918. I should also like to refer to the use that might and should be made of worked-out land—land after being milled. It is a prey to the blackberry at present—one of the worst weeds on the Coast; and I suggest that something should be done to encourage sawmillers to occupy and improve that land, though it might not be for their own benefit. They might prepare it to be taken up later on. In respect to the exhaustion of native timbers, I think there is every prospect that the quantity being used in New Zealand and the quantity being exported to Australia will decrease instead of increase, as we may look for importations of Oregon into New Zealand and of Baltic into Australia.

To Mr. Sidey: When Mr. Hutchins recommends that it is more important for us to regenerate our native forests than to plant exotic trees I do not agree with him. I think he is speaking without local experience. Our forests will not renew themselves in a natural way. I am not speaking particularly of rimu. I am not an expert in forestry, and can only speak of my practical experience. Anything I say should not be taken to apply to kauri. It might, and it might not. White-pine forests would not regenerate themselves within a time for any practical purpose. The birch grows faster, but it is not much use when you have it. I think a rimu-tree would be of no practical use under a hundred years. I have read portions of Mr. Hutchins's report. I suggest that any person who is going to handle West Coast bush should be a man with West Coast knowledge. If an expert is imported from outside I should be sorry to put him in charge of the West Coast district until he had had five years' experience of it.

To Mr. Craigie: I have trees of *Pinus insignis* 2½ ft. in diameter which have been grown from seed in twenty years. On the same place you can see a rimu which has grown very little in that period. It has not put on 3 in. of girth.

To Mr. Luke: To assist settlement I suggest that the residence conditions attached to Government leases should be either modified considerably or withdrawn altogether, and that the improvement conditions should be altered in a way that will allow people to take up land and improve it. As far as I know the lands on the Coast are being opened up as fast as the sawmiller can get through with them.

REEFTON.

THURSDAY, 6TH MARCH, 1919.

D. ZIMAN examined.

I have been deputed to give evidence on the mining industry, the one on which this district is solely dependent. Quartz-mining here should be very profitable; the reefs and the gold are persistently living down to great depths. My syndicate has during the war sunk a shaft to a depth of 1,360 ft., and found at 1,350 ft. down no less than four gold-bearing reefs. I expected to find one only—the Blackwater reef—which the Blackwater Company is mining for more than half a mile in length. The gold in the reefs is quite as good as the gold found in the upper levels of the Blackwater Mine. In the deepest mine in New Zealand (the Wealth of Nations Mine) the gold in places is quite as rich as ever it was in the upper levels. From the Big River mine, some 1,760 ft. down, I have seen the richest quartz I ever saw. The natural facilities for deep mining in the Reefton district are, to my knowledge, the best in the world. We have practically no water to contend with, yet there is in some of the mines enough moisture to keep the dust down, and where there is ventilation the air is very good, and when using the water as supplied to the mines the dust can easily be kept down. The mines even at great depth are not by any means hot. With all these natural facilities and resources, and with practically unlimited supply of coal and water-power, the mining industry here is now at its lowest possible ebb, and on the decline. If it is not remedied it will in time become extinct. Till a few years ago, when the mine-owners could work the poor ores—say, 8 dwt. stone—and meet expenses, the honest miner,

who was encouraged to help himself, whenever an enrichment was found which enabled the miner to see gold in the quartz he took it away and extracted the gold in the method which is called "local industry." There are any number of buyers on this field who pay the standard price for stolen gold, £2 per ounce. Since the shortage of labour several illicit-gold buyers left this district. Some have bought farms, and have paid thousands of pounds; others have established themselves in business elsewhere. To show you to what extent the amount of gold is stolen: Whilst in London I was asked if I knew So-and-so. I said "Yes; he is an employee of a company." I was told that "It cannot be the same man, as that gentleman's bankers inform me that he is worth at least £6,000." Miners in Reefton recently, to save themselves the trouble of extracting the gold from the quartz, have actually offered rich quartz for services rendered. A little while ago £600 of gold slimes was stolen from the Blackwater Battery and sold somewhere. Another instance showing how the gold gets taken away from the mines: I understand that certain men found a lot of rich quartz in the bush. They thought it was a new discovery, but they could not trace the supposed reef into the solid. The management got to hear about it, and after searching for some time they found the reef where the quartz came from in depth of their own mine. The quartz was taken away before the management knew that it even existed in their mine, and planted in the bush until the person could get assistance to extract the gold from the stolen quartz. I have been told that a bank-manager acknowledged to the company of which he was a director that he had bought for his bank the stolen gold from the very company. His excuse was that if he did not buy it his competitor would, and he did not see why his employers should lose the profit. The reason of this state of affairs is that members of Parliament will not legislate that the person who offers raw gold for sale should prove where he obtained it. In South Africa and Australia a man who offers gold for sale must prove where he got it from. Unless this state of affairs is mended the gold-mining industry must sink, as, owing to the increase of working-expenses, it will be impossible to pay from the poor ore only. The companies must have a small share of the rich ore too, and there is no reason why our gold laws should not be on a par with those of South Africa and Australia.

To the Chairman: In South Africa and Australia a man who offers gold for sale must prove where he got it—the onus rests upon him; whereas in this country we have to prove that the gold is ours—we have to prove that the gold came from our mine. We ask that a similar provision be made here in regard to the right of search. As it is, a man can get rid of the gold he has taken out of your mine—even to a bank. We ask that there should be a provision in respect to illicit selling and buying. I would not say that we have the most up-to-date apparatus for carrying on gold-mining. At present the industry is not encouraging enough to warrant the expenditure of large sums of money. Since the war we have expended over £40,000 in sinking a shaft. Fortunately we found rich gold at the bottom.

To Mr. Luke: I do not think the miners have anything to complain of in respect to working under the present conditions. Most of the mines are well ventilated, and as far as I know the machinery we had before the war is quite up to date.

To Mr. Hornsby: Yes, there have been cases of miners' phthisis here, but they may have come from Western Australia, South Africa, or anywhere; or the men may have contracted the disease in this country some years ago. To-day water is carried down to the face and the dust is laid. The owners are only too anxious to provide the best appliances to carry on the work under the best conditions. Furthermore, the Government insists upon it—the Mines Department insists upon it. You cannot prevent some sickness—it is mining—but everything humanly possible is being done.

To Mr. Hudson: If anything did crop up which could be shown would be a protection to the miner we would adopt it.

T. H. LEE examined.

The Mining Regulations do not adequately encourage prospecting. It is not possible to prospect except in the summer-time. The regulations should be relaxed with regard to the taking up of prospecting-areas. You can only prospect for about five months in the year—that is, to any advantage—on the West Coast. If a prospector finds something a survey is granted, and he comes within the reach of the labour regulations with regard to mining. That is a barrier; the labour regulations should be relaxed. He has to put on one man to every 3 acres—that means thirty-three men to 100 acres. I suggested some time ago that the provision should be relaxed to the extent of six men for the first year for 100 acres; ten men for the second year; and twenty men for the third year; and then they might come under the ordinary Mining Regulations with regard to labour-conditions. In Tasmania a prospector who finds a payable place is given a claim of 100 acres free for five years. The State gives him five years in which to make the thing profitable to himself, or float it into a company, or get capital to assist him. It is a matter of common knowledge how ordinary gold-mining concerns have suffered owing to the war—owing, for instance, to the increased prices of commodities. We have had to pay extra war-risk insurance and other extra charges. In South Africa a kind of subsidy is being given. There should be some relaxation in regard to taxation in connection with mining. As to miners' phthisis, I would like to mention that a Commission has been set up in South Africa to inquire and report on this subject. There they have practically eliminated the dust evil as far as mining is concerned. They have adopted up-to-date appliances and drilling-machines, and they have eliminated the dust from explosions; they have up-to-date drilling-machines, and water is laid in to the face, and everything in that respect is done so far as the management can insist upon it. The men are made to drill and use the spray. At times you cannot prevent a man from drilling dry. Within the last few years men have been fined for drilling dry. I have advocated it to the Mine-owners' Association—that they should offer a reward for a suitable respirator for the men to wear.

To Mr. Hornsby: You can frame regulations to compel the men to wear them: that to my mind is the only thing that will eliminate miners' phthisis. There are change-houses and bath-houses, and practically everything is done that is possible concerning the welfare of the men. The percentage of accidents is remarkably small; a man is as free from accident as on a city street. In regard to prospecting, I would make the same regulations apply to all. If a man makes a good discovery he will put on as many men as he can profitably employ.

To Mr. Veitch: I think that gold-mining companies should be exempt from income-tax.

To the Chairman: The taxation of shareholders individually instead of the company makes a good deal of difference in the amount collected, because small shareholders may pay no income-tax, whereas the company pays 7s. 6d. in the pound. Gold is wanted, and should not be taxed. The gold-mining industry will not be extended unless it is fostered.

S. Fry examined.

With reference to the saving of arsenic, a great deal is lost here wherever the ore is crushed. The concentrates which are sent away contain a great deal of arsenic. It has been proposed by some people—and I think it is a good proposal—that the Government should treat these concentrates in the country. They could put up smelting-works on purpose to treat them, and they could thus save the arsenic. Sulphate of arsenic is a valuable produce; it is worth £120 a ton. And the arsenic oxide would be saved. Locally there is a large deposit of alum shale. This substance is alluded to in a report by Dr. Henderson. It contains from 6 to 8 per cent. of alum. Platinum is a very valuable metal. We have some platinum in New Zealand. A little has been found at Orepuki in a sluicing claim there; and there is some platinum in other places. I think the Government ought to have investigated the beach-sands; in the Westport black sands they have got up to 2 oz. per ton. I think the experiment might be carried out more efficiently if the stuff were run over percussion tables. I think the Government ought to have some investigation made along these lines, and see if something cannot be done with the low-grade platinum deposits. Platinum is worth £16 or £17 per ounce. It is worth four times as much as gold. I think investigations should also be made of the beaches in the neighbourhood of Dusky Sound and other places. At one spot platinum was discovered some years ago, but at that time it only brought a few pounds per ounce. It also occurs in some of the ores of Westland, in copper, in connection with sulphide. The Geological Survey discovered it there. All those sources should be investigated, because platinum is badly needed. There are some valuable clays about Reefton in connection with the coal-seams. It would be useful for pottery; it is not high-grade china clay, but it would make pickle-jars, &c. There are facilities here for making cement. There is some high-grade limestone also. At Westport you will find that they have at Cape Foulwind limestone and clay, which would make good Portland cement. Another possibility is carbide; but I cannot give any definite data about that. There is high-grade limestone in this district quite close to the coal-seams and fairly close to water-power. These are required for making carbides. The limestone has not been investigated very minutely; it may contain a little too much phosphorus, but I cannot say. I believe the presence of that substance would be an objection. In New Zealand there is a lot of cyanide being used in connection with the extraction of gold from low-grade sands. £25,000 worth of this material was imported in one year. On the other hand, there is enough running to waste from the gasworks—enough nitrogen in one form to make £50,000 worth per annum. Then, there is an enormous amount of sawdust going to waste; by distillation acetic acid can be produced, and alcohol. I think further investigations might be made in regard to this question. I also think that further experiments might be made in connection with the treatment of flax. Much more might be done in the way of beekeeping. The lecturers on beekeeping have at present to go over a lot of country, and they have only been able to visit this district at considerable intervals. In view of the price to which honey is going this industry is becoming remunerative. It is a good food, and is recommended by the doctors, as its sugar is in a highly digestive form compared with ordinary cane-sugar. Much more might be done in the way of fostering this rural industry. It does not take much capital to start it. Then there is a native plant known as the "pepper-tree," which is as fiery as capsicum; and the miro produces a gum which is about the best thing for cracked hands. I think we ought to investigate and utilize these things if possible. I would also like to see something done in connection with our patent laws. You can get a patent in New Zealand, but it is practically only a piece of paper; patents are sometimes taken out, but they are practically useless for lack of proper investigation. I think a paternal Government might have some kind of bureau to investigate patents and help people who have not education enough to work out their own ideas. I think inventors might be helped: there might be something in the nature of an inventors' bureau—similar to the Labour Bureau; I believe it would produce good results.

Isaac Patterson examined.

Something must be done in this district with reference to securing suitable timber for mining purposes. Our forests are diminishing very rapidly, both through settlement and owing to bush-fires. I think that facilities should be given to replant the mountain-slopes and the high plateaux which have been denuded of suitable timber. We asked some time ago that an expert be sent here for the purpose of studying the matter, and to make recommendations in regard to it; but we have had no reply. We are at present supplying timber to Paparoa, Stockton, and to the Reefton field. Our light timbers are rapidly diminishing. White-birch, silver-birch, and red-birch grow fairly quickly to a size which would be suitable for mining purposes. There are other timbers which might grow more rapidly. I suggest that the Committee might make a

recommendation to the Government in regard to this matter. If you are going to have coal you must have timber to work it. Wattle-trees were planted, but they have not proved a success. I do not think the Government was well advised in planting wattle-trees here. We also strongly urge the early completion of the Otira Tunnel.

WESTPORT.

THURSDAY, 6TH MARCH, 1919.

G. H. GOTHARD examined.

I am here this evening to represent to this Committee the position of the coal industry, or, rather, to speak in reference to that portion of it which is located in the Buller Gorge. You have to-day passed through the area, and from what I can gather you are convinced as to the very valuable deposits which exist there. What we chiefly wish to point out to you is that in the development of this industry in that particular locality it is imperative that the railway should be completed. On a portion of the line £152,806 has been expended, and the line so far constructed has not been used at all, and consequently is a tremendous cost to New Zealand. It will require £324,263 to complete the two sections. The cost of the two sections between Westport and Reefton is: (1) Westport towards Inangahua, £152,806; (2) Reefton towards Inangahua, £171,357: total, £324,263. £324,263 has therefore been spent on thirty-one miles of open line, and an additional four miles of gorge formation, all of which is almost non-productive. An extension of eight miles of the Westport Section will tap one of the finest coalfields in the Dominion —as will be seen from the Geological Survey Bulletin No. 18—distant only twenty miles from Westport, the chief coal port of New Zealand. The Public Works Department estimates the cost of completing this railway—Westport to Inangahua Junction, twenty-two miles—at £440,000. What may be termed the Buller Gorge Coalfield consists of a strip of country that stretches from Slug Creek (a tributary of the Pensine Creek) on the north to Nada Creek (a tributary of the Buller-Blackwater) on the south. The extreme coal outcrops are thirteen miles apart, and of this distance eight miles lie within the Reefton Subdivision, the area crossing the northern portion of the Inangahua Survey District diagonally. The width of the possible coal-bearing area is, on the northern boundary of the subdivision, at least a mile and a half. The estimated quantity of coal in this area is approximately 70,000,000 tons—local estimate. The analysis of the Coal Creek Mine, a 16 ft. seam, is as follows: Fixed carbon, 40·62 per cent.; volatile hydrocarbon, 43·26; water, 13·52; ash, 2·60 (*vide* New Zealand Geological Survey Bulletin No. 18). I have also here a report submitted by Mr. Burley in regard to the outcrops of the Buller Coalfield. There are seventeen outcrops in all, showing that the coal exists over an area of thirteen miles. A great deal of this coal has been found to be very excellent household coal, and in addition it has been used for steam purposes. Some thousands of tons have been taken from this particular portion of the district, and for a great number of years it has been used for gold-mining dredges working on the Buller River. We particularly feel the position, seeing that the Government policy seems to be the importation of coal from Newcastle; yet there is a great quantity of coal lying idle here—a supply which could be made immediately productive. We have heard it said that the railway-line will not pay. I may call your attention to the fact that the best paying line in the Dominion is the Westport Section. There is not the slightest doubt that the conditions will make this line an immensely paying line to the Dominion. It has a gradual grade, falling with the bed of the river. There is no difficult country to open up. The expense of haulage will be considerably reduced, as it will almost gravitate itself along the line to the port. There is another phase: that while a good deal of money has been spent on the Westport Harbour for the development of the harbour, it has been very successful, and without a doubt it has been the most successful harbour of its class in the Dominion. Then there are the coal areas which will be opened up. In support of my statements I will quote the opinions of the three ablest geologists New Zealand has produced. Mr. P. G. Morgan, Director of Geological Survey, states: "In 1911 he estimated the total quantity of bituminous coal originally *in situ* in the Buller Coalfield at 231,000,000 tons. To this estimate might now be added 9,000,000 tons in the Westport-Stockton lease, and, say, 3,000,000 tons in the Blackburn district. This made a total of 243,000,000 tons. The coal won to date was 12,000,000 tons. This left 231,000,000 tons in the ground at the present time, to which might be added possible but unimproved coal in the Blackburn district and beneath the Westport flats." [Witness handed in to the Committee the report of Mr. Morgan's evidence, also Mr. Burley's report on the outcrops.] We have here the finest coal the world has ever produced—that is, bituminous coal; and the shame is that this coal is being used for household purposes, when we have available an abundance of household that could be got at half the price. The value of the coal produced in this district has been very amply demonstrated in the past, and quite recently it has also played a very great part in the great war. Especially may be mentioned the case of the cruiser "Sydney," which steamed 17 knots under full boiler-pressure with Newcastle coal, but later on, with Westport coal and with half her boiler-capacity, increased her steam-power considerably over 27 knots. She used Westport coal when she overtook and destroyed the "Emden," German cruiser. I may say in conclusion that the whole of the industry in this district will be practically locked up until we can get the Buller–Inangahua railway-line completed.

To Mr. Luke: In regard to the route through to Inangahua, there were four different proposals, and the Government have not yet decided which way they will cross the river. In most cases young people have to leave the district; there is no scope for them here at present.

To Mr. Hudson: In addition to opening up the fields along the river, the construction of the railway would benefit Reefton.

To Mr. Hornsby: The construction of the railway ceased about 1912—about two years prior to the beginning of the war. Practically no work had been done on the line since. £100 was put on the estimates last year.

To Mr. Sidey: No reason was given for stopping the work. The work stopped about the time there was a change of Government. Indignation meetings were held, but they had no effect.

To Mr. Craigie: Pending the completion of the line, applications have been made for leases and for protection—they are waiting for the Government to allow them to open up these fields. If the line were completed private enterprise would go ahead. As far as the coalfields are concerned, what is required at present is the railway. The members of the Committee must have noticed how easily the coal could be mined. Miles of the railway practically run over a coalfield. There would be no difficulty in taking the coal over the river.

To the Chairman: I do not know how the use of bituminous coal for household purposes could be stopped. The Government use it on their railways. It could be conserved for steam-producing. Instead of the Government importing Newcastle coal for the railways this coal could be used. If the railway were completed it would mean that household coal would become cheaper, and the other coal would then only be used for the purpose for which it is most valuable. No use is being made of the partially constructed line towards Inangahua. There are some six or seven miles of completed line. It was under the railway system for running purposes, and stations were built. There are only three or four men on the line looking after it.

D. J. WILLIAMS examined.

I shall have to be brief. It will perhaps be better for me to touch on one or two points at most. There is one reason that warrants the railway being completed at once, if everything else is suspended, and that is from a defence point of view. If during the peace negotiations we should get into trouble with Japan, any navy in these seas would be dependent on this coal. If the railway were completed through to Christchurch via Otira the coal could be taken right through to Lyttelton. So the completion of the railway is important from a defence point of view. Then there is another point: I take it that an effort should be made to make every community self-supporting. Westport wants to be self-supporting. Under the present conditions people are leaving it, and if this should continue the place will become bankrupt. The easiest solution or remedy for that is the construction of this railway; and, incidentally, the construction of the line will employ labour in the meantime. Westport must be nursed and helped over a crisis. This crisis has arisen through the harbour-works being suspended. A large amount of money was borrowed and expended on construction-works—something like two millions. It is to the interest of the Government to see that this community is carried over that depression, even at a cost to themselves; but that can be done without cost by the completion of the railway. The railway will be one of the best paying lines in the Dominion when it is completed. The Railway League is working to put the proposal before the Government by the Harbour Board to borrow money, and perhaps the Government would give the Board endowments, and then the Board would construct it. The Government have let the work in little jobs. The work cannot satisfactorily be carried out on such lines. A tender should be let for the completion of the whole line. It is a two-years job. If carried out in that way it would cost half what it would under the method recently adopted. We propose to submit proposals, with estimates of local engineers, of what the whole work could be put through at. The moment you talk coal to the Government they ask, Where are the men? That is a difficulty. But that difficulty is only a temporary one, and the railway has to be put through before the shortage of miners will be felt. Experts and others interested are satisfied that the miners will soon be again in New Zealand, and, incidentally, they will see to it that they get the men out, because the conditions will be better here than at Home. The coal up the river can be mined at half the man-labour per ton as compared with the present mines. The Westport Coal Company's mines are big mines. Incidentally the Government and the country will have to take into consideration the social condition of the miners. The miners are living under such conditions that it is a wonder that you have any miners at all. The miners of New Zealand have got into bad repute by people who do not know them. They have their good points, and they are equal to any other men; but they have to go to isolated places, and their conditions are such as to cause them to drift into slovenliness; they are put into a hovel to live, and education for the children is difficult to get. A remedy may be the nationalization of the mines. The social condition of the people is the first consideration, and that will be a big solution of the difficulty in regard to the shortage of men.

To Mr. Forbes: I know the local conditions, but I cannot speak as to the conditions at the State mine. I do not think the Government is grappling with the question of the State mine in a proper manner; their only consideration, apparently, is to compete with other mines. As to the nationalization of the mines, the first consideration will be the social condition of the miners—that they should live under conditions fit for human beings to live under. I think you will get better returns from the men. If you pay the men more wages and give them better conditions you will be able to sell the coal just as cheap as it is to-day, and perhaps cheaper, and you will be dealing with a happy people, and practically most of the labour unrest in that particular branch of it will be wiped right out.

To Mr. Sidey: To carry out the line properly requires capital and the necessary machinery. I think this particular job does not lend itself to co-operative labour. The initial cost of the machinery is a consideration.

To Mr. Hornsby: As to the conditions at Burnett's Face, the men and their families are there because that is as near as they can reasonably get to their work—three miles at the back of Denniston. They are in a little rock-bound valley; there is nothing there but bare rock. They build such houses as they can—such huts as they can afford. They have only one employer. I do not want to say anything against the Westport Coal Company as employers—they are a fine company; I rather admire them than otherwise in all their dealings—but the conditions are such that a man may quarrel with one of the foremen or deputies, and the man may lose his job. The solution of the matter is this: these people should live in a model town in connection with the industry, and they should be carried from their homes to their work. The condition of these men and their families under existing circumstances is undesirable for themselves and undesirable for the Dominion as a whole.

To Mr. Hudson: It is my opinion that it would be to the advantage of the worker if the coal-mines were nationalized.

To Mr. Veitch: The recent epidemic was very bad at Burnett's Face; in the district there were fifteen or sixteen deaths in a population of between twelve hundred and thirteen hundred.

To Mr. Luke: I think the people running the industry should provide proper homes or provide proper access to the work. The grade up the hill is very steep—I think it is 1¼ in 1; it is more than 45 degrees. As to remedying the existing undesirable conditions, my idea is to nationalize the mines—that is the remedy—nationalize the mines and you settle the matter at once.

To the Chairman: My cure for the trouble is the nationalization of the mines. At present the Government is not in a fair position: they have to compete and show returns. I would not expect them under present conditions to be any better than a private employer: they work on the same lines. In regard to State control and the delay in the construction of the railway-line, my reply is that they all make mistakes and are slow at times. The miners are going to be a big trouble in this country unless something is done. I cannot say what the ordinary wages of the miners are. I believe some miners are making 30s. a day, but they are taking big risks—working in pillars where they are in grave danger; but there are many who are not making anything like a living-wage. It would be fair to charge the men a reasonable rental for their homes.

To Mr. Craigie: A contractor would finish the work far quicker than the present Government. The miners are a community in a state of unrest, and you have to find a solution for that unrest. The general workers outside are not under the same conditions as the miners, and unless you find a remedy for the unrest of the miners, and find it early, you are going to have an upheaval of all labour; you have got to face that.

A. C. Cottrell, Solicitor, examined.

I wish to bring before the Committee the possibilities of the cement industry in this district. At Cape Foulwind, about six miles from Westport, there are large deposits of limestone, extending over an area of some 400 acres. This limestone has been proved to go to a depth of 80 ft., and there are millions of tons of it. There are also adjacent large quantities of marl, the other ingredient chiefly used in the manufacture of cement. There is quite sufficient marl to equal what would be required to manufacture cement from the whole of the limestone in that district. The limestone is at present only being used to a small extent in burning lime—an industry that is being carried on by the Buller County Council. The burnt lime is used by farmers on their land. The manufacture of cement could, I believe, be taken up and would prove a very essential industry. There is a suitable place for cement-works adjacent to a railway running from Westport to Cape Foulwind, and the product could be marketed very easily. I hand in an analysis of the limestone and marl, made by Mr. Lovell, Director of the Westport School of Mines, showing that it contains in large quantities the most essential ingredients for the manufacture of cement. This country was also gone over by Mr. Morgan, Government Geologist, and his statement in regard to it can be found in the report he furnished to the Government.

To the Chairman: The deposit of lime is within six or seven miles by rail of Westport Harbour. The depth of water available at Westport is 27 ft. or 28 ft. The capital required to establish works to be worth while would be fairly expensive in order to provide the necessary machinery for cement-works. At the present time cement is largely used for ferro-concrete work and bridges. There would be a heavy demand throughout New Zealand and Australia. I know there is a tariff against cement in Australia. I believe there would be a sufficient demand in New Zealand alone to warrant opening up works there.

To Mr. Hornsby: I have not heard of any other ores being discovered there, except the ingredients—silica, alumina, iron-oxide, and so on. In the limestone the percentage of lime is 53·10, and after burning it was 92·04. The percentage of silica is 54, and after burning 62.

To Mr. Sidey: I should like the Committee to bring before the Government that such an industry could be opened up if the demand warranted it. I do not suggest any Government assistance in the establishment of the industry. I think that if the demand was sufficient the Government might open up the deposit. I am not speaking for any syndicate. I am only speaking of an industry that could be taken up by the Government or by private enterprise.

To Mr. Forbes: The cement would have to enter into competition with private concerns now existing, and I believe the ingredients are so good it could easily enter into any competition. I could not say that the ingredients are better than those at Golden Bay.

To Mr. Craigie: A great deal of the land where the deposit is to be found is held by small farmers. To work it as a private enterprise more capital is required than we can find in the district.

To the Chairman: I know that two big lime concerns went into liquidation lately. Since the war there has not been the demand for lime for construction-works, but I believe there will be in the future.

To Mr. Hudson: The farmers at Cape Foulwind are not taking full advantage of the lime. They want educating up to its advantages. They would derive great benefit from using first-class burnt lime. It can be supplied at up to £1 per ton.

H. T. PARRY, Dairy Refrigerator and Mechanical Engineer, examined.

The question of the manufacture of calcium carbide has been entrusted to me To increase industries we must have a cheap source of power, and science has proved and demonstrated amply that hydro-electric energy is the cheapest we can get. This district has a hydro-electric concern that, we feel sure, would be second to none in the cost of production. The proposed location of the hydro-electric source is situated at a point three miles and a half south of Charleston and about twenty miles by wire from Westport. The hydraulic energy would be drawn from a river known as the Four-mile. This river is ideal for the purpose, surrounded by high hills, with an outlet only through a canyon 50 ft. wide and about 100 ft. deep, and a fall of about 387 ft. in less than half a mile to the sea. This stream drains a catchment area of about twenty-five square miles. The canyon is long, narrow, and high, and is of solid rock formation. The penstock and hydraulic arrangement would cost perhaps the least to install of any on record for the Dominion—that is, in comparison with the energy developed. The power plant, transformers, &c., could be located about sea-level, and there is a very convenient site for this purpose. About 20 chains of tunnelling is required, but there is no serious obstacle in this work. If necessary other streams can be turned into this catchment, but without their consideration there is still about 4,000 horse-power available. With an average rainfall of 8 ft. per annum, and allowing for soakage, evaporation, &c., there would be about 5,600,000,000 cubic feet of water available, developing at the fall, again allowing frictional and transformation losses, the 4,000 horse-power for twenty-four hours per day continuously. I suggest one way in which this power may be used—namely, the manufacture of calcium carbide, of which New Zealand at present imports a large quantity annually. We have a good limestone handy, and in the Westport coke we have the best in the world: therefore we have the constituents that are necessary. As for the cost of production of the 4,000 horse-power, I estimate it at £40,200, which works out at a cost of £10 per horse-power, as against the Lake Coleridge scheme of £45. I have said that 4,000 horse-power can be developed, but a greater authority puts it at 8,000 if all the water was turned into the catchment area, which could be done with little extra cost. Practical results demonstrate that it takes 12,000 tons of limestone, 6,000 tons of coke, 150 tons of carbon electrodes, and 4,000 horse-power to produce 6,000 tons of carbide per annum. However, in the first year about 3,000 tons would be needed to supplement already depleted stocks due to the war, and between 1,000 tons and 1,500 tons would fulfil all New Zealand requirements for some time to come. A very large quantity is imported into Australia, and no doubt the surplus would find a ready market there. The cost of a carbide plant, with buildings, I estimate at £11,000, and the cost of manufacturing 3,000 tons of carbide per annum I place at £41,050. Then, the sale of 3,000 tons of carbide at 3d. per pound would bring in £84,000, so that in one year's work you would nearly mop up the whole cost of the installation, and still have 4,000 horse-power on hand.

To Mr. Sidey: I suggest that to safeguard the industry at the outset a protective tariff of 1½d. per pound should be placed on carbide. I do not think that after the war the price will come down to the pre-war rate. At present carbide is retailed at about 1s. per pound. None of the water I am referring to is now used for mining purposes.

To Mr. Forbes: The Public Works Department has not reported on this scheme. We have not had a visit from Mr. Parry, though we expected to get him here. He promised that he would come. We could also manufacture caustic soda and nitrates for fertilizing purposes. In the proposal to manufacture carbide I have put a practical proposal before you to show you that the hydro-electric scheme would be a payable thing from the start. The tariff would only be necessary if carbide went down to 2d. per pound, so that we could sell it from its place at 4d. f.o.b. At present carbide is not manufactured in New Zealand.

To Mr. Craigie: The power could be used in a general way in the district. For one thing, there is the electrification of the railway system.

To Mr. Hudson: There is always a keen demand for carbide. It is largely used in country hotels.

To the Chairman: The water-power is on the property of the Crown. The Council asked the Department to allow Mr. Parry to visit the district, and we got a reply that he would come and that we would be informed of his visit. However, he has not come, and we consider we have been treated shamefully in the matter.

A. NEIGHBOURS, Brick- and Potter-work Provider, examined.

I wish to place before you a few of the possibilities of the clay of the Buller district. I have brought in a sanitary pipe which is a local product. This class of pipe has been largely used in the Westport Borough sewage scheme. Local industries, however, are under a disadvantage in some ways. We had an order from Nelson for £12 worth of goods. We forwarded the goods, but were surprised to find that the Union Company had imposed £5 19s. freight on the £12 worth. In spite of that the Nelson buyer backed up his first order with another for £50, advising us to ship by the Anchor line. We packed the goods in readiness at Waimangaroa, but for two months we hopelessly negotiated with the Anchor line, and eventually we were notified that there was no space available. The transaction stopped there. The clay is of a very close nature that

vitrifies under a low heat, and is consequently adapted for hardware-manufacture. We can make jars and fancy goods. The lack of shipping facilities, however, has crippled the work.

To the Chairman: I will endeavour to obtain for the Committee the rate per ton charged by the company. The company can ship pipes by the thousand from Dunedin and compete with us

To Mr. Veitch: The price of our pipe is the same as that manufactured in Dunedin. They can bring pipes from Dunedin and sell them here at the same price as our pipes. The boats take coal round, and would come back empty if they did not bring the pipes.

WILLIAM WILMOTT, Potter, examined.

I have had forty years' experience in clay at Home, in Australia, and in New Zealand. I have seen a good deal of the clays of Australia and New Zealand, and am surprised at the quality of the West Coast clay. It is capable of making first-class drainage pipes and excellent conduits. It will also make fine bricks, and I doubt if a better brick could be made in New Zealand. Roofing and ridging are also made; also tiles, garden decorations, Bristol ware, and other things. As far as I can see there are millions of tons of this beautiful clay. The goods can all be manufactured at a reasonable figure, but we cannot get the transport facilities. There is also excellent clay along the Buller River.

T. FAIRHALL, Labour Agent, examined.

In order to establish any industry on sound lines the Government ought to set up a Board of Research, to consist of a scientist, a skilled expert, and three business men of proved capabilities —for preference men of ripe experience who have retired. Under the advice of this Board any suggested entry into business could be proceeded with on sound lines, and if supported by a bonus or direct grant from the Government the Board should have power to inspect, alter, or condemn any project if not being carried out in a systematic manner. It might be advisable for the Board to travel to other countries to learn the means adopted to deal with raw material. With regard to coal, there is anthracite coal to be found near Brighton, about twenty-five miles distant from Westport in a southerly direction, and connected by a good road. It is country where a railway could be cheaply constructed, as it presents no difficult engineering problems. It would be a good paying line, and the timber within its scope would pay for the cost of construction. It is a sound business proposition that the Government should commence without delay, as from Charleston and many miles beyond there are vast deposits of lignite, a good household coal, with surface workings, which could be loaded into trucks by a mechanical shovel or grab, and placed on the markets in the principal towns at a very cheap rate, which would suit all classes of the community and lessen the cost of living. From it useful oils can be extracted, but it would suit a greater purpose by letting the people get it as fuel. It is undoubtedly one of the best enterprises that the State could take up, and by using lignite for household purposes it would conserve our better classes of coal for more useful purposes, such as steam for manufacturing, &c. A number of men are employed on the co-operative system at Seddonville and Upper Mokohinui, about thirty miles in a northerly direction from Westport. There are many other places in the same locality that could be worked on similar lines, and all that the Government should be required to do is to erect bins and put down sidings for loading the coal into the railway-trucks. The railway is adjacent to several places that could be profitably worked, and it would provide remunerative employment for a large number of men. No doubt many of our returned soldiers who are returning in good health and have been mining in the past would gladly avail themselves of the opportunity. There is land of fair quality in the district which could be taken up, and on which homes under the provisions of the Workers' Dwellings Act could be erected. Such a proposition would place more coal on the market, as well as get coal that would not pay a large company to open up, provide revenue by way of freight on the railway, and furnish royalty of so-much per ton to the Crown. In connection with this work of coal-mining we desire to point out to the Committee that in gold-mining the Government make grants of so-much per foot in putting in a prospecting-tunnel, and assist in making roads as a means of ingress and egress, and it is hard to understand why no assistance is given to the coal-mining industry, more especially when it is a party of working-men who are endeavouring to develop the country. It is a matter to which the Government may well give favourable consideration. They would get a return from the royalty that is paid on every ton of coal produced, as well as freight on the railway, and the greater the output of coal the larger the revenue. Since starting, about three years and a half ago, McGuire and party have produced 9,704 tons of coal, giving by way of revenue in royalty nearly £250; the railage has amounted to £1,940, and harbour-improvement rate £121. If they as a party had not started this would have been a direct loss to the country, as well as the railway-line being practically idle. The average number of men employed has been seven, with dependants making twenty-six. McGuire and party have taken in two returned men as soon as they were discharged from the Forces, and in future when adding to the party preference will be given to returned soldiers. It has been necessary to hire from the Mines Department tubs and rails, which were in use in the State mine, on which they pay a rental based on the capital value of 10 per cent. And what assistance do they get from the Government? None whatever, as the following facts show: Previous to this year the rails were valued at £4 per ton, on which the rental was based; now a fresh agreement has been made valuing the rails at £15 per ton. Why the increase? Surely with four years' wear-and-tear the rails have not increased in value! Similar rails are being sold locally at £8 to £10 per ton. In respect to the tubs, they were valued at £4 each, and have still the same value placed on them. Why, the Mines Department themselves write down for depreciation annually 10 per cent., which is customary in all concerns. Is such treatment any encouragement to the worker? The increased capital value placed on the rails makes the annual rental £52 18s.,

whereas formerly it was £32 9s., making an increase of £20 9s. annually, which is a very heavy burden. In the gold-mining industry a subsidy is granted on any prospecting-work that is being undertaken, also tracks and roads are provided. Why should not the same provision be made for the mining industry, as from it the country receives a fair revenue—greater than that from the gold-mining? At least assistance should be given to any co-operative party of workers to develop any coal-measures. From it the Government receives royalty on each ton of coal produced, freight on the railway-line, and a harbour-improvement rate. Another matter is that of dwellings for the miners. Departmentally we have been looking into the matter for the last three or four years, but we are under the difficulty that if a man leaves a mine he has to give up his home. At Stockton the company have an excellent system under which the company build houses for the men on a five-years basis of rental. Legislation should be passed by the Government compelling the coal companies to erect substantial dwellings for the men, because unless you have good homes for them you will never have contentment among them. The Labour Department has the matter under consideration at present, but I cannot say what it intends to do. I will hand in, Mr. Chairman, a number of notes I have made on other subjects—clay-deposits, cement, flax, and other products of the district.

To the Chairman: In regard to the houses erected by the Stockton Company for their men, the company charge 5 per cent. on the cost of the house, and an additional sum is charged by way of rent in reduction of the capital. I do not favour the nationalizing of the standing mines, but new mines opened up ought to be State enterprises.

To Mr. Veitch: As a general principle it is better for the men to own their homes.

T. WILKINSON, Miner and Farmer, examined.

I desire to refer to certain matters connected with an agreement between the State Coal-mines Department and the Seddonville co-operative party of miners as to a lease of plant, including rail and tubs. [Agreement produced, and handed to Committee.] We had to sign that agreement. They originally started about four years ago with eight men. They did not agree as to the methods of working their little mine, and men dropped out until there were only two men left. Up till the time I went in they turned out about 4,000 tons of coal. They paid a rental of £17 18s. half-yearly—£35 or £36 a year. The agreement terminated on the 28th January, and when the new agreement came along we were surprised that we had to pay £80 a year—the rent was jumped up from £35 to £80. We had no alternative but to sign it and take it over. There are five of us in it now, and two boys. We turned out 476 tons last month. We paid the money to Mr. James, and we told him we would take the first opportunity to protest against it. We consider it too high altogether. A lot of the material had deteriorated to a considerable extent. We were doing useful work for the country, and were taking out the coal from the State mine that was left behind. Mr. James said that the matter was fixed by the officials at Wellington; and the rails were also increased in price. We want to get the sympathy of the Committee that the charge be reduced. It is a bit stiff to pay that price in respect to practically worn-out material.

To the Chairman: I understand that the party was formed first four years ago. They were under the impression that as they paid this rental credit would be given to them until they had really the rails and tubs as their own. They never went into the thing in a business-like manner, and they let it go on from year to year.

The Chairman: I think you had better let the Committee have these two agreements, and we will see if anything can be done. It certainly seems on the face of it that an unfair thing has been done.

Witness: I have several other matters to bring up, and now I represent the Seddonville Vigilance Committee. Some time ago, before the State mine was closed down at Seddonville, to get a big area worked, it was prospected, and was turned down as not being a payable proposition, notwithstanding the large quantity of coal reported to be there. There is another big field at Blackburn. We think it would be a good thing for the Government to prospect on the seam of coal to find out what it contains. In the Blackburn field Mr. Morgan estimates that there are 200 acres, with a seam of an average thickness of 10 ft. It is estimated that there are 3,000,000 tons between the outcrops, the seam varying in thickness from 5 ft. to 40 ft.; and the coal is equal to the best Denniston coal. On the easterly side of the outcrop they do not know how far it goes; but on the westerly side it is considered that by surface trenching it can be ascertained how far it goes. On the eastern side it may require thirty or forty holes to thoroughly test it. I think it would be good for the district and for the country to thoroughly prospect and find out whether there are 3,000,000 tons or 30,000,000 tons of coal there. That is one of the points which the Vigilance Committee asked me to bring before the Committee. You will find all about the Blackburn area in Mr. Morgan's report. There is one other thing in connection with coal: I have noticed in some reports of the meetings of the Committee that statements have been made in regard to the coal. Dr. Thomson made a statement that the mineral wealth of this country lies more in the common things like coal and things of that sort rather than in the rarer metals. At the present time we are working at Seddonville. I have brought two or three pieces of coal to show the Committee. In years past Seddonville was noted for the colour of its coal. It is what is called "peacock" coal owing to its bright colours. I consider that this might be a sort of coal that would carry a lot of chemicals. [Specimens of the coal exhibited to the Committee.] The specimen I have here comes out of the Co-operative Mine at Seddonville.

To Mr. Forbes: I cannot say that there is a great quantity of this coal where we are working, but that quality of coal exists throughout the district, or, rather, that part of the district. It might be of some value to the country to prospect that "peacock" coal. We have some reefs

in our district farther up the river from Seddonville. Once or twice when men were working—prospecting—they got a subsidy from the Government of 5s. a foot. That was handy in years past when explosives were cheaper than they are now. Now, 5s. does not go very far. I think it would be a good thing if a subsidy of pound for pound were given to small parties prospecting for gold. [Specimen containing gold handed to Committee for examination.] This quartz runs at about 28 dwt. to the ton. It paid us about £4 10s. a week when I was there.

To Mr. Veitch: I think the Inspector of Mines fixed the subsidy, and he is, I think, allowed to go up to 460 ft. at 5s. a foot, and after 460 ft. you get a further allowance.

To Mr. Hudson: As long as the subsidy is granted for genuine prospecting—to the satisfaction of the Inspector of Mines—I think it is a good thing to grant it to assist in the development of mining.

W. H. BOWATER examined.

I desire to say a few words in regard to timber. The timber output from this district is very small as compared with the output by our southern friends and from other districts in New Zealand. That is simply because they have better railway facilities. We have a very large amount of timber in this district, but most of it is lying idle awaiting the construction of a railway to bring it to port. The same railway that serves the coal will also serve the timber industry. I refer to the Gorge line, and ultimately we hope to connect with Karamea. In these districts there is a large amount of milling-timber, including a large quantity of beech, commonly known as birch. The latter timber is of very little use except for fencing-posts, rails, and so forth. It is stated that it is suitable for wood-pulp for papermaking. I think the Government should look into that matter and, if possible, establish the paper-making industry in this district. I know of no other place in New Zealand where there is such a large amount of this particular timber. The Nelson Provincial District contains large areas of it, and the greater portion of it lies in the Buller watershed. We request that the present duty on imported timber be maintained; also that the railage on imported timber should not be reduced. We have a large amount of unskilled labour, and we would suggest that it would assist to get over that difficulty if something were done in connection with the timber industry, and the same thing might be extended to other industries. Something in this connection might be included in the technical-school course. In the past our education has gone too much in the direction of turning out officemen. Scholarships might be established with the view of encouraging scientific work and research. This is done in America, and I think we might well take a leaf out of America's book in this respect. The next point is a very important one as far as millers are concerned, and that is the action of the Lands Department in taking certain roads over. We do not think that is quite a fair thing. We should have been paid for it. For instance, in our own case, we had to put in a road at our own expense. We also suggest that timber being a surface crop, where it is growing in the best land the Government should not expect the timber to be conserved for the future; but in the case of timber on the poorer lands I think it might well be conserved for future generations.

D. J. WILLIAMS, further examined.

I desire to say a few words in regard to agriculture. The farmers of this district are suffering under various hardships which the farmers in other districts do not suffer. The Buller County Council has done its best to assist the farmers. They took over some lime-works that were in private hands, and borrowed a sum of money; and the local body is selling lime to the farmers at £1 per ton. The farmers were paying £2 a ton prior to that. It is burnt caustic lime. We want the Committee to suggest to the Government that the farmers of this district are worthy of assistance. The climate is humid and the growth is phenomenal. In some areas the grass grows the whole year round—it is evergreen; but the growth of rushes, scrub, &c., is also phenomenal. The difficulty is to get a good burn. The farmer burns his land, sows his grass on it, and before he can clear it in any way it is covered with rushes, fern, and scrub, and his work is all in vain. The only solution is to bring the land immediately under the plough. In Canada the latest devices have been adopted for bringing lumber lands into cultivation. We suggest that the Government should purchase the necessary machines and hand them over to the Buller County, which will have an expert working them, and so assist the farmers to clear up the land. The work must be done after the milling-timber has been taken out and until the land is ready for the plough. The farmer should be charged a certain sum, spread over a specified period of years. Not much can be done here in that respect without assistance, and it is suggested that the Government should assist in this respect; and it is thought that handsome profits will be returned when our lands are cultivated and the district becomes self-supporting.

To the Chairman: The County Council would undertake the supervision of the machines.

ROBERT PATTERSON, Auctioneer, examined.

I represent the Crown tenants on the Nelson Land Board. The Under-Secretary of Lands was asked on the 29th November last to supply log-haulers to settlers, but so far the Board has not had a reply. I hope the Committee will see that the Department attends to the matter. The lands in the province are heavily wooded. The bulk of the timber is birch, which will not burn. There should be a log-hauler in each county, under the control of the Agricultural Department or of the County Council, and the settlers should have the free use of it. For every acre of ground cleared a return will be provided. The price of the haulers is £800 each. By using the hauler the cost of clearing is £3 per acre, as against £80 by hand. Land could then be brought under cultivation in two years, as compared at present with an average of twenty years.

To Mr. Hornsby: Brown-birch is not suitable for making paper. It might be used in place of hardwood, which is now imported. Brown-birch bark is used for tanning.

Witness: I also suggest that the Public Works Department should buy gelignite and sell it to settlers at cost price for clearing purposes in far-back places where it is not possible to take the hauler. Then we are having a difficulty about the butter-fat in the factories. I advocate that a method might be adopted whereby the Board of Trade could put a standard price on butter-fat. It could appoint a man to take tests in the factories in the district, five in number. It would do away with a lot of the dissatisfaction that exists at present.

RUSSELL WEEKES, Railway Employee, examined.

I wish to speak about ozokerite asphalt. I had a prospectus explaining the material given into my hand prior to the war. The compiler gave it to me to see if I could utilize it, as he had gone into the matter in Melbourne and could not use it for want of capital. I am not an expert in the matter, and cannot go into the details, but I will leave the prospectus with you to look into and see if it is possible to do anything with the proposal. Reference is also made to the distillation of coal for procuring paraffin-wax, &c. I have samples of the asphalts [produced]. I also wish to refer to the eggettes. We have in this district a great deal of coal, but unfortunately it is of a very friable nature. The Government—on the railways, anyhow—use only the screened coal. When approached on the subject of using the unscreened they say it is of such a friable nature when it reaches them that they are unable to utilize it. In 1913 the State briquette-works were dismantled as unsuccessful. The sole reason, I believe, was that the pitch used as a binder was too highly priced. It was costing 3s. 6d. per ton. The compiler of the prospectus, when talking to me, said he could produce it cheaper. The cost of the mixer, he said, would run about 2s. per ton. I am talking of prices prior to the war. [Samples of eggettes produced.] I think the difficulty of our friable coal might be solved if the cheap mixer were introduced and the product utilized for the railways, instead of having to send for 80,000 tons a month from Australia. At Waimongaroa, right on the railway-line, is a mine of crushed coal. It has been known as the Wellington Mine. It would, I believe, bind with less of the binder than any coal of which I have any knowledge.

D. MACKENZIE, Pattern-maker, examined.

My object is to show the suitability of Westport as a site for steel and iron works. We have bituminous coal which has been proved by the New Plymouth Ironsand Works to be a most suitable coal for coke for smelting-works. In the Parapara iron-ores, according to the Dominion Analyst, there is a percentage of iron of 55. Some people favour the idea that the coal should be taken to the iron at New Plymouth or at Parapara, but I submit to the Committee that the iron should be taken to the coal-deposits. Westport is, in my opinion, the most suitable place in New Zealand for iron and smelting works. We have the port, we have the coal suitable for the smelting of iron-ores, the distance is only a hundred miles from Parapara, and you are always sure of a cargo of coal back, which makes the thing a commercially paying concern. We know how successful have been the Broken Hill works. In four years they were able to supply material to Australia. New Zealand has never developed its iron-ore industry. It has tackled the ironsand, but iron-ore would be commercially cheaper than the ironsand. Unfortunately, the Taranaki ironworks have been closed up for the want of coke, showing clearly that to make the thing a commercial success it is best to take the iron to where the coal is. I think the Government should subsidize the industry, because it takes more money to start the steel and iron industry than to start any other work you could mention. When the Broken Hill works started the promoters were prepared to spend three millions. I hope the Committee will impress on the Government that it should go into the undertaking in a proper manner and see that it is carried out. In the Australian works they have to carry their iron-ore twelve hundred miles, and they make a success of it, and surely we could make a success of ours with only a hundred miles to carry the material.

To Mr. Veitch: The Westport Company's coke gave greater satisfaction at the New Plymouth ironworks than the Greymouth coal.

To Mr. Sidey: I do not suggest that the industry should be a State enterprise, though the State should subsidize it. The works in Australia would never have been started if it had been left to the Government to start them. The New Zealand Government ought to obtain the services of an expert to advise it, either from America or Australia.

MURCHISON.

FRIDAY, 7TH FEBRUARY, 1919.

JOSEPH BROWN, Chairman, Murchison County Council, examined.

Dairying is in progress in this district. The butter-factory has an output of 120 tons, and each year the output is growing. The district is scattered, the county being a hundred miles across. More grazing is being done than anything else. A little mining goes on—all alluvial, such as it is. It was not a big goldfield, but it was a good poor-man's diggings. The work was done mostly on beaches; there were no reefs, and six dredges on the river all ceased working. We get top price for our butter. The settlement of estates acquired by the Government is successful; there is no land-aggregation in the district. The land varies in value from £10 to £40 per acre. The district is not suitable for the culture of fruit. It is 600 ft. above sea-level. The grass keeps green all the year, and sometimes we have no frost all through the winter. We

want the railway pushed on in preference to roads. Population will not come unless there is facility for travel and for getting our products out. The Maruia Plains are well suited for dairying. We would like the Government to assist our dairying industry by placing purebred bulls in different localities. We approached the Government once for two bulls, but were turned down. That was last year. The dairying companies might take charge of the bulls.

NELSON.

MONDAY, 10TH MARCH, 1919.

THOMAS A. TURNBULL, Mining Engineer, examined.

I wish to suggest to the Committee that iron, oil, and coal deposits should be nationalized. Regarding the quality of the iron-ore at Onakaka, I put in a statement showing that Dr. Marshall had nineteen samples, and his percentage of iron is 49·6 as against Dr. Bell's 45. As to the tonnage of the ore there, Dr. Marshall says, "There cannot be less than 22,500,000 tons on 96 acres. The ore extends as far as the outcrop of limestone, beneath which it may continue along the dip of the rocks." The whole of Onakaka can be worked by gravitation. The Onakaka lease is in my name. It has cost me practically £18,000, the last £3,000 being overdraft.

To Mr. Luke: I do not support the proposal to take the ore to Westport. We have bituminous coal within eight miles of Onakaka.

To Mr. Hornsby: There are millions of tons of coal at Marble Creek, Coal Creek, and elsewhere. According to Dr. Maclaurin's report the sulphur in it is only 0·36 per cent. If Government officials and others say there is no coal available in the neighbourhood I say they were too lazy to go over the property. There is not the slightest doubt about the existence of coal. I have seen some of it at the gasworks in Nelson, giving 66 per cent. of coke, which is about the highest of the American. The coal should not cost more than 7s. f.o.b.

To Mr. Craigie: I have a sixty-six years' lease, and I pay about £160 per annum. The coal is suitable for smelting.

To Mr. Sidey: I represent a company, the lease being in my name. It has cost me £18,000 and my friends £10,000. I favour the Government sending to America or England for an expert. The people of New Zealand should develop the deposits as a State enterprise. I have a scheme that I shall lay before the Committee regarding that aspect of the matter. I am not aware whether Mr. Morgan has reported on the coal to which I have referred.

To Mr. Veitch: I have protection during the war only.

To Mr. Luke: I am not in favour of sending Home 500 tons or 1,000 tons of the ore for a test: I think it would be useless expense. The quality of the iron is well known, and for myself I am satisfied of its commercial value.

To the Chairman: My lease will be deprived of protection almost immediately. As to the steps I propose to take—well, I am pretty well sick of it. I would make a sacrifice to quit, as I am too old to bother about it. There are others in the business besides myself, and they would have to be consulted before I could make a definite offer to the Government. I take it that the Government will not deal with us more harshly than with the Parapara Company: we are not looking for profit. We do not ask for money—we would take a *quid pro quo*. If the Government will do anything in the matter we are willing that it should have the chance. At present an English company is after it, and there is another inquiry. A letter was sent to Sir Thomas Mackenzie in 1915, suggesting a combination of British ironmasters to take up the concern, and his reply was that he was not a commission agent or a company-promoter. We asked for £10,000 in cash and £40,000 to be taken up in shares.

Witness: Regarding oil, I should like to see it nationalized. No bore should be put down without the approval of the Government Engineer. All boring so far has been on lines of fault, with two exceptions. In respect to the Mining Act, I think that provision should be made for free areas up to 50 acres for new discoveries a mile from the workings. Then I should like to see it made a penal offence for any one to make a false declaration, or a statement, or to suppress information. I suggest the utilization of marls as fertilizers, say, on pumice lands. As to paint, the quality of the Parapara material for paint is of excellent quality. I also wish to suggest that before a mine or a lease is abandoned the manager should be obliged to lodge with the Mines Department a plan of all the workings, sworn to as correct. Then I desire to suggest to the Committee that there should be a Minister of Industries, and that any industrial scheme of national importance, such as oil, coal, iron, or any mining, manufacturing, or industrial project, such as would be advantageous to the people of New Zealand, or such as would be profitable to or lead to the greater development of our industries, or the cheapening of the cost of living, or saving in cost to the Government, may be taken in hand by the Minister of Industries, who shall obtain reports upon such schemes, &c., from competent persons and submit the same for approval to the House of Representatives, which shall duly consider the matter and hear any petitioner in its favour or who is likely to suffer thereby. If the project is approved by the House of Representatives the Government to guarantee interest upon the capital invested in such an approved scheme at the rate of 5 per cent., paid yearly. The project shall then be submitted to the public for subscription. After successful subscription directors to be elected. The chief accountant shall be a Government appointee approved by the directors. The Government shall be represented on the Board of Directors. The first charge upon the profits of any proposition floated shall be cost of flotation and the recouping to the Government of all interest paid and cash expenses incurred. All net earnings after providing for the 5-per-cent. interest shall be

paid into a National Industries Fund to the credit of that particular industry in question. Every five years the excess profits, if any, shall be divided in the manner described: (*a*) 50 per cent. of the accumulation shall be devoted to a Common Industries Fund to recoup any losses made in any other ventures undertaken by the people of New Zealand through Parliament and the Minister for Industries; (*b*) 25 per cent. of the same shall be placed to the credit of a sinking fund to provide for the death or extinction of the industry; (*c*) 25 per cent. shall be divided amongst the shareholders in this industry every five years, &c. In order that no undue calls shall be made upon the Government the Minister for Industries may call up the capital required by degrees so that only capital called up shall bear interest. In view of saving, the Minister for Industries shall call new capital for enlargements of works, plant, &c., as required. All income arising from investments in national industries shall be free of income-tax.

H. P. Washbourn examined.

I represent the Collingwood County Council, the Takaka County Council, the Borough of Richmond, and the Nelson Harbour Board. What is known as the Parapara iron-deposit is really only the eastern edge of a sincline or basin which extends for several miles in a southerly direction, with the ore cropping out in large masses above the surface. The sincline extends over a large area, and the quantity of ore is practically unlimited. I will take first the question as to whether the deposit can be profitably worked for iron. Of course, there are plenty of pessimists, who have no knowledge of the deposit or its facilities, or the cost of ore, flux, coal, and wages in ironworking countries. It is often said, for example, that the deposit cannot be worked on account of the high rate of wages ruling in New Zealand. Before the war, however, the rate of wages for that class of work was not very different in England from what it was here. Iron and coal workers especially were getting high wages. Also it must not be forgotten that the rate of wages in the iron districts in the United States is higher than in New Zealand. After the war wages will be higher still. For several years I closely followed the prices of iron-ore and coal in England and America. The price of coal at ironworks in those countries was not much less than that for which it could be delivered at Parapara in large quantities. . There is plenty of cheap water-power in the neighbourhood readily available, and this may in the future have an important bearing on the coal-consumption. I have frequently been told that pig iron comes out as ballast free of freight. The trade journal *Ironmonger*, however, states that an expert witness before the Commonwealth Commission in 1902 said, "The freight and charges on a ton of pig iron from England to Australia are from 28s. to 30s." I would lay particular stress on the following considerations: The principal cost in making a ton of pig iron is for the ore and flux, and next for the coal. Labour is the smallest item. In England, when pig iron was from 45s. to 50s. per ton, the ore alone to make that ton cost 29s. 7d., leaving, roughly, 15s. to 20s. to cover cost of coal, labour, flux, wear-and-tear of plant, and profit. At Parapara it would stand thus: Ore, 6s.; coal, labour, &c., 44s. Herein lies the immense advantage over other iron-producers—the low cost of the ore far more than compensating for any possible extra cost of coal, labour, &c. I have put Parapara ore at 6s. per ton of pig iron. This includes the royalty, and also, to be on the safe side, I have put the estimate high. Mr. John Bassett, who has had many years' experience as a railway contractor and as mine-manager, offered to contract to break, load into trucks, and deliver the ore in any quantity anywhere up to two miles distant at 1s. 3d. per ton of ore, and limestone at 10d. (It takes rather over 2 tons of ore to make a ton of pig iron.) The Spanish ore, which is similar to that at Parapara, but of slightly inferior quality, was largely imported into England. In 1901–3 Great Britain imported from Spain 5,550,000 to 6,440,000 tons of ore, valued at £4,550,000 to £4,980,000. Delivered at Swansea the price varied from 15s. to 17s. 6d., never falling below 15s. With regard to the quality of Parapara ore, I see that in the evidence given in Wellington it was stated that Dr. Bell's assays gave 48 per cent. metallic iron. This is either an error or a misprint. Dr. Bell's assays gave 51·79 per cent (see also Appendix A). Mr. Reed's sample was obtained by Mr. Bishop by taking a vertical section from the wall of a drive, and included clay, &c., lying between the iron blocks. The assay from this gave (including the clay, &c.) 48 per cent. For the assay to have any value it should have been stated how the sample was obtained. Dr. Bell's analyses of the ore are the most reliable that have been made in New Zealand from the way his samples were procured. For his principal assays each sample was the average of 100 separate pieces taken from different blocks of ironstone. As it is impossible for any one to pick one piece as an average, this is the only way of obtaining a fair analysis of the ore.

Let me quote from the report made for the New Zealand Government in 1895 on a ton of Parapara ore sent to England to be tested. The analysis of the New Zealand ore showed 53·38 per cent. metallic iron, with a trace of gold, a trace of sulphur, and a trace of phosphorus. A sample of Northampton ore gave 51·88 per cent. iron, with a trace of sulphur and 3·17 per cent. of phosphorus; a second one gave iron 53·2 per cent., phosphorus 1·03 per cent. The report then states that "The New Zealand ore is decidedly superior to the Northampton ore represented by the above analysis on account of its freedom from phosphorus." Of the limestone sent from Parapara at the same time the report says, "It thus appears that this limestone is a very pure carbonate of lime, the impurities amounting at most to less than 2 per cent. A special examination for phosphorus was made with negative result." These reports relate to the iron-ore and limestone for flux that can be obtained at Parapara for 1s. 3d. and 10d. per ton respectively.

As recommendations I would suggest that the lease should be at once cancelled, and the ground be open to any one showing the pecuniary ability to work the ore, and on paying down a substantial deposit; that it should be made widely known that the lease was open, and the conditions on which it would be granted; that the New Zealand Government should get the

English Government to select for them a practical engineer with a knowledge of ironworking to make a full report. The engineer should be capable and of good repute, and well known in England as such, so that his report would be known as honest and reliable. This would give the capitalist an opportunity of getting reliable information. I do not think that it would be advisable or necessary to put a duty on imported iron in order to assist the iron industry in New Zealand, but when required I think that the Government should build, or greatly assist in building, the necessary wharf on the ground that, like a railway, it is a national work. They might also assist by giving a substantial bonus on the first iron produced.

To Mr. Luke: The smelting should be done at Parapara. I do not think there is sufficient coking coal at Parapara for the purpose, and the coal must be taken there. I do not favour taking the ore to Westport. I would bring the lesser to the greater.

To Mr. Sidey: I do not suggest that, on the cancellation of the lease, the lessees should receive any compensation. The leases have been in existence for sixteen years. There is practically no work done that would be of use to the country. There was a little tunnelling, but much of it was of no use.

To Mr. Craigie: There was a little roadmaking. There was a temporary wharf, but it is now gone. Some work was done in the way of a tramway, but it is a question whether the next company would make a tramway.

To Mr. Hudson: If it can be shown that certain works have been done which would be of benefit to the incoming people it should be taken into consideration.

To Mr. Luke: There were 4 acres of freehold, a house, the right to a road, and 56 acres of leasehold, with all the plant, and the syndicate was paid £10,000 for the lot.

PHILIP BEST, Chairman of the Waimea County Council, examined.

I support Mr. Washbourn in regard to the cancellation of the whole of the Parapara iron leases as retarding development and industry. The property is in the County of Collingwood. It would be a benefit to the country to have the iron-ore worked which has been lying domant for years and years. We think the time has arrived when something should be done in the matter, and I hope the Committee will recommend that the leases be cancelled.

H. P. WASHBOURN further examined.

I wish to call your attention to another and smaller industry, although it is one I consider of local and Dominion importance. It has these points to recommend it, that it would only require a small capital, could soon be in operation, and would reduce a certain amount of importation. I refer to the manufacture of iron-oxide paints at Parapara. Paints could be made there for £6 per ton as good in every way as those now selling at from £50 to £70 per ton. For the next two years the price is not likely to fall much, but should it fall 75 per cent., which would bring it below pre-war prices in England, there would still be a large margin of profit left. Not only could the old hæmatite be made, but also a number of various colours, many of them suitable for house-painting, either in their natural colours or mixed with white-lead. I hope to submit a few samples of them to you. In 1895 the New Zealand Government, while sending a quantity of the iron-ore and limestone from Parapara to England to be tested there, also sent several bags each of the two colours locally known as No. 1 and No. 2 hæmatite. These were just taken from the stock and not in any way picked samples. Of these, the report furnished to the New Zealand Government said, "Both paints are well ground. They have been submitted to practical tests in comparison with the Torbay paints in a well-known Government establishment, where Torbay and other oxide paints have been largely used." After giving particulars of the tests made the report continues, "The New Zealand oxide is a better paint than the Torbay so far as the covering-power is concerned, and the difference in amount of material required in making up the New Zealand oxide as against the Torbay does not even bring the latter pigment up to the former." The price of the New Zealand oxide was 8s. per hundredweight here, and the Torbay ground oil in England was 24s. 6d. per hundredweight. In reply to the Chairman a witness in Wellington said, that "If there were works established in Nelson that could turn out hæmatite equal to the old hæmatite that they used to produce there, the Department would put it on the schedule," but it wants more than this to be of any assistance. The Government did use the local hæmatite, but not nearly as much as they might have done. There appeared to be a strong tendency to substitute the imported article and use the higher-priced imported oxide where the better and cheaper local paint could have been used. We did not put up the paint plant at Parapara, but had we done so should probably have made some of the blunders, as it took a good deal of experimenting and experience to find out what would be the best appliances for making the oxide paint. The previous company, after getting and calcining 24 tons of ironstone, obtained only 3 tons of badly ground paint from it; the other 21 tons of the best was thrown away. After a good deal of trouble we improved this to the extent that we obtained 13 tons of well-ground paint from the 24 tons of stone. With a suitable plant the other 11 tons could have been made into paint without cost. Again, with the previous company it took forty-eight hours' constant firing to dry 15 cwt. of paint; and this we improved so much that we could dry 18 cwt. with eight hours' firing. The price of hæmatite was then £25 per ton. We tried supplying the paint ground in oil in 7 lb. and 14 lb. tins. This was favourably received by the public, but as we had to get the tins made in Christchurch, pay freight to Nelson, and then freight to Parapara, and had only a small mill for grinding in, the expense was too heavy, and we gave it up. These items will give some idea of the unsuitable nature of the plant and the difficulties we had to contend with. Still, we made the paint and sold it at £8 per ton,

Australia took about half of the paint we made, and I have had many inquiries from there asking if any more could be obtained. We were also asked to give a quotation for a 100-ton lot for them, but being under option at the time we could not quote. A good trade could be worked up with Australia, where the good standing and fire-resisting of the paint makes it very suitable. We had many letters in appreciation of these qualities from there. A very important point in connection with successfully producing Parapara oxide paints would be an establishment for grinding them in oil and mixing ready for use. This would greatly extend the sale, as from their great covering-power and easy spreading nature they do not require the skill to apply that white-lead does. The cost of pigment for painting a building would not cost a quarter that of lead, and they would protect the wood or iron better and last longer. This would be of great advantage to farmers and settlers by enabling them to paint their buildings, gates, &c., at a small cost. With timber always rising in price it is worth considering the best means of preserving buildings. The superiority for the good standing and protecting quality of these paints is from the fact that the ironstone from which they are made has gone through all possible chemical changes from air and water, so that they are quite inert when exposed to the weather on a building and do not injuriously affect the oil like lead and other chemical made paints. They form an impervious coating of iron-oxide, on which the oxygen of the weather has no effect, protects the oil, and prevents the oxygen of the air from getting access to the wood or iron underneath. Painters object to using the paints in the dry-powder form. This is a reasonable objection, as, besides the time and trouble of mixing them when required, the paint is neither as good nor as easy to apply as when ground in oil. This emphasizes the necessity of having them made and put in as good and convenient a manner as the imported paint. I was frequently asked "How much of the Parapara oxide will it take to paint my house." As they could not give the number of square yards, my reply was, "For every hundredweight of lead that it will need 28 lb. of the oxide will be ample." The truth of this statement can easily be demonstrated. The actual cost of material to paint 1,000 square yards one good coat was (on my own house)—3 gallons of oil at 14s. per gallon, £2 2s.; 28 lb. Parapara oxide at 20s. per cwt., 5s.: total, £2 7s. These were both war prices, otherwise the cost would have been 16s. I am aware that there would be trade prejudice and the importing interest, and also the supineness of those having painting done to be overcome. A few demonstrations would soon show the superiority and cheapness of these paints.

To sum up: There is plenty of various-coloured oxide of iron of good quality which can be made into paints cheaper than the same quality as made in any part of the world; and I believe that a good export trade could be done with them in the dry powder state, but for consumption in New Zealand and a good deal in Australia it is essential that they should be ground in oil and be put up in a convenient form. If done in a proper businesslike way I am satisfied that there is a large and profitable industry to be made out of the iron-oxide paints that can be made from the various iron-ores at Parapara. I do not consider there is need of Government assistance in establishing this industry, as it is quite within the means of a small company or firm. If the Government would use them on railway-stations, trucks, bridges, &c., and whenever suitable, and prevent the substitution of the imported article for them, I think that is all that they need be asked to do.

To Mr. Craigie: The deposit is situated at Parapara. The standing-quality and the keeping of the colour can be put against any other paint that is made.

To Mr. Forbes: The syndicate bought out the paint-works. We would have gone on if they had not bought us out. We could start again, whether the leases are cancelled or not. Some of the colours I produce do not come off the lease.

To Mr. Veitch: A capital of £4,000 or £5,000 would be required to start the industry. It is not correct to say that the quality of the Parapara product has been deteriorating over a number of years. The quality was as good at the finish as it was at the start.

S. KIRKPATRICK, Jam-manufacturer, examined.

The matter which I wish to speak about is the duty on machinery necessary for canning. Machinery for industries in New Zealand, I think, is either admitted free or 5 per cent. is charged on it—or, at any rate, that is the position in regard to most of that machinery; but the duty on fruit-canning machinery is 20 per cent., and 10 per cent. preferential, which works out at 33 per cent. The present tariff was fixed at a time when none of this machinery was invented. The machinery has been invented in America since that time. I have tried for a number of years to get it altered, but the reply was that it could not be done, because it would interfere with the tariff. The machinery which we want would probably cost between £2,000 and £3,000. It is the latest machinery. The duty on that would be from £900 to £1,000. I want to get the best and latest machinery I can get. That is the only thing I want to bring before you. Unfortunately, a fire in our premises swept out the whole of our canning plant. We have put up a temporary building, and we will have to get new machinery, and that machinery has gone up greatly in price. Some time ago we imported apple-grading machinery. The apple-grading machinery used by orchardists comes in free. I imported exactly the same machinery, and I had to pay 20 per cent. on it as duty. We used it for the same purpose. We are short of labour—in fact, we cannot get hands.

To Mr. Hornsby: As to local machines for grading fruit, I may say that I only referred to grading machinery, but I refer to special machinery for canning fruit and vegetables. Two of our pea-podding machines were burnt, and we paid 30 per cent. duty on them. We paid the duty under protest. It is seed-cleaning machinery. We got the amount refunded. But the position was that because we imported it the Department charged 33 per cent. on it.

To Mr. Luke: The machinery is patented, and we cannot make it here. I understand that in Australia they copy it, but by the time they copy it the Americans have got better machines. We got some machinery from Australia, but it has been scrapped; it never worked satisfactorily.

To Mr. Forbes: In connection with our industry the only hindrance we find is in connection with the special machinery.

To Mr. Hudson: If we had sufficient labour we could handle considerably more of what might be called perishable fruits. If we got a canning plant we could put out the same quantity of produce with twenty or thirty hands which is now put out with a hundred hands. It all goes through automatically. The import duty on the machinery is prohibitive; it is 33 per cent. The result of our not being able to get the machinery is a material loss to the district and to the fruitgrowers in the district. The machinery is patented in America. If you get a machine out here and pay a man to copy it, the cost would be great to make one.

To Mr. Hornsby: As to the use of electrical energy in our industry, I may say that we must have steam for cooking and preserving.

To Mr. Craigie: We employ a hundred hands at the busy time. We advertised for fifty hands recently, and we only got seven. They are going hop-picking presently. We cannot get girls or boys; they are very scarce.

To Mr. Hudson: We would employ between two hundred and three hundred if we could get them. We would want them as well as the machinery. Peas are podded by machinery.

To Mr. Forbes: We had a very large trade with South America when the war broke out. We have had a difficulty in regard to labour all the time; we have not enough hands.

To the Chairman: The wages of women in the factory is from £1 10s. to £1 15s.; the working-time is forty-five hours a week. In regard to railway freight, I may inform the Committee that jam sent from a local factory to any station on the line goes under "B" rates, but if it is sent from another factory—not a local factory—it goes under "A" rates.

W. R. B. VASS, Quarry-manager, Takaka, examined.

I wish to refer to marble and slate, but the principal question I shall deal with is copper.

The Chairman: Mr. Vass communicated with the Committee some time ago, and we applied to the Under-Secretary, Mines Department, for information regarding a copper lode which Mr. Vass brought under the Committee's notice. The reply of the Under-Secretary, Mines Department, was to the effect that nothing was known of the copper lode referred to, but that the local Inspector of Mines had been instructed to report on the lode, and that a copy of his report would be furnished to the Committee as soon as it came to hand. We informed the Under-Secretary of the date of the sitting of the Committee at Nelson, but so far we have not received the report.

Mr. Vass: The Inspector was there last Friday, and he intended to put the report in hand, but, of course, he has a lot of other work to do. First, I want to bring up the question of marble. I do not mean to say anything about the building-marble, because I know the Government have £10,000 invested in building-marble; but I wish specially to allude to marble for decorative work. Considering the quality of my marble, I think the Government ought to give me a fair share along with others. We have the greatest variety of marble, and our quarry is the handiest. My marble, as I have said, is not a building-marble, but it is suitable for interior decorative work. I got a small order, and had to supply it within ten days; but that was hardly fair. They knew it would take a little time to get it. They had plenty of time to give the order. I got an order for twenty-four blocks, but immediately after I got the order it was cancelled. The other people have had large orders, and they have plenty of marble, and I have not. I wish to call the attention of the Committee to the question of slate. Mr. Morgan said that he found iron-pyrites in the slate, and that its presence militated against the slate. I think that Mr. Morgan has a "bee in his bonnet" in regard to iron-pyrites. He did the same in regard to marble. There is no outside building-stone in the world free from iron in some form or other. I mentioned that I had put in marble at His Majesty's Theatre, Wellington, and in the Royal Insurance building. The Home slate contains iron-pyrites. Mr. Morgan says the slate would not be suitable for roofing-purposes because of the iron-pyrites; but let me point out that corrugated iron is used for roofing.

To Mr. Hornsby: The slate exists there in enormous quantities. It is as large as any slatefield in the north of Scotland, where I come from. I am satisfied as a practical man that it is good slate; it will take the same finish as the imported slate. Pyrites can be seen in the Scotch slate. I do not know whether the Government authorities saw the red sample of marble. I am the only person who has red marble in New Zealand. Unfortunately, I have not the means to develop it. The marble is handy to the sea. I could not supply 14 ft. blocks of that kind, but I could supply 20 ft. blocks, if necessary, in some varieties. I have an unlimited supply in large sizes of the grey and the dark varieties.

To Mr. Luke: I have had large experience in this business in Scotland, and I have visited the Italian quarries. From my experience in Scotland I can say that commercially the New Zealand deposits offer sufficient inducements for development, especially in view of the increased price of Italian marble. These marbles are not like the Italian marbles: they are like the Belgian and French marbles. The Italian marble is white. There are no more defects in our marble than there are in the French and Belgian marbles.

To Mr. Sidey: I have a forty-two-years lease of the land. The deposit is at Takaka; it is half a mile nearer to the sea than the other quarries. All that I ask is that the Government should give me a good order, and give me plenty of time to carry it out.

To Mr. Hudson: I have been connected with marble-works all my life. At present I am working "on my own," and all I ask is fair consideration from the Government in respect to orders.

To Mr. Veitch: The slate is not in use in New Zealand. I have not the wherewithal to put it on the market; and I think Mr. Morgan's report stopped me from getting anything for it.

To the Chairman: I have nothing to say with respect to the Customs tariff. The marble pays well; it is all right. I have not considered the question of exporting to Australia. The Australians have decorative marble. The marble would be shipped in a rough state. The other people ship it in a rough state. I am supplying some marble to a monumental mason at New Plymouth. I have not got the means for dressing marble here. If I had a rock-drill I would be in the same position as the other people. A rock-drill would cost about £100 to install. In the case of slate, I would require two rock-drills, because there is a great amount of slate used. We would be easily able to compete with imported slate, and we could almost compete with corrugated iron. What I want is capital. I want to see the thing go ahead. I would not mind if anybody else took it up. I have been told that if I would get out a certain number of slates a company would be floated immediately, but I cannot arrange for that, because there is no road, and it will take some money to construct a road. If I had reasonable assistance I could make use of the deposit.

To Mr. Craigie: The specimens of the slate produced are like the Scotch slate. It is not so thin as the Welsh slate, but it is harder than the Welsh slate.

To the Chairman: I will read the following information from Professor Park's book with respect to copper. In James Park's "Text-book of Mining Geology" he states, "It should be noted that extremely low-grade ores, containing as little as 1·5 per cent. of copper, are made to yield large profits in the Lake Superior district. To achieve this result enormous quantities of ore are mined annually. . . . Spain and Portugal: The copper-deposits at Rio Tinto, Tharsis, and San Domingo are of great extent. They consist of compact pyrites containing from 1 to 2½ per cent. of copper-pyrites disseminated through the whole mass. Mansfield, copper-mines, Saxony: The whole bed contains copper, but only the bottom 3 in. or 4 in are rich, and on an average contain 2 to 3 per cent. of copper and 163 oz. of silver to the ton of copper."

I will now read Dr. Bell's description of the copper-deposits. New Zealand Geological Survey: The Geology of the Parapara Subdivision, Karamea, Nelson, by Dr. J. M. Bell (page 100): "In Copperstain Creek, a tributary of the Pariwhakaoho River, a well-defined mineralized zone occurs, running in a general north and south direction, and traceable for about 12 chains. It may, and probably does, extend farther to the southward. Its width is uncertain, since its boundaries are difficult to delineate with accuracy, though it probably does not exceed 50 ft. The zone occurs as a highly pyritized band of much altered and decomposed mica-schist in conjunction with a micaceous carbonate, the mineralization being most pronounced near the line of contact of the two rocks. Though the mineralizing constituents consist for the most part of pyrite, chalcopyrite is also present, as well as its oxidation products—malachite, azurite, and possibly melaconite, which occur in the conspicuous limonitic gossan. Plates of native copper are occasionally seen along joint or foliation planes. Prospecting-work has been carried out in a drive 40 ft. long in Copperstain Creek, about half a mile from its mouth, and shows the character of the mineralization to be fairly constant. Throughout the rusty oxidized portion of the mineralized mica-schist, seams of a hydrous silicate of alumina ramify in all directions. A picked sample of ore from the mouth of the drive contained—gold, 4 gr. to the ton; silver, 15 dwt. 5 gr. to the ton; copper, 23·54 per cent."

I may mention that there was a little mistake made when Dr. Bell was in that locality, and there is no doubt that the man who drove in the tunnel made a slight mistake. Dr. Bell mentioned that the picked sample was taken from the mouth of the tunnel; but it appears to me that sample was taken from the creek—from the washings; that he did not recognize the outcrop, and the tunnel was driven in not quite at the right place. I may state that some 6 in. from where they drove in I struck the gossan, and on the upper side, 3 ft. from where Dr. Bell and his assistants had been working, I struck the other end of the gossan. I went up there one day looking for something else, and I recognized the gossan. The facilities for obtaining the ore cannot be beaten in the world. The place is three miles from deep water; it is 183 chains from the main road, and it is in solid country. All that I ask in respect to the copper-ore is that the Government supply a man to put in a drive on the other side; and if anything can be done to prove that the lode is 40 ft. wide there will be no difficulty in floating a company.

To the Chairman: The Government can assist me by supplying a man to do the work I have indicated, and no doubt the Inspector of Mines knows of such a man. I merely want the Government to prove the lode, because I am not a mine-manager myself. They would require to drive a tunnel into the gossan on the opposite side of the creek to prove the lode, and perhaps put in a crosscut. I think the quality of the ore is good enough. If they proved the lode the Government's costs would be refunded. We have got six months' protection. It is a prospecting license; at the end of the six months we would have to get a renewal of the license. The lode is quite close to the Parapara boundary in places.

WILLIAM EDWARD WILKES, Builder and Contractor, examined.

I am the Mayor of Richmond, and I wish to speak about afforestation. It is necessary that we should have something done with Rabbit Island, a Government property lying on the foreshore between Nelson and Motueka. It has an area of 2,600 acres. It is of a sandy nature, but is eminently adapted for growing *Pinus insignis*. Trees planted there seven years and a half ago are to-day 30 ft. high, with 1 ft. diameter at the butt. The importance of growing fir-trees in this district is that the timber-supplies are getting short. The island is controlled by a Domain Board. The income from the island is £10 per annum. With this sum the Board cannot improve the property, and it has no power to rate. If the Board had more money it would undertake the planting of trees.

PHILIP BEST, Chairman of the Waimea County Council, further examined.

I corroborate what the previous witness has said. I suggest that the Committee should recommend the Minister of Justice to send a band of prisoners to the place and to other places to carry out tree-planting. The island will grow trees, and at present it is a waste. The timber could be used for fruit-boxes and other purposes.

HENRY GOODWIN KINGSLAND, Nurseryman, examined.

I speak on behalf of the Afforestation League in Nelson, and I support what has been said by Mr. Wilkes and Mr. Best. Nelson is using a large number of cases, and the *Pinus insignis* is well suited for the making of such cases. After the trees have been growing for only ten or twelve years the thinnings may be used for cases. It is believed that in the next five years the fruit industry will have trebled or quadrupled its output in this district, and therefore it is necessary to provide for a larger supply of timber. At present 500,000 cases is the output of the district. There is difficulty at present in securing timber for fruit-cases. Millers are to-day giving 6s. per 100 ft. of a royalty for *Pinus insignis* trees in the log. The yield per acre in our plantations is from 150,000 to 160,000 superficial feet per acre.

To Mr. Craigie: There are other areas besides Rabbit Island which are more or less suited for planting *Pinus insignis*. There are Crown lands that cannot be used for any purpose that ought to be planted.

To Mr. Hudson: The price of a case in Motueka is 1s. 1d., and in Nelson 9¾d. If there was a good supply of timber the price would be 6d. or 7d. I think it has not been proved that the *Pinus insignis* is suitable for butter-boxes.

To Mr. Forbes: Some of the local bodies have planted, though only on a small scale. I have started two tree-planting syndicates in Nelson.

Lieut.-Colonel A. A. GRACE, examined.

I represent the Colossus Gold-mining Development Company (Limited), whose registered office is in Hastings, and of which I am the supervising director. I was asked to show you some of the stone from one of the reefs. It is a silver-lead-zinc ore, carrying copper pyrites and some gold. [Sample produced.] The average value is about £7 10s. per ton of ore. The reef changed on the line of lode and gave us visible gold, of which I have a series of assays, which I will leave with you. We want to get to work, but when we applied to the Minister of Finance he said, "No, I will not allow machinery to be put on the ground." We propose to put on a plant of about £20,000. We have driven tunnels for about 1,500 ft. or 1,600 ft., and would like the Government to give us what assistance it can equitably give us as a reward and as a help to us. We have been very bold and very successful, and now we want to make it pay.

The Chairman: I understand your request was refused principally because of the war, but now the restrictions have been waived?

Witness: We would like a subsidy from the Government for the work we have done. The mine is at Wangapeka, on the northern slopes of Mount Owen. We have not applied for a subsidy. Regarding the subsidy, it is usual to give 25 per cent. of the money spent on the actual creation of tunnels. The nominal capital of the company is £36,000. We have about £50,000 worth of ore ready to mine. We are the first to mine the ore, and consider we are worthy of a little encouragement.

A. T. ALLPORT, Orchardist, examined.

I represent the Fruit Association, with Mr. R. B. Jackson and Mr. W. S. Snodgrass. I submit a proposal for supplying cheaper apples and pears to the consumer by means of improved methods of distribution, and at the same time putting the fruitgrowing industry on a sounder economic footing. In this matter the question of prices really affects only two classes, the producer and the consumer—the former, say, 5 per cent. and the latter 95 per cent. of the population. Sections of the producers, through various unrelated schemes tried out in various parts of the Dominion, have spent many thousands of pounds in trying to evolve better means of distribution, with the object of providing a cheaper supply of fruit to the consumer, and thus increasing the demand. It must be confessed that their efforts have been at least a comparative failure, principally owing to a lack of control of the entire output. Therefore we, as growers, suggest that the consumers should co-operate with us in evolving a scheme which will directly benefit themselves by reducing the cost of such a desirable article of food as fruit. But 95 per cent. of the population cannot be organized excepting through the Government. During the next two or three years a tremendous area of young orchards will be coming into bearing, and by the end of that period the production, locally anyhow, should be at least double the present output. This means a very serious situation for the fruitgrowers unless a very largely increased demand can be established. To effect this we can only suggest—(1) Improved means of distribution so that by greatly reduced prices the local demand may be stimulated; (2) an adequate supply of tonnage for export trade. To overcome the difficulties of the situation and to help to reduce the cost of living by a cheap fruit-supply we suggest that the Government should establish a special department to commandeer all apples and pears for a period of three or four years and to work out a national scheme of distribution. Prices to the growers at the orchards to be, say, an average of 1d. per pound for marketable fruit, and a proportionate price for fruit suitable only for factory use. This would, of course, automatically provide the Department with cold storage for about 250,000 cases, together with various packing-sheds and factories, all of which could be leased for the term of the commandeer. A comparison of the sug-

gested purchase prices and the ordinary retail prices show a sufficient margin to ensure that the suggested Department could be run without fear of financial loss. As the Department would be the sole consignor of fruit, and would therefore be handling it in enormous quantities both for local and overseas trades, very considerable reductions could be made in the costs of transport and distribution and also in the cost of cases. During the last few years shipping freights and cost of cases have both doubled. A co-ordinated scheme of railway, steamer, and other means of delivery should enable the Department to supply case lots to almost any part of New Zealand at, say, not exceeding 2d. per pound during the greater part of the season. We are sure that this proposal will appeal to the consuming public for various reasons. Firstly, it means the cheapening of the cost, to them, of one of the most popular forms of food, which under present conditions has to be looked on as a luxury. Further, it is a food recommended by every doctor and dentist for health reasons, especially for growing children. If such a scheme as we suggest could be carried out we believe that the consumption of apples would become as common as that of potatoes, with great benefit to the national health. The evolution of a really effective and economical scheme of distribution would put the fruitgrowing industry on a more stable basis than it is on at present, and the increased demand would encourage further planting of orchard areas. As fruitgrowing is looked upon all over the world as the closest form of land-settlement possible, in many cases utilizing land otherwise worthless, its extension will appeal to all those who believe that the primary producers are the backbone of the country. Under a Government Department, ruled by a business man, there would be no difficulty in making such a scheme bear good results. Let the Government commandeer the whole of the fruit and handle it in a businesslike way, with cheap railage and boat transit, and the community will be supplied with fruit at a cheap rate. It would assist the industry, and the consuming public would be benefited.

To the Chairman: Some of the growers might object, but the large majority would welcome such a scheme as I have outlined, because they would know what they were going to get for their year's work. I think that 95 per cent. of the growers would agree with the scheme. The price would need to be on a sliding scale. If you had a set price people might produce apples that were not of commercial value.

To Mr. Hudson: The scheme was placed before the Board of Trade, which was taken up with the idea.

To Mr. Veitch: The small growers would also come under the commandeer system—those who produced, say, 100 cases.

To Mr. Sidey: As to the supply of tonnage, we take it that the Government have some control of the matter. I believe that if we had a proper system of distribution the public would consume ten times more than we are now producing.

To Mr. Craigie: We also have a market in South America which would absorb practically unlimited quantities at a good price. The Panama Canal has diverted the boats from South America, and it will be for the Government to arrange for opening up that trade again.

To Mr. Forbes: We will never get the same results from a small local company as from a Government Department, for the reason that the Department will control all the supplies. We are up against the small grower, who is making it a side line and sells at less than it costs to produce. We can cater for the English market, as we have improved our method of grading and packing. Legislation gave us power to tax orchards, but I do not think it has been a success. The idea was that the federation should develop an overseas market, but the war hindered operations.

To Mr. Luke: If there is any loss in the commandeer scheme the Government should stand in, because the scheme will be for 95 per cent. of the population. I think we can depend on export. We have an absolute market in South America, except that we want the shipping. Surely the Government can get a direct service between this country and South America for a certain part of the year. I think it is the duty of the Government to see that not only fruit, but dairy produce, is sent to South America. We have a great market on the eastern coast of North America. There are two months in the year in which we could supply them.

To the Chairman: The present system of distribution is wasteful. We send fruit to the auctioneers, and take whatever price comes along from them. From Nelson to Wellington we pay 1s. per case, and to Auckland (by boat and train) 1s. 7d. We have protested to the Union Company and the Anchor Company. The Government have been reasonably fair in the way of moneys lent to the companies. We have never had a refusal where we could show that we had a hope of succeeding. I think the Government might increase to large companies the sum they now advance for the erection of cool stores—that is, in the event of the Government not going in for the scheme I suggest.

R. B. JACKSON, Orchardist, examined.

I endorse the scheme outlined by Mr. Allport. It is the only one that will benefit the consumer and at the same time make the apple-growing a success.

WALTER S. SNODGRASS, Orchardist, examined.

I think that Mr. Allport has placed the matter before the Committee. There is this I might add: I do not know what the retail price of apples is in Wellington, but the report in the papers is that cookers are from 4s. 6d. to 5s. per 40 lb. case. That is what we as the growers will get. When we went into the question we found that 4s. 9d. in Wellington would net the grower ½d. per pound, as we have to pay for cases, freights, and sundry charges. Then there is a phase of the industry that is worthy of attention—I refer to evaporated apples; and in a national scheme that is a branch that might be encouraged as far as cooking-apples are concerned. It

takes 8 lb. of green apples to make 1 lb. of evaporated apples, or 450 cases of apples to make 1 ton of evaporated apples. Last year our experience was that a ton of evaporated apples cost, for casing and freight to Wellington, 4s. 10d. Four hundred and fifty bushels of cooking-apples would cost us, for cases and freight, 2s. 1d. per case. That would show a saving of 2s. per bushel case; and one advantage would be that the evaporated material could be sold in any part of New Zealand at any time of the year at 1s. per pound—that is, under that system the public could buy the equal of fresh fruit at 1½d. per pound.

To the Chairman: Can you tell the Committee what the evaporated apples could be sold at in 25 lb. or 50 lb. lots by the ton?—We gave ½d. per pound for the fresh fruit, and sold at 7½d.; and 7½d. should enable them to be retailed at 1s.

What are they actually retailed at now?—At 1s. It would not be possible to tell the difference between fresh apples and evaporated apples, provided the evaporated apples are properly treated.

In the event of orders coming to Nelson from, say, Taranaki, how long would it take under present conditions to get the fruit from Nelson to Taranaki?—I could not say. There is no certainty of delivery. It would be a saving to the grower to get a through bill of lading to any place in New Zealand.

To Mr. Sidey: In my opinion the best trader we could get to handle the apples is the grocer, who has a proper system of canvassing for orders and a proper system of delivery. The grocer handles so many lines that he could handle another at less profit than any other tradesman.

A. McKee, President, Nelson Provincial Fruitgrowers' Council, examined.

The great development in the New Zealand apple industry started as recently as 1911, when the Tasman settlement was initiated, followed by similar settlements in the surrounding Moutere country, which previously had been regarded as land of little value. I believe that over 7,000 acres have been planted altogether, and the trees planted in the early period are now carrying fruit that will take first place, I am sure, in any market in the world. Other parts of the Dominion followed suit, particularly Auckland and Otago. It may be said, I think, that the planting in New Zealand was greater than in Tasmania or any part of Australia during the same period. Before 1911 the orchards had been planted for the most part to supply the local market, and comprised numerous varieties, the greater part of which, as we know, was useless for export. In the new era orchards have been established on modern lines, with only a few varieties, recognized as the best in the overseas markets. The expansion of production from now on will be rapid, and I believe that in a very few years the industry will attain an importance that will surprise many. As far as I know, fruit is the only primary industry that has been hit by the war. No export, heavy increase in cost of material and labour, and increase in local freights, coupled with low prices in a glutted market in the early mid-season, were some of the factors we had to contend against. It was confidently expected by our Provincial Council that shipping-space would be provided for in 1919. Representations were made to the Department of Agriculture by the Nelson Provincial Council, and I understand that Mr. Massey undertook to interview the Shipping Controller with a view of space being allotted. In reply to a question asked by Mr. Hudson in Parliament Mr. Massey promised that he and Sir Joseph Ward would interview the Shipping Controller with a view of securing space. A cable message from London published a few days ago stated that the Commonwealth Government had arranged for the shipment from Tasmania and Australia of over 600,000 cases. Unfortunately, we have had no word from the New Zealand representatives in London, and it does seem had luck that Australia should be allotted this space while New Zealand appears to be cut out entirely. There is no doubt we should have been "up against it" this season but for the fact that the Dominion crop is comparatively very short. It may be said that Nelson has an average crop, but Auckland, Canterbury, and Hawke's Bay, and I think perhaps to a lesser extent Otago, are reported to be very short. Buyers from some of the centres named have arranged for supplies from Nelson to make up their shortage, and it is anticipated that prices will average out better this year than last year. But past experience carries the lesson that a heavy season almost invariably follows a light one, and therefore a big crop may reasonably be expected next year. In that event it is of vital importance that provision be made for quitting the surplus outside the Dominion. The surplus next year may amount to about a quarter of a million cases. It is impossible to say exactly, of course, what the quantity will be, but I am sure that I am not overstating the estimate. The fruit market is very sensitive. Let the supply be ever so little more than the demand and prices go down with a wallop. Clearly, unless an export trade is properly organized for 1920 the industry will be placed in a very serious position. Fruitgrowers have uncomplainingly submitted to the inevitable during the past four years, and now they feel they are entitled to some special consideration from the Government. It would be a great help to the industry if the Government would renew the 1d. per pound net guarantee on the prospective 1920 shipments. The future of the industry appears to be very much in the hands of the shipping companies. Before the war Tasmania had a 2s. 6d. freight to the Old Country. The New Zealand rate, I think, was 2s. 10d. or 3s., plus 10 per cent. primage. The very high rate of freight ruling now would be disastrous in normal times. There is every indication of an enormously increased demand for our apples overseas because of the great increase in the purchasing-power of the working classes. We want the apple to be regarded not as a luxury, but as a necessary article of food; but this object in my opinion will not be attainable unless export charges are brought to such a level as will enable us to reach the mass of the people. The rate of freight is the king-pin of the export trade so far as we are concerned, and it is in connection with this aspect of the question that we solicit the powerful help of the Government. We ask the Government to make

an immediate effort to secure necessary shipping-space for 1920 at a reasonable rate. We are told that the direct shipping companies have cut out the South American ports in favour of the Panama route. This is a very serious setback, for the reason that South America was before the war our best and most stable market. While trade to the Old Country was on a consignment basis, that with South America was on a purely cash basis, the South American merchants paying cash f.o.b. Wellington, and they paid a satisfactory price. The export of apples from New Zealand was—in 1910, 5,647 cases; in 1911, 6,031 cases; in 1912, 14,869 cases; in 1913, 33,000 cases; and in 1914, 67,964 cases. You will notice that there was a considerable increase in our export, and that was at a time when we had nothing like the organization for packing our fruit as we have now. Of the total quantity of fruit exported, Nelson contributed probably about three-fourths. I believe that some of the early shipments were sent to London, but latterly the trade went to South America. At this time we had virtually captured the South American market from Tasmania, and there were bright prospects of a growing and remunerative market for many years to come. It is a heavy blow to lose a sure cash trade built up on the merit of our goods in competition with other countries, especially at a time like the present when everything is "in the air." So again we solicit the help of the Government to endeavour to induce the shipping companies not to entirely abandon the old route, but to give us at least a boat once a month in, say, March, April, and May. In view of the fact that the quantity of apples available for export will increase very rapidly from now on, it would be encouraging the fruitgrowers to have a positive assurance that provision is being made in connection with the building of new ships for the carriage of apples under the best conditions. It would be a good thing, perhaps, in connection with a publicity campaign, if a representative display of New Zealand apples were made in the windows of the High Commissioner's office in London and elsewhere. Incidentally, perhaps, a similar display of other New Zealand products and industries would be an inexpensive and an effective form of advertising. There are some thousands of acres of land here awaiting development especially suitable for fruitgrowing. Many returned soldiers wish to take up fruit-growing. Some have already done so; some have taken vocational training in respect to it, but so far the Government have not published any scheme of settlement. Personally, I think it would be impracticable for inexperienced men to take up unimproved land here and there individually. What is needed is a community settlement. Briefly, the men would be paid wages for work done, and charges would be debited to each allotment. The holdings might be balloted for in, say, two or three years' time, so that only tried-out men would be able to take up areas. Strawberry, tomato, and tobacco growing, and to some extent poultry-farming, could be carried on as side lines until the trees came to the bearing-age. This province is handicapped for want of better railway facilities. There is probably no other part of the Dominion where intensive farming is carried on in such an extensive scale. The first and pressing need is perhaps for an outlet through the South Island by connecting up Glenhope to the Reefton end. This would enable us to supply the South Island with cheap fruit, because the railway carriage would cost only one-third or one-fourth of the coastal freight. There should be a remission of Customs duty on plant used in fruit-preserving and on by-products plants, and also on wrapping-paper, provided the wrapping-paper is cut down to sizes required. Many of us think the Fruit Industries Preserving Act might be made more elastic in its operations. It might perhaps be termed the "Fruit Industries Assistance Act," so as to cover wider scope. Under that Act the Government advance up to a maximum of £9,000 for the establishment of cool stores and so forth; but it makes no provision for an advance for the establishment of, say, vinegar-factories. It is a matter of great importance to us to take inferior fruit off the market; and if such fruit could be converted into vinegar and perhaps cider, as well as being evaporated, it would have the effect of increasing the quality of all fruit marketed. £9,000 is not sufficient help to enable us to establish fruit-preserving works. We are sending out of the country a considerable sum of money for canned goods, and I have no hesitation in saying that the greater part of these goods could be produced in the Dominion. While £9,000 is perhaps sufficient to enable a body of fruitgrowers to put up a cool store, it is quite inadequate to help them to establish a modern preserving-works. The total amount of capital required for modern works such as we find in Tasmania and Australia would probably run into £30,000 or £40,000.

To Mr. Hudson: Regarding wrapping-papers for apples, it is not so much a matter of quality as a question of cost; we are going to be handicapped unless we can buy in the cheapest market. I have known the packers to prefer the local paper.

To Mr. Sidey: I think the local paper comes from the Dunedin mills. The freights are high on the Coast.

To Mr. Craigie: In regard to canning fruit. I have not the slightest doubt that we have enough experience in New Zealand to compete with the imported article. A considerable sum of money is sent out of this country every year for canned fruit. It would be advisable to engage an expert from America so that no mistakes would be made. I think Nelson would be the most suitable place in New Zealand at which to establish such a plant.

To Mr. Forbes: I visited the Frimley plant once; there seemed to be an enormous amount of plant, and they seemed to be using about one-third of it. I understand that the works have closed down. As to the reason for that, one does not like to say very much about it. We have a good factory here, and it is a prosperous business. Quite a lot of apples could be canned, but they are not canning at present. There is a scarcity of tin. We hope in our organization to have control of these things ourselves. There is at Motueka a by-products factory which I believe is going to do. The Motueka cool store has been extremely successful. I do not know what we would have done if that store had not been established three years ago; we would have had a heavy knock indeed. In the early and mid season there was a glut in the market, and we were

getting nothing for our fruit, and we put the fruit in the cool store. If it had not been for the cool store the position might have been very serious. That cool store is one of the most successful things in connection with the industry.

To Mr. Hornsby: I think the most vital thing connected with the industry is to make absolutely sure of getting shipping-space for 1920.

The Chairman: The Committee will make inquiries in regard to the question of securing shipping-space.

To the Chairman: There is no doubt that lemons will do well here, particularly in the Takaka district. A number of the fruitgrowers have put in a few lemon-trees: when they get into bearing they may be sufficient to supply the local market. As to the tobacco industry, I think that is a line in regard to which there is going to be a big future.

T. A. H. FIELD, M.P., examined.

I will speak about the fishing industry first. We have in the Nelson waters, in Blind Bay, one of the best fishing-grounds in New Zealand. Fish is a wholesome food, but it is exceedingly scarce in Nelson. I think the only way to deal with the fishery difficulty is for the Government to organize a proper Fisheries Department, just as they have organized the Department of Agriculture and the Dairying Division of that Department. At present our fisheries are mixed up with lighthouses and others branches of the Marine Department. I think if we had a Director of Fisheries and a small staff we might get something done, but under the present arrangements nothing is done. I think the Government should assist in connection with the insurance of fishing-boats, the provision of cool stores and ice-making plant; lend money for the purchase of boats, and help in the supply of fishing-gear. The Government might also open up fishing-grounds, and devise better systems of marketing. In Canada the Government gives assistance in regard to railway freight, and provision is made for cold-storage cars. We should have plenty of fish in Nelson, but we have very little.

To Mr. Sidey: As to cold storage, the Government could help to finance it, and provide places in the different towns, or assist in connection with such matters. I believe it would be a good thing if the Government could nationalize the thing, but I am afraid that would be asking rather too much at the present time. I think it would be a good thing if the State could undertake trawling.

The next matter I wish to bring under the notice of the Committee is the Cawthron Institute. I maintain that this is a national matter, and a very important national matter. I would like briefly to explain the position. The late Mr. Cawthron left about £240,000—subject to some annuities and to some legacies—for the benefit of the people of Nelson, to be devoted to a technical institute. The trustees appointed were members of local bodies in office at the time. That is how I came to be connected with it. The trustees were the Mayor, the Chairman of the County Council, the member for the district, and the Chairman of the Harbour Board. They are permanent trustees. The trustees looked upon it as a very important matter, and they appointed an Advisory Board of Scientists in New Zealand to assist them in the way of giving advice. The names of the members of the Advisory Board are—Professor Benham (Otago University), Dr. L. Cockayne, Professor Easterfield (Victoria University College, Wellington), Dr. P. Marshall (Otago University), Sir James Wilson (President of the Board of Agriculture), and Professor Worley (Auckland University College). As you know, there was no opportunity of doing anything during the war. In the first place the trustees ascertained from the Advisory Board that it was impossible to get instruments for the laboratories during the war. In the meantime the trustees have been nursing the estate, and they have increased the income by judicious investments. The income at the present time is between £10,000 and £12,000 a year. When the Institute is under way the whole of that income will be expended in research work for the benefit of the Dominion. They have established scholarships which are very valuable national matters. It is proposed to appoint at first a Director, a Chemist, and then a Plant Pathologist and an Orchardist and then increase in the direction that occasion demands. This will not only be economical but it will allow of elasticity in the development of the Institute. The Cawthron Minor Scholarship will be for three years at least £105 per annum. There will also be a Cawthron Scholarship for two years of £150 per annum. Then it is proposed to give a Cawthron Fellowship of £250 per annum if a candidate of sufficient merit is forthcoming. In seven years' time, when this scheme is in full operation, this will mean a yearly expenditure of—Three minor scholarships, £315; two Cawthron Scholarships, £300; two fellowships, £500: a total of £1,115 per annum, which will mean the interest on a sum of £22,000 devoted to the scientific training and education of students in New Zealand. This is open to all New Zealand. This should attract a constant stream of University graduates, and should be an important factor in retaining in New Zealand a large proportion of the most able of the New Zealand science graduates who at the present time leave the country and do not return. When the work of the Institute is well under way great help can be given to technical rural education in the Nelson District by means of lectures, demonstrations, and scientific advice. Courses of lectures could be arranged not only in Nelson, but also in other centres. Practical demonstrations would naturally be made on the experimental grounds owned or controlled by the Cawthron Institute in different parts of the district. As fresh industries take root in the district it will be a natural function of the Institute to help in the establishment and to foster the growth of these industries by carrying out investigations that will assist in their vigorous development. A sum of £12,000 to £15,000 should cover the cost of buildings and equipment. It is proposed to have a large and carefully selected library, which is one of the first needs of a research institute; otherwise a worker may spend weeks, months, or even years in arriving at

the solution of a problem which has already been solved by some other worker, or which, with proper library facilities, could be solved in a few days. It is also proposed to maintain the most friendly relationship with the Departments of Agriculture, Education, and Mines, so that the work of the Institute and the Government Departments should be complementary of each other, having for their ultimate objects the welfare and advancement of the Dominion and of the Empire. The late Mr. Cawthron was very much interested in the establishment of a solar observatory in Nelson, whose climate is particularly suited for this purpose. Dr. Hale, of Pasadena, has promised to prepare a plan of suitable instruments, similar to that which he is preparing for Italy, and which would be inexpensive and yet enable observations to be made which could be worked out in America and be of the greatest value to science. The trustees are disposed to favourably consider the matter, as the land was purchased for the observatory before the late Mr. Cawthron's death. The Cawthron Institute will, it is anticipated, in time carry out similar work to that undertaken by the Mellon Institute of Industrial Research in the United States. About 1908 Dr. Duncan, of the United States, while attending the sixth International Congress of Applied Chemistry at Rome, conceived the idea of a research laboratory which would be open to all classes of industrial problems, and by which the industries concerned would obtain the best of chemical talent and equipment at a minimum of cost. The plan he evolved was to permit industrial concerns to establish fellowships in the research institute. The donor of the fellowship would give a sum of money sufficient to pay the salary of a Research Fellow or a group of research men for a term of years, who would devote all their time to the problem presented by the donor of the fellowship. All the discoveries made would become the property of the donor, and would be kept secret for a term of three years. Then the matter would be made public, thereby enriching science and enabling others to make use of the knowledge gained. The plan was first put into operation at the University of Kansas, and met with immediate success. Then Dr. Duncan was called to the University of Pittsburg to establish a similar research system This system is now in operation at the Mellon Institute of Industrial Research, under the Directorship of Dr. Bacon, who succeeded Dr. Duncan upon his death in 1915. It is a benevolent institution; the donors only pay the salaries of the Research Fellows. All other expenses are borne by the Institute. In 1916 there were thirty-six industrial fellowships, and the expenses of the Institute were 72,000 dollars. Each donor received, therefore, an average of 2,000 dollars in the form of housing, equipment, or expert direction of his Research Fellow. There were in 1917 forty-two industrial fellowships, and the work they are doing ranges from the coking of coal to the baking of bread, and from the washing of clothes to the filling of teeth. To show how its work is appreciated, the Canadian Government endowed a fellowship to solve the problem of separating asphalt from very fine sand, so as to make available for commercial use certain large deposits in the Dominion. The problem has been solved in the laboratory, and it is now undergoing a test on a commercial scale. Outside of the Institute are a number of small buildings or shacks, which represent the commercial tests of the laboratory experiments. One Research Fellow is creditably reported to have saved a large United States bakery as much as £200,000 a year. Recently a professorship of pure chemistry was established there. In July, 1914, a large manufacturing firm of dental supplies wanted a dental cement. They paid for a Research Fellow. It took six months to find out what others had done and get the preliminary work done. The year went through without anything being accomplished. Finally, in February, 1916, it was accomplished. But they said, "We must now test it in actual use," which meant waiting another year before the Research Fellow knew if his work was finally successful. The company wanted it well tested before they would send it out and stake their reputation on it. The trustees of the Cawthron Institute have asked the Government to give them a subsidy or annuity payment of £2,000 a year, which would be equal to 5 per cent. on their £40,000. That application is before Cabinet at the present time, and I believe will be considered after the end of the financial year. I hope when it comes before the House that members will support it, because we think the trust is entitled to the amount, seeing that the whole of the money will be spent for the advancement of our primary industries and for the secondary industries of the Dominion. When the Cawthron Institute is in working-order it will be of the greatest national importance.

To Mr. Hornsby: As far as I understand, there is no conflict between the Cawthron Institute and the proposal made in respect to the general Research Institute. As far as I understand it, the Board of Science and Industries which it is proposed to establish would subsidize work done by such bodies as the Cawthron Institute, or research work done in Government laboratories, or done in University colleges, or by private people. They would subsidize research work where they thought it desirable. I have no doubt the Cawthron Institute would work in with the general scheme. I do not think there would be any overlapping. If the Board of Science and Industries is established I do not think it will interfere with the Cawthron Institute.

To Mr. Sidey: I do not know that the trustees of the Cawthron Institute have considered the question of co-ordinating the work of the Institute with the work of the proposed Board of Science and Industries. The minor scholarships are open to every part of New Zealand, but if there were a tie between two scholars in marks preference would be given to a Nelson scholar. The holders of these scholarships can attend any university in New Zealand. The wording of the will was a little vague, and when the trustees appointed the Advisory Board they got the opinion of the Board with regard to these points; and the Board's opinion was that they thought the trustees would be carrying out the wishes of Mr. Cawthron and would be acting in the best interests of the people generally by adopting the scheme which has been formulated.

To Mr. Hudson: In connection with the administration of the funds, Nelson would get the preference if any preference existed regarding local industries. Local industries would be first considered, and the fruit industry, I think, would come first. The Board has not commenced operations yet; they have not got a Director. The trustees are at the present moment considering the appointment of a Director.

Captain R. WORLEY, Civil Engineer, examined.

I desire to draw the attention of the Committee to the importance of light railways. I notice that a witness brought this question to the notice of the Committee in Dunedin; but as one who has had experience in connection with light railways at the theatres of war I would like to say a few words on the subject. I think I ought first to state what my experience has been. For twelve months I was an officer in charge of a light railway company, and supervised the light-railway construction-work done by such company in France—in the Ypres sector. After that I was appointed Light-railway Officer attached to twenty-two headquarters in charge of light-railway work done by the Army Corps. After seeing what I have seen I am thoroughly convinced that light railways are going to play a very important part in opening up the country in New Zealand. The chief recommendations of light railways are cheapness and lightning-like construction, and the capability of negotiating extremely sharp curves, thus being able to follow the contour of the land. As used in France the rolling-stock would carry weight for weight with the French broad gauge—that is, the light-gauge railway-truck would empty weight for weight with the French broad gauge, worked out at about two-thirds the carrying-capacity. [Witness gave details of work done by light railways in France.] An important fact is that a light railway could be put along the sides of most of our country roads in the Dominion, requiring no additional fencing. The maximum speed in carrying provisions, &c., is about ten miles an hour, and where it did go through private property it would not require to be fenced except under certain circumstances. It cannot negotiate any steeper grade than our present railways, but seeing that it is only for goods traffic it can cross the face of obstacles at no inconvenience, speed not being an important factor. Obstacles which would at present have to be tunnelled can be got over by zig-zagging. That was done in France. There are numbers of places in New Zealand where light railways could not fail to be a great boon, especially where there is no road-metal. I could mention many places where light railways could be constructed with advantage, but I might state in regard to this district that a light railway from Stanley Brook down the Motueka Valley to Tasman and Appleby, with feeders to Motueka, Riwaka, and other valleys, would link the whole district up with the present system. From Stoke there could be a branch line round the Rocks Road. By such means the orchardists would get their fruit away rapidly, and infinitely cheaper than under the present system, under which each orchardist has his fruit taken away individually. The light-railway system will mean a great saving of labour, and it will save the roads—it takes all the heavy traffic off the roads. The system could also be adopted in districts like that north of Waitara, and in many other districts in the Dominion. I will not give estimates at present of the cost of the light railways, but I will say that it will come to something under one-fifth of the cost of the present-gauge railway. The engines could be built in New Zealand—for instance, by Messrs. Price Bros., Thames. There would have to be special rolling-stock, too. Before leaving France I wrote to the High Commissioner, and saw him personally in reference to New Zealand buying a large quantity of the plant and rolling-stock for redistribution to local bodies, &c., in New Zealand. General Richardson was also interested in the matter. Sir Thomas Mackenzie promised that he would put the matter before Mr. Massey and Sir Joseph Ward immediately on their arrival. I heard from a private source that another colonial Government had made an offer to buy up the whole of the light-railway department plant in France. Many hundreds of miles of it is quite good, and can be bought at about two-thirds of the price it can be got from the makers.

The Chairman: We are very much obliged to you for bringing this matter before the Committee.

To Mr. Craigie: I think it would be an excellent idea to electrify the lines.

D. H. RUNDLE, Manager, Nelson Co-operative Fruit Company, examined.

I may state that I have only been in New Zealand six weeks; previous to that I was for four years in Tasmania. The Nelson Co-operative Fruit Company has 240 growers, representing over 4,000 acres of new orchards, which the Committee has seen, between Nelson and Motueka, and these growers have invested to date £12,000 in packing-sheds, cool stores, and evaporators. One of the things we have to face is that in the next year and in the following years the present packing-shed equipment will not be nearly big enough for the amount of fruit that is going to come off our company's acreage. Neither is there going to be sufficient cool-store space. The Government has advanced to the company the limit of the amount that can at present be granted—namely, £9,000.

To Mr. Hudson: I am just going to put the question of obtaining a larger advance before the company; that is a question that will have to come before the Government later on. We hope to do it not through a small organization of 240 growers, but through an organization of some thousands of growers. If machinery for other agricultural purposes is imported free I think the fruit industry is entitled to the same consideration.

Mr. Craigie: You have had experience in Oregon, California, and in Tasmania: will you give us your opinion as to the quality of the fruit grown here compared with the fruit grown in the countries I have mentioned?—The fruit I have seen grown on this new land is equal to anything I have seen anywhere for quality, and I believe for keeping-quality; but I am not sure on the latter point yet. Fruit could be distributed to the consumer cheaper by one organization having control; there would be a big saving of expense. I do not favour Government control; I favour the growers putting the industry on a commercial basis, and paying capable men to run it.

To Mr. Sidey: The Dunedin brown wrapping-paper is satisfactory. I went through some lemon-orchards in the Auckland District. The stock the trees are grown on is very inferior compared with the stock the trees in California are grown on. I saw trees offered for sale in the Auckland District that a nurseryman in California would be fined for selling. The lemon-tree is very liable to fungus diseases. In California 90 per cent. of the seed used is the Wild Florida orange.

TUESDAY, 11TH MARCH, 1919.

F. O. HAMILTON, Director of E. Buxton and Co. (Limited), examined.

I wish to introduce my firm as the pioneer exporters of apples from New Zealand. My information has been gathered during my many visits to Tasmania and Australia, and as a result of those visits there has come the extra planting of orchards in this district, with a view to working up an export trade. In 1910 my firm made a canvas of the district, and induced growers to make a trial shipment to London. This shipment, which arrived in Wellington in May, unfortunately received bad treatment on the way Home. Although the result was not what we had expected, it was shown that under proper conditions the fruit would have been a payable proposition if it had been landed in good order. Following this, plantations were put in wholesale. Next year a second shipment was sent. Again it received bad treatment. A small quantity dropped at Monte Video was eagerly sought for, and in 1912 the Nelson District sent 10,000 cases there, and in 1913 between 30,000 and 40,000 cases, while in 1914 between 60,000 and 70,000 cases were booked, but the shipment was stopped, as the boats had been diverted. South America was a very profitable market. Previous to New Zealand entering that market Hobart had catered for the whole of it, but we knocked Hobart right out. At any rate, as to the Home shipments: In 1912 the shipment arrived at a time when there was a glut, and the fruit was not as desirable as it should have been. I wish to say to the Committee that the Nelson District is the only district in the Dominion that is worth considering commercially, and the only district that is worthy of the consideration of the Committee. Last year was a partial failure in other districts, which are now dependent on Nelson for supplies. We have never known a failure here. Auckland, Hawke's Bay, and Otago have failures, and one failure in three years will set fruitgrowers against apple-growing. In 1900 the Australian export of apples, including Tasmania, was 11,000 cases, in 1909 it was 204,000, and before the war it was about a million cases. It was estimated in 1909 in England that nine million and a half cases were being imported annually into England from North America and Europe. This shows that there is still a big field to be covered. The Nelson District is favoured, like Tasmania, because it produces an apple that carries colour and flavour right through. Other districts fail in these properties. Some will have flavour and little colour, and others will have colour and no flavour. Nelson produces an apple equal to that of Hobart, if not a little better. This year 614,000 cases are going from the Commonwealth, of which number five-sixths are going from Tasmania. Now, how can we be put in the best position to meet the competition of our neighbours? Hobart has its natural advantages, and to compete against Hobart we must have harbour facilities here, so that mail-steamers that get prompt despatch from New Zealand can load weekly and get away to the English markets within a given time. The Nelson acreage, on the 1916–17 agricultural returns, amounts to 8,000 acres. Working on a 7,000-acre basis, with 130 trees to the acre, will give us 910,000 trees. We assume that those trees are in bearing, and on a conservative estimate we get 1,400,000 bushels. We have only fourteen weeks to catch the market abroad, and therefore must handle 100,000 cases a week. If we have to send the fruit to Wellington to be shipped you would want fourteen steamers of the size of the "Nikau" to carry it to Nelson and do nothing else, or four steamers of the size of the "Pateena."

The Chairman: Do you suggest that the harbour facilities should be improved by the Government?—Unless the big boats load here it will be death to the industry in Nelson. At present we have not the harbour facilities for loading fruit.

You point out the danger to the trade on account of not having harbour facilities?—Yes. If that quantity of fruit has to be carried to Wellington the cost will be very high, and in addition there would be the loss in the handling. The boats will not call here unless there are the harbour facilities for loading them within a limited time. At present we have no facilities for handling a big quantity in a given time. Either Government money has to be put into the extension of the railway, or roads put into order to facilitate motor traffic. We have the port here, where the fruit may be shipped under proper facilities, and therefore we can compete with Hobart, but if this is not done the fruit will not be shipped and the Dominion will suffer materially.

To Mr. Hornsby: We cannot take a boat in here that is partly loaded, and that would be our difficulty if boats were sent here after being partly loaded in other ports. Some of our fruit lands were previously used for the grazing of a sheep to 4 acres. The Riwaka land was used for dairying and hop-growing, and even with those profitable productions fruit with a favourable crop would beat it by a high percentage.

To Mr. Hudson: We could not send away weekly shipments at present, but we could manage monthly shipments. There is no fear of not getting the proper varieties for monthly shipments. Bad packing told against us in the first shipments to London, but we have got over that difficulty now. Tasmanian experts were imported to demonstrate to growers the proper methods of packing, and the complaints now are practically nil. The quantities that will be produced next year will surprise you, and we must tackle at once the question of exporting to the Northern Hemisphere. Unless we get encouragement and proper facilities it will be death to the industry. The prospects of the boats going by South America are very remote, from what I can gather from the general manager. The extra cost of coaling at Monte Video is so great as compared with coaling at Panama that the route via the Horn is not likely to be taken up again.

To Mr. Veitch: The Nelson Harbour Board wishes to develop the harbour. I have no idea of the cost of doing the necessary works, but it would not cost a large sum, as the dredging is easy. I understand the Board intends to approach Parliament for money.

To Mr. Craigie: We would require a depth of 29 ft. in the harbour to take in the big ships.

To Mr. Forbes: Unless the shipping facilities are perfect for carrying fruit under proper conditions it would be foolish to ship to London. I am doubtful whether those facilities will be given, as there are other lines that can be shipped that do not require the attention that fruit does.

To Mr. Hornsby: I do not see how the commandeer proposal will work. It would mean that you would have to commandeer the fruit in other districts besides the Nelson District. Once the export trade starts the growers would not favour the commandeer system.

A. GILBERT, Orchardist, examined.

The Committee will have noticed during their present visit to the "garden of New Zealand" that fruitgrowing here is a very important industry. An industry to be a complete success must have dependable and regular supplies, but in most parts of New Zealand, Australia, and America the crops vary very considerably, whereas in this district an experienced grower can ascertain fairly accurately while he is picking this season's crop what his crop is likely to be the following season. An instance of the consistency of the crop here is shown this season. You will have noticed that the Nelson crops are exceedingly heavy, and the trees well propped and roped to enable them to carry their loads. But Canterbury, Otago, Auckland, and Hawke's Bay are very considerably below the average, and in many cases almost a complete failure. A Dunedin merchant, writing for supplies, stated that the partial failure of the southern crop means that the Nelson Province will have to supply the bulk of the southern requirements for this year. Auckland is also requiring heavy shipments from here, and this brings us to the problem of transport. We are right off the beaten track. The advent of the North Main Trunk line deprived Nelson of a considerable portion of shipping to northern ports, and also its direct Lyttelton and southern service. The West Coast service a few years ago gave us two good red-funnelled steamers weekly, besides a good mosquito service. But now we get only a small, slow steamer, sometimes once a week. The result of this lack of efficient transport service is that fruit is so long in transit, and receives so much rough handling, that we can seldom depend on its arriving at its destination in anything like a satisfactory condition, fruit apparently receiving no more consideration at the hands of transporters than do potatoes. The Government can give great assistance in this direction by making provision for through freight, the Railway Department being in a position to make better terms with the shipping companies than can be made by the grower, individually or collectively. In addition to through freight the fruit needs to be carried in specially constructed wagons (the X wagon meets the requirements fairly well), attached to passenger-trains instead of to the slow goods as at present. Fruit is a highly perishable product, and must be transported with despatch and careful handling. The Government by making these essentials available will be affording very material assistance to the industry. At present fruit put on the rails along this line on Tuesday morning cannot be sold in Auckland or Dunedin till the following Monday, and the cost of transport is nearly 2s. to Auckland, and slightly over 2s. to Dunedin, per case; and too often we receive a telegram announcing the fact that the fruit arrived in bad condition. Besides improving our existing means of transportation, we wish to emphasize the vital necessity to this district of a vigorous railway-extension policy. We are isolated, and isolation does not mean progression; and if the industries of this district are to be progressive and successful the present railway, which goes to nowhere, must be linked up with the Main South system, and a light railway constructed along the waterfront to link up with Riwaka, Motueka, and the other large orchard areas. Fruit could then be placed on the rails at Riwaka and along the line, and be delivered at the west and east coast towns the following day in good condition and at a moderate cost to the consumer. The forests of the West Coast would also be made available for case-timber supplies. The Defence authorities claim that a through railway is a strategic necessity in order to assure a sure supply of coal. Had this province received the treatment promised when it merged its affairs into the Dominion scheme, or had the province continued its own administration for a few more years, these railways would have been completed long ago. For over four years both men and money have been devoted to other and more serious business, but we now look to a forward move by the Public Works Department, and we know of no more important works than these. By providing the transport facilities indicated the Government will reduce our transport difficulties to a minimum. The Government can also assist us very materially in the production of good fruit. Fruitgrowing is often spoken of as being a science, and any science to be satisfactory and really useful must be progressive. The methods of fruit-culture a decade back are useless to-day, and we are solely in need of an experimental station. The Government have established one each at Tauranga, Te Kauwhata, and Arataki in the North Island, but we have none in the South Island. The local associations have been carrying out experiments in the growers' orchards with fairly satisfactory results. But it is not fair to ask any grower or growers to do what should be departmental work. In order to get complete and definite data it is necessary that these experiments should be carried out over a period of years, and the results carefully tabulated. And this can only be done by a properly conducted departmental station. Returned soldiers and others would then be able to gain reliable information, and also receive training and instruction. We are not asking for an elaborate and expensive scheme. A moderate-sized orchard property, with a suitable residence for the district instructor, and perhaps whare accommodation for a few students,

would meet the requirements. Growers could then go to the station and receive information of a reliable nature on any phase of fruitgrowing. The Government hitherto have erred in dissipating their energies and funds over too many non-commercial fruitgrowing districts. Until quite recently this province had only one instructor, whereas Blenheim, Wanganui, Hamilton, and Palmerston North each had an instructor; and they are not fruitgrowing districts in the sense that Nelson is. The Department also sends a man to the West Coast to teach the people how to grow apples, instead of endeavouring to find the grass best suited for their wet climate. The Department's efforts and funds should be concentrated on the proved commercial districts first. The area of orchard land here is 10,000 acres, or more than double that of any other province, and the annual increase is about 1,000 acres. Last year, the most disastrous for the industry, the increase was 400 acres. An experimental station and an assistant instructor are highly necessary, and would be of very valuable assistance to the industry here. This Committee might also assist us by stirring up the Department of Agriculture to procure the services of two professors, as authorized by the Cawthron Trustees. Timber for cases is becoming a serious problem. The cost of the case in proportion to value of the contents is very high compared with butter and cheese, and the cost is likely to become greater, as the millers assure us that the sources of supplies are almost exhausted. The output of fruit from this province is 500,000 cases annually, and as only slightly over half of the 10,000 acres are in profit, you can imagine the tremendous output a few years hence. It requires a little over 4 ft. of timber for each case, and the timber required for our complete crop is now approximately 2,000,000 ft., or equivalent to the timber required for 125 five-roomed wooden dwellings. In a few years the timber required annually will be equivalent to the timber of a fair-sized town. The Government can best assist in this matter by a prompt move in establishing State forests adjacent, where possible, to the orchard lands. The position before long will become really serious, and there is no time to be lost. Another direction in which the Government can assist the industry is by making an ample supply of sulphur available at a cheap rate. This is one of our most important spray materials, and at present it is procured from Japan and Italy, the cost being £25 per ton, and supplies difficult to obtain. We would like the Government to go into this matter promptly, and see if our sulphur-fields can be exploited to advantage by putting in refineries to produce flowers of sulphur. In the apple industry a short crop this year usually means a heavy crop the following year, which means that next year we shall probably have a very large surplus of fruit, and it is necessary that arrangements should now be in hand to secure suitable shipping to South America, or to England and North America. Tasmania has already moved in the matter, and is now loading apples for London, but New Zealand has adopted the "Wait and see" policy. Prompt and vigorous measures will need to be taken in order to avoid a possible glut and ruinous prices. The Argentine and Brazil can take all our surplus if we can find the shipping. My own agent at Buenos Aires requires 2,000 cases per fortnight during March, April, May, and early in June; and he is only one of the many buyers. Mr. Guthrie has said that the Canal will take all the shipping, and that none will go by the Horn route; but shipping-space must be made available. It is very desirable that the steamers should call here as near their final loadings as possible, and take the fruit direct from Nelson, thereby saving heavy transhipment charges and unnecessary handling. The importation of apples will also need very careful consideration. If the American apples are allowed to arrive here before the middle of November they clash seriously with our cool-storage stock, the total storage-space of the Dominion being now over 200,000 cases; and if the imported apples are allowed to arrive after the 21st December they clash with our early apples. It takes several weeks for the Dominion trade to assimilate heavy shipments during the stone-fruit season. Finally, England, America, France, and Italy are now moving energetically to secure and use the best brains of their respective countries to increase production in every department to its very utmost. The French mission was in that direction, and nearly twelve months ago a representative of the United States Bureau of Industries was here making exhaustive inquiries concerning our industries, particularly apples, meat, wool, butter, and cheese. New Zealand must also move along on progressive lines; there is no time to be lost; and we sincerely trust that the results accruing from the work of this Committee will be eminently successful and satisfactory in every respect. There seems to be a fear that apples may be overproduced, but a good food product cannot be overproduced. The importation of apples will need careful consideration. We want the apples kept out between the 21st November and the middle of December, and that will give our fruit a chance.

To Mr. Hudson: If nothing is done to make Nelson Harbour available we shall have to continue transhipments at Wellington, and it is a very serious handicap. It costs us 1s. from the time we put the stuff on board here until it is put on board the boat in Wellington. If we export 100,000 cases a week we must load it here. The matter is one of vital necessity to the industry. We have put considerable time into experimental work at Stoke and elsewhere, and much of the work ought to be done at a public experimental station. The results of experiments at an experimental station are available to all growers, but when experiments are carried on privately by growers they are available only by courtesy to other growers. The butter and other industries were encouraged by the Government, but so far practically nothing has been done for the fruit industry in the Nelson District.

To Mr. Sidey: I speak for a number of fruitgrowers. If the Government can work the commandeer scheme it would suit the growers admirably. Distribution is the crux of the trouble, because we can grow the fruit. I support the commandeer scheme.

To Mr. Forbes: We have made application to the Government for a fruit-testing station but have not got a sympathetic reply, except that we were promised something when the war was over. There are three fruit-testing stations in the North Island.

To Mr. Hornsby: During the Committee's tour on Saturday the members looked at a 12-acre paddock that twelve years ago was yielding £60 or £80 per annum, and its market price was £30. When you viewed it recently it was yielding fruit on a basis of 5s. per bushel, or £1,250, and the owner would not look at £500 per acre. Another fruit section is a leasehold for twenty-one years with right of perpetual renewal subject to revaluation. That owner would not look at £500 per acre for the goodwill of the lease. These are exceptional cases, but they show what can be done by planting the right varieties. Any city man could do it, and in twelve years he would get the same results.

To Mr. Forbes: Next season we should have anything from 200,000 to 250,000 cases available for export. The largest export up to the present was approximately 65,000 cases to South America. I have got into communication with my agent there, but have not had a reply yet, as the letters come via London.

To Mr. Hornsby: The eastern States of North America have not been tried on commercial lines. Trade with that quarter is problematical. The Government can assist us in that matter, and I ask the Committee to make a recommendation to the Government with a view to getting that market tested.

T. HOULKER examined.

I desire to bring under the notice of the Committee the question of the utilization of the by-products of fruit. I have been connected with vinegar-manufacturing practically ever since I left school, and the question of using the waste products of fruit for commercial articles has always been an interesting one to me. I have realized for a great many years that immense quantities of apples are practically allowed to rot on the ground unless they are utilized in some form in a commercial way. According to the Public Health Sale of Food and Drugs Act, 1908, vinegar is defined as "The liquid produced by the fermentation and acetification of any certain specified materials." The Act further states that "The word 'vinegar' and expressions which include the word 'vinegar,' shall not be written on any label or attached to a package which contains an acetic mixture sold for the purpose of being used, or which may be used, as vinegar unless it be conjoined with the word 'imitation.'" I wish to draw the Commission's attention to the fact that, although Parliament has seen fit to draw up these regulations, the Department entrusted with the administration thereof—for what reason we cannot say—have not made any attempt to inforce them, in that they have allowed imitation vinegar to be sold labelled as the genuine article, guaranteed to comply with the Act. This procedure defeats the objects of the Act in protecting the public, and also prohibits the manufacture of the genuine article, which cannot compete with imitation vinegar sold as genuine, imitation vinegar requiring practically no plant for its manufacture, and the materials required for the manufacture of the genuine article cost about the same as the finished imitation article. The annual consumption of vinegar in the Dominion amounts to over 1,000,000 gallons, equal to about one-seventh the consumption of beer; and in the event of prohibition being carried a large proportion of the brewing plant, material, and labour could be devoted to the manufacture of vinegar. Under present conditions at least 90 per cent. of the labour and materials for production of vinegar is not only lost to the Dominion, but the money for the same is sent out of the country, as the materials for imitation vinegar are all imported. The fruitgrowing industry is seriously handicapped under present conditions, as the manufacture of vinegar from reject apples and fruit cannot be entered into extensively unless the Act is enforced. It is estimated that at least 500,000 bushels of reject fruit could be used for this purpose if the unfair competition of imitation vinegar was eliminated. On behalf of the general public and for the above-mentioned reasons we solicit your assistance for the strict administration of the existing regulations with regard to vinegar, which would result in the establishment of a valuable industry to the Dominion and secure to the general public a wholesome article of food in place of the present chemical product. The Dominion is losing from £5,000 to £6,000 duty on vinegar alone by allowing imitation vinegar to be manufactured and sold.

To the Chairman: I wish the Act to be enforced. The fruitgrowing industry is seriously handicapped under present conditions. I brought this question of imitation vinegar under the notice of the Government in 1914, and from time to time since then, but we have not got much further forward. It is time something was done.

To Mr. Hudson: I sent certain samples of imitation vinegar to the Government Analyst, and he said that the samples complied with the Act. I mixed acetic acid with some of the samples, and the reply was that the samples complied with the Act.

To Mr. Forbes: I am making vinegar from apples taken from the factory at Motueka. I have taken a three-years lease with the view of utilizing fruit that is not suitable for evaporating and turning it into vinegar. I expect to have the product on the market in another three months. The quality is first class. In the United States practically nothing else is used as high-grade table vinegar. Acetic acid is purely a preservative. I think it should be prohibited to be used as vinegar.

To Mr. Hornsby: Acetic acid is allowed to be used in the manufacture of pickles.

To Mr. Craigie: The only imported article that I know to be the genuine article is Cross and Blackwell's. I may be wrong, but that is my opinion. I think the Act is sufficient if it is properly administered.

To the Chairman: Before the war the wholesale price of imitation vinegar was 7d. a gallon; I never sold any of the genuine article wholesale at under 1s. 3d. I can produce the first-class article, guaranteed genuine, and sell it at 1s. 3d. The package is extra.

J. A. WALLACE examined.

Asbestos-production is now an industry in New Zealand. It is used extensively; there is a great demand for it. Prospecting has been carried out for a considerable time. Large deposits

have been discovered in the Mount Arthur district. We have received reports from firms manufacturing asbestos goods in New Zealand, and they have assured us that the quality of the goods is good. I understand that Mr. John Hutcheson, of Wellington, has given evidence to the Committee on this point. We have had a man prospecting for some nine months of the year for some five or six years past. We are satisfied with the result. Last year about 45 tons were packed down on horseback at a cost of £9, £10, or £11 a ton, according to the weather. A good deal of it was tested and manufactured at Christchurch, with the result that the demand has increased. We cannot go on with the pack-work. With the freights from Canada reduced we are on the market with the rest of the world. We desire help from the Government with regard to road facilities. There is already a decent graded track to the mine. If we get help in that respect I think we can dispose of thousands of tons of asbestos yearly. Asbestos a few years ago was only valuable in the long fibre, but asbestos tiles are now manufactured extensively, and another grade of asbestos can be utilized. We have three grades; the manufacture I have referred to brings second- and third-grade stuff into a marketable commodity—grades that a few years ago were considered valueless. We do not profess to have large quantities of high-grade fibre; but we can only see what is on the surface; mining is required. We understand that in the case of asbestos the farther you go down the better it becomes—that the length of the fibre usually increases by external pressure. It varies from $\frac{1}{6}$ in. to about $2\frac{1}{2}$ in. in length, 3 in. being very rare. We quarry the second- and third-grade out of the hillside, similar to loading a dray from a gravel-pit. It is suitable for asbestos-sheet making. The land has timber upon it, and the land itself is suitable for closer settlement; it is good grazing-country. Our company is quite prepared to help in the construction of the road. We have an order for 3,000 tons if we can execute it, provided it is according to sample. The length of the road would be fifteen or sixteen miles. The price offered for the 3,000 tons would be a payable one. We cannot export asbestos until there are decent facilities for bringing it out. So far as we know we have got an unlimited supply. The order was given in 1913–14, before the war.

To Mr. Hornsby: The grade of the track is good; it only needs forming properly.

To the Chairman: The local bodies are anxious to assist us in connection with the road. Roughly, we estimate that the road will only cost about £2,000; there is only one small bridge to build, and there is plenty of metal. I would like to correct a statement made by Mr. Reed, Inspecting Engineer of Mines, in Wellington. Since his report was made some years ago we have been prospecting vigorously. This asbestos is in bush country. We know the value of the asbestos there by constant prospecting. I think Mr. Reed should have qualified his statement by saying that his report was eight years old.

The Chairman: Mr. Reed's statement was "Asbestos exists here, but not in payable quantity."

Mr. Wallace: I saw Mr. Reed last week; he is satisfied that his report is an old one. Such a statement circulated throughout New Zealand is calculated to do harm to our company. Our company is being formed at the present moment; a meeting is to be held in Christchurch next week.

To Mr. Craigie: With proper access to the mine as far as we can see we can compete quite well with the outside market. We have everything in our favour; we have cement close by, and I think the labour is available.

J. WATT, Gas Engineer, examined.

I thank you for the opportunity you have so kindly afforded me of trying to place before you a few facts in reference to the immense value of a few of the unlimited undeveloped resources, mineral and otherwise, of the district. I may here explain that I have no ulterior motive, material personal interest, or connection with any company, body, or syndicate, nor can or will I derive any personal money benefit by the establishment of any of the industries which I advocate; my only motive is that it seems a pity—almost bordering on a crime—to allow such vast resources of mineral wealth that lie at our very door to remain undeveloped. We have the minerals, and we have the means here in New Zealand—here in Nelson—where by the practical application of applied science we could not only revolutionize the industries of the district, but materially benefit the entire Dominion by millions of pounds. Yet, strange as it may appear, no one seems to have the courage to take the initiative, and those into whose hands were placed in trust for that sole purpose—viz., scientific research—the enormous fortune of some £250,000 absolutely refuse to spend a single penny of what was given in sacred trust some three years ago for the benefit of those to whom it was bequeathed, the people of Nelson District. The only ones that have benefited have been the lawyers engaged in litigation and the trustees who employed them. Therefore every one who has the interest and prosperity of the country at heart must welcome the present action of the Government in appointing an Industries Committee of gentlemen well qualified by their large and varied experience and business ability and practice, their knowledge of the various industries of the country, to examine, inspect, receive and take evidence and facts of the unlimited wealth in the undeveloped resources of the country, and giving special attention to those particularly favoured places, such as Nelson, where, lying at our very door, so to speak, we have immense deposits of iron-ore, copper, chrome, barium sulphate, scheelite, and asbestos, &c. First, for example, we have the actual outcrop of the iron-ore deposit at Parapara, estimated by the Government Inspector of Mines as over 60,000,000 tons. I am quite aware that thousands of pounds have been spent or squandered, and all to no practical purpose, not so much in trying to demonstrate its practical value as an iron-producer, or to establish an iron industry, as to puff its exaggerated imaginary claims and possibilities as an iron-producer in order to induce some far-away syndicate or speculator to invest and find out its actualities for themselves; whereas if half the money expended had been spent in proving its actualities the iron industry would have been an accomplished fact to-day; and

now that so far all efforts to establish it as an iron industry have failed, it behoves us to try and utilize its vast mineral wealth in another direction, and establish an industry for the manufacture of paints from that ore, an industry that for value to the country would be second to none in the Dominion. And it is for that purpose I am here to-day, to try and place before you sufficient indisputable facts that will induce you on the strength of the evidence to recommend the Government to give the necessary practical assistance, protection, encouragement, and patronage required to establish an industry that would be second to none in the Dominion, and for which there is an unlimited demand, importing as we do over £200,000 worth of paint a year (I have not been able to see the official report for 1918). I presume every year to come the demand will be greater; the Government alone, in Railway and Bridge Departments, are the largest consumer, and yet their patronage of the locally manufactured article, of equal value, does not exceed £10 a year—certainly not much encouragement to local industry or enterprise. I am confident that almost every known colour at present on the market could be produced from the Parapara ore and other minerals in the Nelson District. Some eighteen months ago, in company with a Government analyst and another gentleman, I visited Parapara and secured a large assortment of the various shades of ore, from which I personally, with very crude appliances, succeeded in getting a splendid jet black, a good dark and light brown, a yellow, and a red, in an endeavour to secure an Indian red, which at present is worth over £100 per ton. I may say that my friend, a large paint-manufacturer, has, in conjunction with Professor Easterfield, been experimenting in the same direction, which experiments are still proceeding. But the manufacturer advises me that no matter how much money he may spend in this direction, the Government so far prefers to use imported paints rather than encourage local industry or manufacture, although the locally manufactured paint in several instances was superior to the imported, as the hæmatite manufactured from the Parapara ore is admitted to be by qualified experts the finest in the world. Again, close at hand we have a deposit of first-class-quality chrome-ore, from which some very fine marketable chrome has been produced. Chrome to-day is worth something like, or over, £336 a ton. Then we have copper-ore, which so far we have not been able to convert into marketable metallic ore, but with very little apparatus or plant could be easily converted into a valuable product—viz., sulphate of copper, which is quoted locally to-day at £112 a ton, a price quite equal to the metallic product, with the tenth of plant expenditure. Then we have another specially valuable mineral in barium sulphate, which is not only valuable in conjunction with paint-manufacture, but bids fair to be a very valuable commodity in the manufacture of paper; and that is an industry that is certain to be established on a large scale in manufacturing paper from the many suitable New Zealand woods, as it is one of the principal ingredients used in loading the paper, hence a valuable commodity. Then we have numerous by-products that are at present being wasted or thrown into the sea—I refer to the tar-oils and ammonia-water at gasworks, &c., which are being wasted all over the country, with one or two exceptions. From this, motor-spirit and the finest disinfectant could be made. Then, as to the tar itself, it is practically wasted or given away, as it is sold locally at 4d. a gallon, which ere long will be worth as many shillings, or where are we going to get our aniline dyes for which Germany has held the monopoly for so many years? A law has just been passed prohibiting the importation of dyes unless those of British manufacture. Then why should not New Zealand produce her own dyes? We have a surplus of raw material, and only require some practical Government assistance and inducement to establish the industry. These are only a few of the valuable resources of Nelson District. One more and I am done—that is, the extraction of wax from lignite or brown coal, a monopoly which has also been held by Germany for years, and who had to send to New Zealand for the raw material or lignite. I could give you the names of the firms who supplied, only I might be blamed for accusing firms of dealing with alien countries, although they simply availed themselves of what we possessed but had not the enterprise to avail ourselves of. Now that we have additional advantages added let us avail ourselves of them, and with the favourable recommendations of the Industries Committee we trust the Government will give such practical assistance and encouragement that many of the industries referred to will be an accomplished fact. I am quite aware that it is the easiest thing in the world to find fault, and often very difficult to find a remedy for the same. Therefore I hope you will excuse my audacity in suggesting a remedy: First, that the Government offer a bonus of, say, £1,000 for the first 10 tons of sulphate of copper, sold at market price, made from copper-deposits in the Nelson District, and a further bonus of £10 a ton for every further ton sold up to 100 tons; second, that a bonus of £1,000 be paid for the first 5 tons of chrome produced from chrome-ore found in Nelson District, and sold at market price, with a reasonable bonus per ton for further production; third, that a £1,000 bonus be paid for the first £1,000 worth of mixed paints made from Parapara ore-deposit, and sold at market price; fourth, that a bonus of £1,000 be paid for the production of the first £1,000 worth of aniline dyes produced from tar and sold at market prices. You may say that is asking a specially large amount of bonus money for Nelson. Quite so; but Nelson is, I think, entitled to special consideration, as the Government from one estate alone—the Cawthron Estate—received £40,000 in stamp duty; therefore Nelson is entitled to special consideration. So that I am only asking a tenth of what the district made them a present of out of a bequest made to the people of Nelson —some £250,000 for the sole purpose of establishing a Scientific Research Institute; and although this was bequeathed three years ago, and although we have 250 college boys (the future scientists of the people), 206 girls (the future mothers of the nation), and 607 students attending technical schools, all eager to engage in scientific research, yet the trustees have absolutely refused to spend a single penny for the benefit of those whose enormous fortune they hold in trust. The only individuals who have received a farthing of benefit are the lawyers engaged in litigation and the trustees who engaged them. I should therefore respectfully ask if it is not possible to

bring the trustees of the people's money under the influence or scope of the Industries Committee, so that they could induce, persuade, or compel them to take some practical action, even on a small scale—as, for example, the establishing of a Scientific Research Library and Reading-room, and establishing an experimental and chemical laboratory, so that those thousand students could have free access for experimenting. If the brain-power of those thousand students was brought into action no mind can conceive the revolution it would produce in the science and industries of the country. Therefore, if this evidence appeals to you, I would most respectfully ask your favourable assistance in inducing the Government to take such steps as would speedily develop the valuable mineral resources of the district, which would materially benefit the entire Dominion.

F. G. GIBBS examined.

I have been asked by the Nelson Forestry Society to urge upon you that a forestry expert should be appointed to investigate the question of transforming our birch or beech forests into good timber forests. The Year-book shows that Nelson Provincial District has a very much larger proportion of rough mountainous country covered with birch than any other provincial district. When Mr. Hutchins, forestry expert, was lecturing here we discussed the question with him. It appears to us who know our forests that a considerable area is likely to remain unproductive and uninhabited. In such rough country birch is not worth putting in mills for timber purposes, and when the birch is destroyed all the rest of the bush disappears. The question is, Is it not possible to turn the birch forest into good timber-milling forest? It is suggested that a certain amount of experimental planting might be carried out with different species of timber-trees planted in the birch forest. The present forest would afford admirable cover and shelter, and in time the forests might be transformed into valuable timber forests. At present there seems no possibility of utilizing that large area of forest country. Mr. Hutchins suggested that if the Government appointed an expert he might plant certain experimental areas —might plant certain kinds of trees which might in time turn this country into a valuable asset to the Dominion.

To Mr. Sidey: The area is Government land. On the fringe of the forests a certain amount of destruction is going on by fires; but in the back country the amount of destruction is quite on a small scale—the large mass of the forests is untouched. Millers tell me that although birch is being sold at a high price at the present time on account of the shortness of wood, still they do not get the same return per acre from birch as they would per acre from, say, pine. Light railways would be useful in this connection.

To Mr. Craigie: Much of the land where birch is growing would not be good for agricultural purposes when cleared. Our suggestion is to plant other suitable trees amongst the birch-trees, and that is Mr. Hutchins's suggestion.

To Mr. Forbes: The trees Mr. Hutchins suggested were chiefly trees from abroad—not New Zealand trees. I have also been asked by the Chamber of Commerce to bring under your notice the desirableness of the Government putting some bores down on the Waimea Plains and the level country about Takaka and Collingwood with the view of prospecting for coal-seams. Vertical seams have been discovered, but the opinion of the experts seems to be that the vertical seams will turn to horizontal as they go down. A suggestion has been made as to an amount from the Cawthron bequest that might be expended in scientific research. I would suggest that if a very much larger sum than that stated were devoted to this purpose there would be ample scope for scientific research. I desire briefly to support Mr. Washbourn's statement in connection with Parapara.

To Mr. Veitch: The geological report on the Dun Mountain district gives much information in regard to the coal-seams.

H. R. DUNCAN, Chairman, Nelson Harbour Board, examined.

The original scheme for Nelson Harbour, formulated in 1900, when the Board was formed, was to have a cut through the Boulder Bank of 500 ft. The work was put in hand. The estimated cost was £58,000, and it was found that the whole work could not be carried out. £65,000 has been expended. 500 ft. was the original width of the cut; it is now only 350 ft. We have expended practically £72,771 on the harbour. The policy of the Board is to get the original scheme completed. We have £35,000 to expend out of the old loan; but the ratepayers have not agreed to be rated for that amount—that is, the ratepayers have not authorized the additional amount being raised—they turned it down at a poll. The present position is that we have carried out a certain amount of dredging to improve the depth of water in the cut, inside and outside; and we have got a depth in the cut of 13½ ft. or 14 ft. We want at least 15 ft. or 16 ft. —that is, at low water. We can bring in boats at high water drawing 24 ft. The rise and fall of the tide is 12½ ft. We have brought in a boat drawing 23 ft. or 24 ft. and between 470 ft. and 500 ft. in length. We want to be able to bring in boats drawing up to 26 ft. At the present time we have had considerable silting at the wharf. The Government jurisdiction extends 70 ft. beyond the wharf. We have made application for the last eighteen months, and although the Government promised to have the dredging done it has not yet been done. The Government are responsible for dredging 70 ft. from the wharf. I believe the Railway Department has used their best endeavours, but has been unable to get a dredge at what they consider a reasonable figure. I desire to say that I am one of the Cawthron trustees. I have listened to some criticism as to the alleged delay of action on the part of the trustees. I may say that the trustees have acted on the strong advice of an Advisory Board of scientists. It was on their advice that we should do nothing while the war is on in the way of appointing a Director. We have invited

applications for the position, and the Bishop of Nelson, who is a trustee, is making inquiries at Home, and it is probable that a Director will be appointed in a very short time. I do not think the criticism of the trustees is quite fair. The trustees have acted on the advice of a Board of Scientists.

Mr. Veitch: Do you know of any circumstances to warrant any one making a statement to the Committee that the trustees are gaining pecuniary advantage?—Absolutely no.

A. McKee further examined.

I desire to make a brief statement in regard to the marble-deposits at Takaka. I am sorry the Committee were not able to visit the place. At the present time and for some time past we have been quarrying marble over there; huge blocks are to be seen of 5 or 6 tons; the size of the blocks depends on the lifting-power of our crane. The stone is fine-grained marble. It is different from the stone from which Parliament Buildings is being built: that is coarse-grained marble. This is fine-grained marble. I believe this to be not a local matter but a matter of national interest, for that stone is going to be wanted all over New Zealand. Masons and experts say it is undoubtedly the best stone we have.

To Mr. Hornsby: I hope the Cawthron Institute will be built of marble, because the cost of the material is low. I think there is going to be a great development in this respect in New Zealand. We have found all the capital, have done all the development, and we have had absolutely no assistance from the Government, and do not want any, except this: that over there you have the Takaka Valley. It is a rich, prosperous, beautiful district with a population of about two thousand people, and it is absolutely isolated. There are no railways, no direct boats; there is plenty of water; there is a small wharf that will accommodate small boats. There are cement-works there. The whole of the Takaka district is handicapped by having to pay double freights. We want a continuation of the road from Tarakohe to enable us to load at the Cement Company's wharf. There is an area of 150 acres at the mouth of the Motupipi River. It has been reported upon by various scientific men from as far back as Hochstetter, and including Dr. Bell and others. There is no doubt there is a valuable coalfield there. It is a brown coal. Coal is now being obtained from that deposit. It is probably the oldest coalfield known in New Zealand. I believe it was the property in the old days of the late William Ewart Gladstone, formerly Prime Minister of England, but I cannot vouch for that. On that property there is a whole series of coals. Mr. Peter Hutson, of Wellington, has reported that there is an enormous area of limestone there. There are also many samples of good clay—china clay, pottery clay, and other kinds. Will the Mines Department and the Geological Department help industry by proving that country? The question is, Is it worth while the State undertaking these investigations?

C. E. Lowe examined.

I have brought for examination by the Committee some samples of tobacco-leaf grown on my property at Harakeke; also samples of pipe and cigarette tobacco manufactured from the leaf. In 1907 I visited the St. Louis Exhibition, and subsequently visited the tobacco plantations in North Carolina and saw the tobacco-plant growing on the most poverty-stricken land. Two years ago it occurred to me that tobacco might be grown with advantage as a side line to our fruitgrowing in this district. Last year the Hon. Mr. Wilford was in this district and visited my tobacco patch, and was very much struck with it. He sent me Kellebrew and Myrick's book on North Carolina, in which the following statement appears in reference to tobacco-growing: "The lands which grow the finest tobacco had light cream-coloured soils, 90 per cent. of which was siliceous matter. It is porous, spongy, sandy, arid, destitute of humus, incapable of growing any crop without the most abundant applications of manures, became the cornerstone of new agriculture. Tobacco planted upon it, with the addition of a very small quantity of manure, from which the plant could derive sustenance until it approached maturity; when the manure became exhausted the plant began to lose its vitality and take on a very dry and deeper yellowish tinge. Just before they were harvested the plants turned a beautiful colour, like hickory-leaves in autumn. Fields of tobacco looked more like small grain ready for harvest than tobacco-fields. Sterilized spots, worn out and abandoned, grown up in briers and scrubby pines, that in 1860 could with difficulty be sold for 50 cents an acre, were soon in demand at from 30 to 80 dollars per acre." The members of the Committee have seen the tobacco growing on my land. To-day I am going to raise a loan to build a barn for use in connection with the tobacco-production. I have the plans and specifications from Australia. Immediately my barn has been proved, no doubt many other similar barns will be erected.

To Mr. Sidey: It would be impracticable for more than one grower to use a barn; the barns are only 20 by 20 in size. I deserve no special credit for what I have done in this connection. The Hon. Mr. Wilford produced the book for our information, and we followed on. I think the soil and climate inside the Tasman range of mountains is suitable for the growth of tobacco. I would not suggest that any man with fruit land should grow more than 5 acres of tobacco—as a side line to work in with his fruit. My own experience shows me that poor land is what is wanted.

BLENHEIM.

WEDNESDAY, 12TH MARCH, 1919.

ALEXANDER THOMSON, Lime-works, Flaxbourne, examined.

I have been asked to come here and put before the Committee the position regarding the production of agricultural lime in this district. Just prior to the war the farmers considered that they needed lime on some of their lands, and I was approached about commencing to work a deposit of lime on my property. About that time soft lime was discovered at Waikare, I believe, and in looking round we found that there seemed to be considerable quantities of it on our own place. I commenced to work on this soft lime in 1914. I worked for about fourteen months—until owing to men leaving for the front labour became scarce—and I closed down, and at the present time we are not working. I want to be in a position to commence again when times become normal, which I hope will not be long; but I can see that we will not be able to continue using soft carbonate of lime as we have been doing by simply taking it from the hill and screening it. These deposits are not as extensive as they seemed; but I have sufficient for another six months, and then it becomes a question of putting in machinery and starting in a proper way. I am convinced that there will be a fair demand here for lime as soon as we get back to normal conditions—in fact, there is now. The position I am in is this: that I have to cart the lime to the railway-station along a road that is not properly formed, and across two creeks which in times of flood are difficult to cross—so difficult as to stop us for a few days at a time. In order to assist in the production of lime, I suggest that the road to the railway-station at Ward should be put in order (including two bridges), and be maintained by the Government through the Awatere County Council, as that body has considered it unfair that it should maintain the road when damaged by lime-carting for use in other districts. Owing to the difficulty in finding a plant which will satisfactorily crush limestone in its raw state, I ask that the Government should find out and install a suitable plant capable of turning out, say, 12 tons per day. This I shall be quite willing to pay for when it proves satisfactory so far as its work is concerned. I also desire that the Government give assistance and advice in laying out the quarry and works. In the event of a drying plant proving necessary I urge that a supply of coal at a cheap rate should be arranged. The cost when produced should not exceed £1 per ton on the trucks, and I have found it difficult to produce at this price when selling carbonate of lime in a soft state, and of this material the supply is limited. I would also suggest that steamer conveyance to such districts as the Sounds should be subsidized to encourage the use of lime. I suggest that trials of the lime be made in growing tests of different crops in the district—with and without lime. Scarcity of labour at present is the main difficulty, and when machinery is installed it may be necessary to provide accommodation for the workers. The carbonate of lime supplied in the district has given satisfaction, but in order to continue the industry it will be absolutely necessary to crush the rock; and any assistance in obtaining a plant and in other respects as suggested will give some encouragement to make the larger financial outlay.

To Mr. Craigie: The length of the road is about a mile and a half. The road has been formed; it is merely a question of metalling. I should say, roughly, that it would cost about £300 to put it in order.

To Mr. Sidey: There is an unlimited quantity of hard lime rock on my property.

To the Chairman: The price on the rail is 15s. a ton. When I referred to the machine I meant the power to drive it also. If the plant proved successful I would be prepared to pay off the cost within a reasonable time.

J. W. HUMPHREYS examined.

What I have to say concerns a matter of very great importance at the present time—I refer to the price of coal. When the Government purchased the State coal-mines it was done with the view of bringing down the price of coal.

The Chairman: Has it not done so?—Very slightly, if at all. It struck me at the time that State coal-mines without State ships to carry the coal was simply a farce, and I have thought so ever since. It seems to me that at the present time the State is simply providing coal for the purpose of giving big dividends to the Union Steamship Company and other companies. The bulk of the profit that should go to the State goes in the matter of freights. We are told that the miner is not making such a big thing out of it. The consumer is paying considerably for his coal. The leakage must be through the freights. I think that the remedy is that the State should have a naval fleet and mercantile vessels and colliers—ships capable of looking after the lighthouses, and also ferry-boats. There is no doubt the ferry-boats should connect with the railways. The Great Eastern Railway Company in England runs its own ships. The naval mercantile fleet should be run on the same lines as the British Navy—that is, men should be enlisted at a certain rate of pay and under fixed conditions of living and pensions. If these things were in existence it would do away with the trouble we have with sailors and firemen. The Government rate of wages, conditions, and pensions could be taken as a criterion and be made the minimum conditions for private companies. In any case, I understand that private companies could be forced to introduce a system of pensions or a superannuation fund. The only thing that will bring down the price of coal is to establish State-owned ships.

To the Chairman: We have not got a State coal-depot in Blenheim.

J. PERANO, Te Awaite Whaling-station, Tory Channel, examined.

We are asking the Government to issue a license to all whalers, and all whaling-factories not to be less than a hundred miles apart—the same as obtains in other parts of the world. We

also ask that every factory to which a license is issued shall be capable of treating the whole of the whale, and that the carcase and bones shall not be cast into the sea again, as is done at some places at present.

To the Chairman: We ask that the whaling-vessels shall not approach within fifty miles of one another, and that the factories shall not be under a hundred miles apart. I understand that such laws exist in other countries. I understand in regard to factories that the provision here applies only to Crown land. There is nothing to prevent Norwegians coming here again and buying a piece of land and setting up in opposition to the present whalers engaged in the industry. We also ask that a duty be put on imported fish-oil and so-called Japanese oil to fetch it up to £30 a ton in Wellington, in order to give the New Zealand people a fair margin of profit. We desire the Government to send a trial shipment of, say, 5 tons of whale-meat (frozen) to Japan, or canned whale-meat. We are prepared to supply the whale-meat in the freezing-works free for the trial shipment. There are eight factories in America, and one factory in 1916 sold 300 tons of whale-meat.

To Mr. Hornsby: Whale-meat tastes like beef. We have now a plant worth £3,000, and our last season's catch amounted to 250 tons of oil. At present there are some persons who are interfering with the proper whale-fishing industry. They have not proper equipment or factories for dealing with the whales if they succeed in catching them. We propose to get fresh plant to treat the carcase—to extract the oil and sell the bone in a dry state. I am told that the bone is worth £13 a ton.

To Mr. Veitch: Our factory is in Tory Channel. There are six sailors and ten men at the factory.

To Mr. Forbes: I have not noticed any diminution in the number of whales during the last eight years. Some of the whales go up to 100 tons—the average is about 50 tons—and up to 55 ft. long. The nearest whaling-station to ours is at Kaikoura. There are only three in New Zealand. The third is at Whangamumu, north of Auckland. There are seven of us in our party. We have invested £3,000 in the industry. It is a staple industry; it is not a thing that will die out. Whale-oil is used in the manufacture of very many things now. I understand that about 8 per cent. of chocolate-cream is made from whale-oil.

To the Chairman: The party of Norwegians left after the last provision was made in regard to a license; but there is no license or restriction for boats under 25 tons.

H. J. MITCHELL examined.

As a member of the Chamber of Commerce I desire to say something with regard to the lime which Mr. A. Thomson has referred to. I am not personally interested in the matter. Mr. Thomson has a very fine farm at Ward. It is in the interest of the district that the lime-deposit should be developed. There is another deposit of lime within four or five miles from Blenheim, but the deposit at that place is not being worked now. There is a considerable amount of building-lime used in this district. The rivers here are full of shingle suitable for making concrete. One firm here uses 40 tons of building-lime per month. We would like a Government expert to report upon these lime-deposits, and say whether they are worth developing. I will furnish the Committee with particulars as to the location of the deposit. There is understood to be coal close to the deposit. We have approached the Government with reference to hydro-electric power, and experts have visited Lake Rotoiti, but we have not received their report yet. We consider that we should get preference over other districts for the reason that our big coal-bearing country is at Westport and the surrounding district; and the distance between Westport and Picton overland is not great, and when the bars are bound and the weather conditions are unfavourable on the Coast the coal could be conveyed over to Picton at a minimum cost by electric railway. The grade would be an easy one, and there are no obstacles in the way. Not only from a commercial, but also from a strategical point of view, the carrying-out of such a project would be important. Admiral Halsey, R.N., has expressed the opinion that Picton would be an ideal naval base for New Zealand.

E. PARKER examined.

I have been asked by the Mayor of Blenheim to bring under the notice of the Committee one or two matters. This is not a manufacturing district; our industries are mainly farming. Numbers of our men are now coming back from the front, and the Repatriation Board is interested in keeping them in the district and in creating, if possible, industries in which the men may be engaged. In addition to the agricultural industry, a number of men might be settled on small areas, and the establishment of the bee industry here would be an assistance. It has already started here. Then there is the fruit industry. There are a lot of old orchards here, and at present large quantities of fruit of various kinds goes rotten every year owing to lack of development of the fruit industry. We can grow many kinds of fruit here admirably, including apples, apricots, pears, plums, &c. We are endeavouring to start a small fruit-factory, and the Government has intimated that it is prepared to advance £2,000 towards putting up the factory. The fruit industry, including fruit-preserving, would go ahead here if fostered. We have abundance of river-gravel here suitable for making concrete, and we have also lime-deposits.

THURSDAY, 13TH MARCH, 1919.

A. F. O'DONOGHUE, Estate Agent, examined.

I am interested more or less directly in advocating a geological survey of Marlborough with the hope of testing our mineral wealth. The splendid indications we have at the present time, we consider, warrant a geological survey. In various parts of Marlborough we have indications of asbestos, coal, agricultural lime, and building-lime. There is a splendid outcrop of building-lime in the Taylor Pass: it is recognized by builders to be the finest material procurable. We believe that if sufficient prospecting were done, or the geological survey completed of the whole of Marlborough, we might locate something extensive in this direction. We also have an oil seepage in the Ure Valley. In 1915 I went into that valley with Dr. Allan Thomson and Mr. B. C. Aston. [Witness read a report by Dr. Thomson on "Oil Indications in the Benmore District, East Marlborough," contained in the Ninth Annual Report, 1915, of the Geological Survey Branch, page 100.] I produce a sample of the oil taken from the top of the pool. We collected a pint of the oil. In the bed of the creek there was a distinct spring of oil. The indications were so distinct that when we camped at night we could plainly taste the petrol, or benzine, or whatever it was, when we made the tea. I think there must be a very fine oil spring in the bottom of the Ure River.

To Mr. Hornsby: Dr. Thomson wants a geological survey prior to boring operations. He says that although the seepage of oil is there the reservoir may not be within miles of it. Dr. Thomson has informed me that the Geological Survey Department have borrowed him for two months to come into this district to make a geological survey and test this particular locality, but it will not be a comprehensive geological survey of Marlborough. Coal has been prospected fairly extensively in Marlborough. If we had a complete geological survey of Marlborough on the lines of Dr. Bell's report on Parapara and other parts I consider there would be such splendid indications of wealth that something would come out of it.

To Mr. Sidey: Dr. Bell was not in Marlborough. Mr. Morgan has been here and has written an article on coal. He did not report favourably on it. I think we have indications of coal here which are sufficient to warrant boring: the coal is around Picton. Referring to coal prospects near Blenheim Mr. Morgan says, "After a geological survey of the Wairau Valley and the adjoining areas has been made it will be possible to state in a rough kind of way what the probabilities are." He also says, "At the present time, with very few geological data as a guide, I am not able to recommend boring the plain at any point. In any case, drilling in advance of geological survey must be deprecated."

Witness: I might also mention the beet-sugar industry. I suggest that if the Government were to import an expert the matter might be furthered. There is a splendid opening for it in New Zealand.

KAIKOURA.

THURSDAY, 13TH MARCH, 1919.

J. A. JOHNSTON, Fisherman, examined.

The whaling industry has been going on in Kaikoura for the past fifty years or more. I have put up a shed and installed digesters, with steam-power, and use oil-launches. There is no protection or registration for the business, and considering the money that men spend on works as I have done, it is only right that some protection should be given. I lease a piece of ground from the Government, and I am told by the Marine Department that I have no right to work in front of my shed on that ground. The money and work I have put out on the boats would run well into £1,000. It is not fair that I should spend that money and that any one may come in and set up in front of my works. The Secretary of Marine says that if I like to go to the trouble of building an expensive slip to the water's edge I would have the right to that part—to the depth of the slip, or 18 ft. This is useless to me.

To the Acting-Chairman (Mr. Forbes): The whaling reserve is under half an acre. A whaling-station should be registered, and I would be willing to have it registered so that I would possess some right.

To Mr. Craigie: The plant I have in the building is 2 chains above high-water mark. If I bring a whale ashore I have steam-winches to haul the blubber up, and I have two vats to deal with it. I favour the suggestion that whaling-stations should be a hundred miles apart. Under the Fisheries Act, 1908, there is a regulation on those lines; it is taken from the Canadian whaling laws. I think that as many whales passed last year as the year before. They seem to be much about the same in number from year to year. The industry wants some regulation, because there is a tremendous waste at present. It is a rush for about two months at the outset, and after that it is practically done. You must get a whale out of the way inside forty-eight hours. Under the Canadian whaling laws a plant must be capable of handling an ordinary-sized whale in twenty-four hours, and that is a fairly big order.

To Mr. Sidey: No one should be allowed to whale without a license, provided he has the works. I have plant for making a whale into manure and for grinding the bones, and I should have protection against the man who goes out under the old system to get whales. The necessary works might cost about £5,000. As far as I know, no Japanese oil comes to New Zealand, and I do not think a Customs tariff is required for whale-oil.

To Mr. Hornsby: It would be very advantageous if the Government were to lend money to fishermen, as they do to settlers. It would enable them to set up a plant to deal with a whale, so that most of it would no go to waste as it does at present. A good deal of oil can be extracted from the bone. I know that whale-meat is used largely for human consumption in the United States, and I believe there is little difference between whale-steak and beef-steak. In the ten months of the year that I am not whaling I would be engaged in the ordinary fishing. We expect whales from the 1st May to the end of October. During that time there is always a chance of one coming along. It is a tremendous waste to turn the whales away and waste the good meat when it could be turned into manure that could compare with any that comes from the freezing-works. There are also the bone and the blood, which have to go to waste at present. It would, however, take big capital to set up a proper works, and we would need help from the Government to establish works to carry on operations for the season. There are four members in my party.

To the Acting-Chairman: I took nine whales last season. Ours is the only party that has been whaling here in the last two years. We have all the plant to take the blubber from the whales and deal with it, but nothing else. If the industry was protected a co-operative company might be formed.

C. NILSEN, Fisherman, examined.

I hope there will be no close corporation. It seems to me if the stations are to be a hundred miles apart there will be a monopoly of the coast. If licenses are granted for whaling, let anybody take a license, provided he puts up the plant. I would allow him to whale outside a radius of fifty miles from a station. The sea is open, and the fish are anybody's until they are caught. I think that two establishments or more could work side by side. If a man wants to put up a plant let him do it, as long as he is prepared to comply with the conditions.

To the Acting-Chairman: As to the proposal that stations should be a hundred miles apart, I say that if licenses are to be granted, as long as a man complies with the conditions let him put up a station wherever he likes. If a hundred whalers want to come to Kaikoura let them each have a license. I do not think the industry would be injuriously affected by a number of whalers operating. I have seen twenty whales go past in one school, and it is impossible for two boats to catch the lot of them.

To Mr. Craigie: If I had a plant at Kaikoura I would not object to a man from Terawhiti coming down here. If there were a number of companies operating, the ones that were not paying would drop out.

To Mr. Sidey: If the Government issues a license on condition that a plant is sufficient to deal with the whole of a whale—oil and everything else—that in itself will be a sufficient bar to a large number engaging in the industry. Any further restrictions would be unnecessary. I do not think it is necessary to fix the localities. The whales pass at different parts of the coast—Amuri, Akaroa, and other places. There were whaling-stations all along the coast in the early days.

To Mr. Hornsby: A station would mean £5,000 of plant, and that would deter any man who was not sure he could make a living out of it.

J. A. JOHNSTON further examined.

If I expend £5,000 or £6,000 in a plant and a company comes in with £10,000 and goes in much bigger than I can go it ruins me. I might spend £5,000, and a company £10,000, and another company £20,000, and it would be ruination for every one. It would be waste of material and time, and probably the company that spent £20,000 would not be able to compete.

G. RENNER examined.

With regard to the fishing industry, I would like to say to the Committee that the trouble is to obtain protection for the boats. Reasonable slip appliances ought to be provided, so that the boats could be got out of the water when heavy weather drives in. There are about £3,000 or £4,000 worth of boats in this place, but they cannot obtain insurance, as the anchorage is unsafe.

R. COWPER, Fisherman, examined.

I have been here about five years. There were then six boats fishing in a haphazard way. The protection to the boats was the same as now, and we were at the mercy of any storm that came along. Some fishermen could moor their boats properly, but others could not, and if a boat got away in a storm it would smash into two or three others and damage them. The insurance rate, I believe, is £20 per cent. We started a retail shop in Christchurch, but a storm came and smashed a number of boats. The shop had to be closed, and a number of the fishermen were ruined. For myself, I had to throw up fishing and go to other work to save up money for another boat. It took me eighteen months to get enough money to get a boat. When the freezer was established by Messrs. Newman Bros. we could produce so much over requirements that we had to regulate the supply of fish going into Christchurch, so that the market there could get a regular everyday supply, instead of four hundred or five hundred fish on one day in the week. We then started running a motor to Parnassus. That is better than the steamer, which is very uncertain. However, all our plans might collapse at any time. If a storm comes you cannot say your boat will be there to-morrow morning. We are absolutely at the mercy of the open sea. We reckon that if we could have slips, and were allowed to use our own discretion as to taking our boats on to it, it would serve our purpose. We are prepared to pay an annual rental for the use of the slips. Mr. Ayson told us that the Government had a scheme

of insurance. If the Government were to erect a slip for each boat it would mean a big sum, but it would establish the industry. At present it is not established, because if a big storm comes it is disestablished. With ten slips we would get security. If the Government were to advance money to men to engage in the industry it would be good assistance, but what we are aiming at is security for the boats when we have got them.

To Mr. Craigie: There are thirteen oil-launches here. The County Council, which controls the foreshore, has not helped the industry. I think it is the duty of the Government to assist. The district does not benefit by the industry as much as the cities do. The whole of the Kaikoura catch, for instance, goes to Christchurch. An oil-engine of 5 horse-power or 10 horse-power would be required to haul a boat on to the slip. I hold that it is the duty of the Government to insure the boats. I would sell all my catch at 3d. per pound net. We receive 4d. per pound at present, and I am told the distributors charge 8d. We have to take 33 per cent. off the 4d. for freight, rail, commission, and wharfing. If you give us slip accommodation we would probably get insurance from the companies.

To Mr. Sidey: Fishing is an individual enterprise. You would not get fish cheaper by having State trawlers, which would catch in large numbers and have fewer men doing the work. This place is peculiarly adapted for individual fishermen. I would not like to pass an opinion on the suggestion that the State should enter into the business, establish stores, take the fish from the fishermen, and arrange for the distribution.

C. NILSEN, Fisherman, further examined.

We could have carried on our shop in Christchurch if it had not been for the misfortune to the boats at Kaikoura. In the summer the trade falls off by about two-thirds, and no fish-shop in Christchurch makes a cent. of profit in the summer months.

To the Acting-Chairman: The main trouble is that of slips. The Government should make better provision in that respect to assist the fishermen than they have made in the past.

To Mr. Sidey: The local body put up a slip on which we could run the boats if we wish to repair them, but only one boat could be taken up at a time.

To Mr. Craigie: Until the public is prepared to eat all the fish that are brought in they will never have cheap fish. Groper, soles, and flounders are asked for, but other fish are not wanted, and if a man has to throw away two-thirds of his catch the public must expect to pay for the fish they want.

To the Acting-Chairman: If there was proper protection for the boats in the way of slips other men would engage in the industry. I would not be surprised to see fifty boats if protection was given. If fifty boats were engaged the market would not be glutted with fresh fish, though the price might drop. If there was a surplus it could be put in the cooler and brought out when the supply was short. We are not complaining about the price we get for our fish. The great trouble is the expense of getting them to Christchurch. If the Government were to guarantee to take every fish we brought in, provided it was an edible fish, it would be a good idea.

To Mr. Craigie: The Government Engineer has been here, and has gone into the matter and made plans of the harbour. It might be possible to build a breakwater to protect the boats. I should like the Committee to inquire if it is a fact that the Government has spent a considerable amount of money in giving facilities for the fishermen at Moeraki and at The Nuggets.

Witness: I should like the Government to take the duty off fishing-gear, or to import the fishing-gear themselves and sell it to fishermen at cost price—petrol, nets, lines, anchors, and so on.

A. G. MISKIN, Engineer, examined.

The harbour cannot hold any more boats at present, because the boats cannot get moorings. If six or eight rocks were blasted out of the harbour there would be accommodation for perhaps eight more boats. It would also make it safer for the boats there at present.

R. COWPER, Fisherman, further examined.

Mr. Ayson said to me, "If the Government provide ten slips and ten more fishermen come they will also ask for slips." I said that we were trying to establish the industry, and that if we had ten we would have security. They are bringing big boats here now. They are out of all reason, and if these boats were to break away in a storm they would smash the others. The fishermen want to know what rights they have in their moorings. There is room for ten or twelve boats in the harbour, provided they are not big boats.

W. SARISTON, Manager of the Freezing-works, examined.

If there was better protection for the fishermen's boats this would be the fishing-port of the Dominion for groper. The harbour accommodation and the moorings are deficient, however. If there was a breakwater or proper moorings no doubt there would be fifteen or twenty boats here next week. I know of six men who have been talking of coming from Lyttelton, but they are afraid of the rough seas. I should like to see an extension on the outside of the rocks, and the rocks in the centre of the harbour blown up.

JAMES BOYD, Chairman, Kaikoura County Council, examined.

I believe the fish are plentiful about here and the fishermen are willing to work. The question of putting up slips is a big one. The Government and the local body have put up one slip, but it is a small thing to what is wanted. The slips that the men want are such that the whole of the Council's rates would not give them what they want. I think the basin ought to be made

bigger and a breakwater constructed outside to give calm water inside. The principal difficulty is that of slips. For ten boats it would require £3,000 or £4,000 for slips, and if there was safety for these boats ten more boats would no doubt come, and that would mean an expenditure of another £3,000 or £4,000.

To Mr. Craigie: It is really a Government work to provide the slips, and not a work for the local body. I cannot see any remedy except the slips. The breakwater would be a big job. The Engineer and Mr. Ayson came here and decided to recommend the slips. That is not long since, and I suppose the plans are now in Wellington. I think the ratepayers would be against raising a loan for any big works. The harbour is under the control of the County Council.

To Mr. Sidey: The harbour has had £8,000 spent on it, principally in the building of a wharf.

WANGANUI.

WEDNESDAY, 9TH APRIL, 1919.

C. E. MACKAY, Mayor of Wanganui, examined.

The first necessity for the extension of commerce and industry is a plentiful supply of cheap power, and in consequence an early development of hydro-electric power. I need not stress the point, because at various places where you have held your sittings the matter has been brought before you. Wanganui, however, feels the need as keenly as any other manufacturing centre in the Dominion. We trust that your findings will hasten the completion of the Mangahao scheme, and thus place us on an equal footing with the South Island as regards cheap and plentiful power.

Cheap and efficient transport is one of the necessities of commerce. In the solution of its problems the motor-lorry is destined to play a most important part. Several of these are owned by Wanganui firms and ply far into the country, but the state of the roads is all against them. A poor road means heavy running-expenses and dearer freights, while in turn motor traffic over a poor surface means expensive road-maintenance and heavier rates. Thus the country customer is penalized both ways. The Government should recognize the position and insist on local bodies doing their duty in this respect. If necessary the main arterial roads should be taken over by the Government.

The important influence of closer settlement on every branch of trade and commerce is such that no apology is needed to bring the matter before the Commission. Every transport returning to New Zealand is accentuating the position. Soldiers are anxious to get on the land, and in most cases it is cruelty to send them into the bush. In Wanganui we feel very keenly the apparent apathy of the Government Land Purchasing Department. Practically no land has been bought in this district, although there is plenty of suitable land available and a large number of men here ready to go to it. I am glad to be able to say that the Patriotic Association is endeavouring to meet the difficulty by itself acquiring land for the purposes of soldier settlement.

The question of workers' homes has been brought into special prominence since the influenza epidemic. In Wanganui we have erected several, but our operations have been hampered by the high prices of material. A valuable suggestion had been made by Councillor Sigley that by doing their own buying and building the municipalities would greatly decrease the cost of houses. Municipalities have wide powers in this direction. They can either erect dwellings and let them to tenants, or they can erect the dwellings and sell them on easy terms, or they can lend workers the necessary funds for building and allow them to repay on easy instalments. If the municipality erects houses and lets them at a low rent, there is a grave danger that the reduction would ultimately benefit not the worker, but the employer. In any case there is no inducement for the worker to take an interest in his home. I cannot help thinking that the preferable course is to give the worker a proprietory interest in his home and in the improvements he makes on it. The municipality has by law to charge the worker 5 per cent. on unpaid purchase-money or loans. But no borough can now get loans at 5 per cent. The Government should find the various boroughs funds for that purpose at 3½ or 4 per cent. That means, of course, that the Government should subsidize any borough which recognizes its duty to improve housing conditions. Such improvement, wherever made, benefits the Dominion as a whole.

To the Chairman: The borough would spread its repayment of instalments over, say, a period of twenty-five years—that is where the advantage would come in; not that the price would be much less, but the terms of repayment would be much easier.

To Dr. A. K. Newman: It is impossible to get houses in Wanganui just now. In the Avenue there is a big new building which consists of tenement houses. I know of one case where two families are sharing the same house. I have a letter here which the Town Clerk received yesterday which shows the difficulty of getting houses, and that is an instance of many. I think the Corporation could build houses much cheaper by day labour than by contract by large and careful buying.

To Mr. Hornsby: There is no doubt that cheap electric power would enable us to extend our tramway system much farther than it is at present.

To Mr. Pearce: At our last visit to Mangahao we were told that it would probably be completed in four years. We understand that Wanganui will be about the limit of the Mangahao scheme. In his report Mr. Parry refers to three schemes, each to be linked up and to supplement the other.

To Mr. Veitch: In connection with our building scheme, our main difficulty is with respect to the cost of the construction of buildings. If the scheme were carried out on a bigger scale the cost would be reduced. In the case of buildings made of concrete we would have our own gravel-pits, providing unequalled material, and in other ways it is trusted that we will be able to keep down the cost. The provision of a proper concreting plant would be a very important item. I would like the Committee to inspect the workers' dwellings which we have put up, and we can supply the Committee with particulars as to cost, &c.

To the Chairman: By law we are bound to charge the worker 5 per cent. on his unpaid money. I think the Government ought to let us have the money at, say, 4 per cent. In regard to the charge to the worker, it is quite possible that it might be brought down to 4½ per cent., or possibly 4 per cent. The Patriotic Association did its utmost to get the Government to take over Mr. Moore's Rangitatau block. The Land Purchase Board came up, and we understood that it was practically decided to take over the block. Mr. Moore was prepared to sell the land to the Government at a much lower price than he was prepared to sell to any one else. It was understood that the business was practically closed, but after some delay the Land Purchase Board turned it down. Mr. Moore immediately got out his own subdivisional plans, and the land is advertised for sale within a fortnight's time. With a view to securing the most suitable parts of the land for returned soldiers the Patriotic Association has decided to invest some of their funds in the purchase of one or two of the blocks—the two blocks amount to 3,000 acres—with the view of subdividing them and reselling them to returned soldiers who are in a position to take up farming. It will not need much cash, because Mr. Moore's terms are fairly easy—10 per cent. down and 10 per cent. in twelve months, I think. The Government will only assist returned soldiers up to the Government valuation of the land. We assume that the upset price will be above the Government valuation, and we ask the Government to assist the Patriotic Association in finding the difference. I think the price that Mr. Moore asked for the land is lower than the price they would obtain by auction. The non-acceptance of Mr. Moore's offer by the Government will result in the association having to pay a higher rate. It is really the "eye" of the land that we propose to buy.

J. F. HOLLOWAY, Manager, Restar Limited, examined.

The tar-distilling industry has been in existence about five years, during which time a large amount of propaganda work has been done by the company in furthering the good-roads movement, with the result that very large stretches of roads have been put down in tar seal or tar grout, especially in Taranaki and Wanganui districts. As evidence that the facilities offered by Restar Limited to procure a suitable road-binder results in local bodies adopting a better style of road, it may be mentioned that the Auckland works established last year has been the means of greatly stimulating the good-roads movement in that district. Many of the counties in the Auckland Province have taken or are taking loan polls with a view to putting down permanent tarred roads. The greatest drawback, however, is the high railage rates on tars required by local bodies for their work. Obviously the higher the grade of tar the better for permanent work, yet the Department will carry the lower grade of tar at a lower rate than the better grades—why it is hard to say, as the latter represents a cleaner freight. The Department carry other roadmaking materials, such as metal, at a lower rate with the object of encouraging better roads. Under the changed traffic conditions good roads cannot be made without a suitable binder, therefore I claim that all road materials, including tar binders, should be placed in the same class. For the sake of comparison the different rates may be quoted (each rate subject to a war increase of 20 per cent.):—

On 50-mile Run.

	Per Ton. s.	d.
Road-metal, scoria, boulders, shingle, gravel, and *other materials for roadmaking* consigned to and for the use of public bodies in lots of not less than 10 tons; carried at the convenience of the Railway Department—⅜ classified rates for Class Q = ⅜ of 5s. 5d. ...	3	5
Tar in 5-ton lots consigned to and for the use of local bodies—Class N ...	9	10
Tar (New Zealand manufacture) in ton lots—½ rate B, 26s. 10d. ...	13	5
Tar not otherwise specified—Class D	17	5

The position is that the Department will carry raw tar or the lighter distilled tars at 9s. 10d., but the most desirable tars, which we call "Restar," must pay 13s. 5d., an increase of 20 per cent. We submit that all materials for roadmaking should be carried at the same rate—namely, ⅜ of Q—and that the raw material should also be carried at the same rate from the respective gasworks.

Regarding imported tars, it is a question of policy as to whether imported distilled tars should carry an import duty. The position is that whilst tars and the products of tars from Australia have free entry into this country, Australia has a protective tariff not only on manufactured articles, but on crude materials also—as, for instance, crude naphthalene, 25 per cent. [Sample shown.] To get into line with Australia all manufactured products of tar, including distilled tar, should carry a duty, and this would materially assist in building up an important New Zealand industry. As an instance, during the year 1917 (the latest figures available) the value of disinfectants imported into New Zealand totalled £20,463 (see "New Zealand Statistics," p. 288), representing about 200,000 gallons. There is no reason why all the disinfectant required for this company should not be produced in New Zealand. An article quite as good, and in many cases better, can be produced, but the cost of production in New Zealand is higher, owing to the higher prices for raw materials, ingredients for manufacture, and the higher standard

of labour. An import duty of 25 per cent. would enable Restar Limited and kindred concerns to successfully cope with outside competition. The same argument applies to sheep-dips, naphthalene crystals, tar paints, stains, creosote, &c., all of which can be manufactured in adequate quantities in New Zealand.

Turning from what may be termed the primary by-products of tar we come to a large group of articles than can be produced in New Zealand, provided a profit can be shown over the cost of production. Amongst others may be mentioned the following: Moth-balls, solvent naphtha, carbolic acid, creosote, benzol, insecticides.

Assistance from Government Departments: The raw material is to hand in New Zealand to manufacture all the insecticides, sheep-dips, and fruit-sprays required for colonial consumption. If the Agricultural Department took in hand the matter of thoroughly testing out New Zealand articles with a view to their adoption instead of the imported articles, the New Zealand business would be greatly stimulated. This, however, should be done thoroughly and with a sympathetic interest in local industry that should be a feature of every Government Department. A suggestion is offered that a Government Industries Department should be formed solely for the purpose of assisting struggling industries with their experimental and research work. This would be a great boon to many industries whose business is not large enough to pay for staffs of highly paid experts.

To Mr. Pearce: In sending our tar by rail we do the whole of the handling as regards putting it on the trucks, &c. Raw tar and the lighter tars are carried in wooden casks, and they leak; whereas Restar is carried in steel drums. Restar is a roadmaking material. Other materials for roadmaking are carried at a lower rate. The war has been held up as an excuse, but now that the war is over and things are getting back to normal tar for use by local bodies should be carried at a low rate.

To the Chairman: The Australian duty on tar is 5 per cent., whereas it comes into New Zealand free. I think there should be a small import duty on the manufactured article. Crude naphthalene carries an import duty of 25 per cent. in Australia, and it comes in here from Australia free. I think it is only fair that we should be put in line with Australia. I have here samples of Australian, English, and local Wanganui disinfectants. These are coal-tar disinfectants. [Samples produced.] The article which we manufacture is on the market now. It is selling fairly well. We have not been successful in placing any with the Government. We approached them last year, and they said they would take the matter into consideration. We wrote to the Stores Department, Auckland. We think that disinfectants produced in New Zealand should be protected. We think that New Zealand should supply all its own requirements in this respect. In the event of a 20-per-cent. duty being imposed I think the article would be put out at the same price as now—possibly at a little less.

To Mr. Pearce: Disinfectants are easily made. The Dominion Oil Company make disinfectants.

To Mr. Hornsby: In the event of a 20-per-cent. duty being imposed, I think it would be only fair that the present price should not be raised to the consumer. In New Zealand in connection with the making of coke the by-products go to waste.

To the Chairman: I submit to the Committee for inspection samples of the article from which moth-balls are made—naphthalene crystals. There is also a Japanese article; we are up against that; it is now quoted on the market. It all comes in free. If there were a duty put on moth-balls probably we would put in a plant and manufacture all that is required in New Zealand. We sell some tons of it, but it has only been possible to sell at a decent profit owing to the war. Now that the war is over the position will be different. At present large quantities come in from Japan. It comes in free at present, so far as I am aware. I think all these articles should carry 20 per cent. duty, the same as drugs. According to latest quotations the price is nearly £100 a ton. I think it was £60 or £70 before the war, but I am speaking subject to correction. I understand that the last Japanese quotation was about £80, but I will ascertain and let the Committee know. [Witness submitted to the Committee samples of stained woods.]

To Mr. Pearce: It is well known that creosote is one of the best wood-preservers there is. We have sold large quantities of this article. It is a great insecticide, and it keeps out borers. These paints and stains are all producible in New Zealand, and that being so we are entitled to a reasonable amount of protection under the Customs tariff.

To the Chairman: As to stains, in regard to the crude stuff we can compete against the imported article, but when it comes to manufacturing the other articles it means a plant and ingredients. For instance, for linseed-oil we have to pay 10s. a gallon; it is pretty dear stuff.

To Mr. Veitch: I will furnish the Committee with a schedule of the charges and our recommendations.

To the Chairman: I think the whole of the articles that we produce that come into New Zealand free ought to carry a certain amount of protection.

To Mr. Veitch: So far as I can gather and from my reading, creosote is a valuable preservative for timber. If the Department of Agriculture would take in hand the matter of thoroughly testing the New Zealand articles the New Zealand business would be greatly stimulated. This work should be done thoroughly and with a sympathetic interest. You want an official to do the work with a keen interest in the matter. I think the industries of New Zealand would be very materially assisted by having trained men appointed to experiment and report upon them. Every little industry cannot employ an expert.

To Mr. Pearce: In regard to cement roads and tarred macadam roads, I think I could supply the Committee with facts and figures that would absolutely prove that cement roads are "not in it" as regards cost and wear. You have only to consider this one point: a concrete road, no matter how well it is put down, will wear into potholes within three or four years. If you

have to provide a top-dressing of tar or some other bituminous matter to present an even surface, from that time on your cost of maintenance will be the same on that road as on any other foundation. Then you have to consider the high cost of concrete as against the comparatively low cost of tars. The thing speaks for itself. I may mention that there is a bit of tarred macadam that has been down for over forty years—that is a proof that it does not deteriorate.

To Mr. Hornsby: In the Taranaki District I think the Committee will be able to see contrasts in regard to roads which will afford members information as to the best methods to adopt.

R. J. JACKSON, Wanganui Sash and Door Factory and Timber Company (Limited), examined.

I would like briefly to bring under the notice of the Committee certain matters connected with the timber trade as they apply to us. During the war period we have endeavoured to meet the demand for small woodwork, apart from doors and sashes in which we previously specialized. During the war, owing to the increased freight, we have been able to meet the competition; and we have been able to manufacture a large number of articles in New Zealand that were never previously manufactured here. There is a very wide range of these articles. If you go into almost any shop you will see large numbers of woodwork articles, and many of them have come from Japan, England, or America. The reason given as to why we are not able to meet such competition is that you must have quantity; you must manufacture in large quantities, and you must standardize. Furthermore, the Government of this country—and I think quite rightly—has endeavoured to lift the standard of factory occupation, so far as the life of the worker is concerned—that the wages should be increased above the wages in other countries. I agree that that is very fine, that we should all come along and enjoy some of the world's pleasures. But there is a necessary corollary to that, and that is, if the Government see that it is right that this should be done, that the conditions under which the workers work and live should be protected as compared with the standard in other countries—if the Government protect the worker, we contend that it is no good protecting the worker unless you protect the work that the worker produces. Why should our own citizens be penalized by allowing stuff to come in from other countries to compete with the products of our own citizens—products manufactured under totally different conditions—under conditions that would not be tolerated in this country? I need not stress that point any further, as the members of the Committee, being public men, must be fully aware of it. Furthermore, I will show the Committee some articles of manufacture, and will explain to the members where we are beaten. I also desire to call attention to certain anomalies in the Customs tariff which apply to our business. In the past these anomalies were not noticed, because the Customs tariff was framed long before the present condition of affairs arose. The problem did not arise in former years as it arises now. We know that the Customs tariff has not been materially altered for many years. Take, for instance, shafts. Sawn shafts come in from Sydney free. There is a slight variation desired for local coachbuilders, and we endeavoured to meet that slight variation by manufacturing a shaft in Wanganui; but we are charged 2s. duty on the timber if we bring it in and make the shafts here, but shafts come in free. The same remark applies to a limited extent with regard to rims. We set up a plant to manufacture cart-rims. Rims come in from the United States free. America has the benefit of us owing to the large numbers they manufacture; they are able to use better machinery, and their product naturally is cheaper. When a foreign manufacturer sends an article to New Zealand he practically says, "There is my article; take it or leave it." If we could take up a similar position we could sell cheaper, but the public, if they know that an article is made here, vary it in certain respects; and architects are great offenders in that way. For instance, if you look at the houses built by the Corporation you will see the same fault—there are hardly two windows or doors that are the same size. These variations do not improve the houses or add to their artistic effect, but they certainly add to the cost. Standardization of measurements would greatly facilitate cheap manufacture in New Zealand. [Witness exhibited to the Committee samples of doors.] The imported doors are a long way inferior to the others; they are made on the doweling process; they save material and labour. The duty is on an *ad valorem* basis; but it comes to a very small amount. Those doors made in America are being dumped in by hundreds of thousands. We do not make a doweling door in Wanganui. If such a door were made in England the people would not take it; but the American door finds a sale. The indent agent in New Zealand in nearly every line becomes a practical advocate of foreign-made stuff as against the local article. I show to the Committee an Oregon door and a rimu door; in the case of the Oregon we pay duty on the timber, and the duty we pay on the timber leaves us on a dead level again.

To Mr. Hornsby: The policy in Australia is to protect their own people and shut out the competitor. As I have said, I think that in this country we should protect the worker's work. During the war we took up the manufacture of churns. In regard to doors, if protection were given it would mean that local manufacturers would improve their plant.

To the Chairman: We would have no objection to our price being limited by the Department of Industries; we do not mind any Government interference in that way at all. As you probably know, churns come in free. In the past hardly a boat came in from the United States but brought in these churns. These churns [sample exhibited to the Committee] were made in New Zealand. The churn is all New Zealand manufacture except the hoop-iron. During the war period we have been able to compete with the imported article, but with the reduction of freight following the war we anticipate that we will not be able to do so. The American churn comes in free. During the past two years we have turned out between two thousand and three thousand of these churns. I have no doubt that in the future we will be able to reduce the cost, and we will endeavour to meet the American competition; but at the same time I do not see that we can do so without some assistance. We keep at least four men in Wanganui continually employed in making these churns. Japan is dumping small woodwork in here. We have been able to tackle

the problem during the war period. With your assistance we want to be able to do so in the post-war trade.

To Mr. Veitch: No doubt after a time we will be able to still further reduce prices, more especially if we can purchase the component parts cheaper.

To Dr. A. K. Newman: In the event of protection being granted I personally would not mind submitting prices to the Government from time to time. Personally I would not object to the Government protecting the consumer.

A. Doig, Managing Director, New Zealand Coal-tar Products (Limited), examined.

The company's works are in Wanganui. We manufacture the finer products of coal-tar. The industry is a new one for New Zealand. The history of the coal-tar products industry is of great importance not only to the research chemist and student of industrial economics, but also to the politician and the leaders of industry. The coal-tar industry, which originated and received its early development in Great Britain, has grown to one of great profit and importance, but after a period of much prosperity it became gradually more and more centralized in Germany, and has latterly been one of her most profitable industries. The average dividends paid by six of the largest firms in this line are upwards of 20 per cent. on a nominal capital of about £12,000,000. The ramifications of the influence of the coal-tar products industries in Germany are indeed most astonishing, and a close investigation of the causes of their success will well repay those who are responsible for the future success of New Zealand industries. The reasons given for the relative decline of the industry in Britain and its phenomenal development in Germany are numerous and varied. Amongst the reasons given for its decline in England may be mentioned the supposed lack of well-trained chemists, our admitted early neglect of chemical research, defect in our patent laws, the excise restrictions on alcohol for industrial purposes, the fiscal system, want of enterprise and co-operation amongst manufacturers, and the apathy of successive Governments towards industry as distinct from commerce. It is begging the whole question to say that New Zealand has not progressed in the coal-tar products industry because she has not the specially trained chemists necessary for its cultivation. Germany did not have them fifty years ago, and if she has them to-day it is because this ever-expanding industry has called them into being. It is starting at the wrong end to be clamouring for special chemists when we have no use for them. I would like to see the Government of New Zealand offer some special inducement to firms that take up this research work, and thus open up new industries. In this connection I would like to mention that in Great Britain the sum of £10,000 a year has been granted for ten years to assist research work in the products of coal-tar. Of course, in this Dominion one cannot expect assistance on such a large scale, but nevertheless we do expect assistance and protection of some sort. Reduction in railway freights and protection by Customs tariff on similar imported lines would materially assist the industry here. I would like to see the Government set up an investigation committee composed of experts to "try out" New Zealand productions and to conduct experiments in a sympathetic way instead of displaying an antagonistic spirit, as is generally found in Government Departments throughout the Dominion. All things being equal, the Government should give a lead in supporting local industries. The general experience of commercial men in approaching Heads of Government Departments is that they not only expect New Zealand products to be equal to the imported lines, but unless they are much superior, and at the same time very much cheaper, they will not touch them. It is a well-known fact that the New Zealand Government is the hardest firm in the Dominion to do business with in supporting local industry. For the information of the members of the Committee I would like to point out that the patent laws in England, and also in the Dominion, are against us. It is not generally known that England lost the coal-tar colour industry because the trade in England was shut up for fourteen years by a master patent whilst no controlling patent had been sanctioned in Germany, so that any one could take up the manufacture there, the result being, of course, development in Germany and stagnation in England. So long as the Germans kept the British market supplied, which they took good care to do, nobody was at liberty to make the patented articles in England. During the war the patent restrictions were lifted, and England was allowed to manufacture these products according to the patents belonging to the Germans for the duration of the war; but what is going to happen when peace is declared? Will we still be allowed to use the patented processes, or will the patents again become the sole property of the Germans, and be workable in England and the colonies only on the payment of royalties or licenses? This matter has no doubt been carefully considered by the Law Advisers of the Government, but so far I understand no statement has been issued which make this situation clear. An eminent German professor made the following statement early in 1914: "England talks now not only of holding her own in war, but of beating us in our chemical industries. She cannot do it, because the nation is incapable of the moral effort to take up an industry like that, which implies study, which implies concentration, which implies patience, which implies fixing one's eye on the distant consequences and not considering merely the momentary profit." That is a challenge that the British Empire cannot refuse to take up, but in taking it up let us realize that success can be achieved only by a more general appreciation of science by the cultivation and encouragement of chemical research in an enormously higher degree than in the past. With reference to what is now being manufactured in New Zealand, I may mention such products as disinfectants, carbolic acid, creosote, naphthalene, benzol naphtha, wood-stains, paints, enamels, sheep-dip, branding-fluids, horticultural sprays, insecticides, and various colouring-agents. All these products are made from coal-tar oils, which up till a few years ago were run down the drains as waste products. I venture to say that the whole of the requirements of the Dominion for these lines could be made in New Zealand if the industry was properly established. During the time the epidemic was raging in New Zealand practically the whole of the disinfectant used was

manufactured by the New Zealand Coal-tar Products (Limited), Wanganui, then trading under the name of the Dominion Oil Company (Limited). They supplied nearly every Borough Council and local body in the Dominion, as well as the general public. Our chief competitor now is an Australian-made disinfectant. This comes into New Zealand duty-free, yet if we send New-Zealand-manufactured disinfectant to Australia we are up against 25 per cent duty. This is where the Committee can assist the industry in New Zealand, and assist it materially. Every year about £20,000 worth of disinfectant is used in the Dominion, and I can produce evidence to show that the locally made article is equal to and in many cases much superior to the imported lines. I understand that it is the wish of the Government that, so far as is possible, New Zealand should be in a position, if supplies are cut off for any reason whatever from outside, to supply herself. I do not wish to convey the idea that we can supply all the products of tar at present, but I believe it is only a matter of time and we will be able to do so, especially as New Zealand coal-tar is recognized as one of the richest in the world. I sincerely hope that the Government of this Dominion will do its utmost to assist in establishing the coal-tar industry in these Islands on the largest possible scale. Our manufacture was analysed by the Government Laboratory in Wellington, and this is the report: "The sample of Bulldog disinfectant left with me by Mr. J. Butland on the 4th instant was examined by the Rideal-Walker method, and it was found that the carbolic coefficient of the sample is between 1·5 and 2.—J. A. HURLEY, Government Bacteriologist." The date is 16th December, 1918. Mr. A. J. Parker, analyst and consulting chemist, Auckland, also analysed the disinfectant, and he reports, "I hereby certify that I have analysed the Bulldog disinfectant, and the results are as follows: Rideal-Walker coefficient, 2 (two)." There are two ways in which the Committee might assist us—(1) increased protection, and (2) railway freights. With regard to the railway freights, I wish to say that about a month ago I had to send twenty cases of disinfectant to New Plymouth, and the purchaser complained about the freight charge. Later on, when another order from the same purchaser came to hand, he advised us to send the goods by boat to Onehunga and from there to New Plymouth. It is cheaper to send by that roundabout way; and now we send all New Plymouth, Waitara, and Stratford goods to Onehunga and back to New Plymouth. The railway freight is 42s. 2d. per ton, plus two 10-per-cent. war taxes, and the shipping freight from Wanganui to New Plymouth via Onehunga is 27s. 6d. per ton. I produce samples of some of the products we are making.

To Mr. Hornsby: We have sold to the Government but not any great lot, though they have promised something more when the next contract comes along. There are many of these lines that the Government could use, and if they would use them it would assist us materially. Of course, we would expect the Government to test our manufactures. The Government should test in a sympathetic way, and, all things being equal, the local production should have a chance. The borer gets into some timbers, but creosote is a cure for it. Creosote has been known to penetrate an inch board. It has been proved in America that creosote is the only prevention for the borer. It will kill the borer in the wood, and the borer will not come near wood where creosote has been used. The creosote also has a preservative effect. We are also producing, in a number of colours, a paint that is suitable for rubberoid. We are also making varnishes.

To Mr. Veitch: During the recent influenza epidemic there would have been a serious shortage of disinfectants but for the local manufacture. Practically there were none in New Zealand, and we used to work three shifts a day to supply the demand. We reduced our price to Borough Councils to 3s. 9d. We made a special cut for them.

To Mr. Poland: We also make benzene. I use it in my motor-car.

O. HOLST, General Manager, New Zealand Casein Company (Limited), examined.

I should like to place before you the position with regard to the casein industry in New Zealand. When the company started the manufacture of casein we asked the Department of Agriculture if it could lend us a man to assist us with a series of experiments. Mr. Cuddie, the Director, replied sympathetically, but regretted that the staff was so short that he could not spare us anybody. We then decided to carry on the work ourselves, and in February or March, 1911, I went to Melbourne, and purchased from a chemist representing a German firm their method of manufacturing casein. This chemist came to New Zealand and taught us the method of manufacture. He obtained patent rights of that method, the rights applying to New Zealand, and we had an interest in them. Since the war the German rights have been extinguished, and we have the whole advantage of them. A bonus of £7,000 was voted by the Government some years ago for the manufacture of by-products of milk, but on making inquiries about it we were told that no money had been paid. Mr. Cuddie has stated before your Committee that the Department views the casein industry with favour. He has always been sympathetic, but apparently somebody else has been having the say in the matter. The Committee can help the company in these ways: (1.) The Department to furnish a chemist or scientific man to assist industries generally. It is impossible for a small industry to engage a trained chemist. (2.) No sudden increase in railway rates without consultation with parties affected. (3.) Goods manufactured from casein to have a duty on them. It might be possible also to assist by granting a bonus such as was held out for the first manufacture of by-products. We propose to manufacture some goods from casein. We are about to go a step further and embark on the manufacture of raw casein into the finished products. At present the casein is shipped to England or to America, where it is used in manufactures—150 at least in number. We wish to embark on the manufacture of some of those articles, and thus stabilize the market for the main product. We think that that can best be done by Customs protection on the finished article. Our Customs tariff badly needs revision, and when it comes up for revision we hope an opportunity will be given to us to state in detail our views of the matter.

To the Chairman: The present price of casein is £80 per ton. This year we have not sold any, but we know the market is down. There are two other factories in New Zealand—at Frankton Junction and at Dargaville. We hold the patent rights, but anybody can use them.

To Dr. A. K. Newman: Our output of casein will be 550 tons. Frankton, I think, will reach 100 tons, but next year it will have a great deal more. The Dargaville factory will not put out more than 50 tons. In 1913 the world's consumption of casein was 17,000 tons. These are the latest figures I have. Since then the flying-machine industry has taken large quantities. It is used as a varnish for the wings, as it does not crack with variation of temperature. New uses are being found for it every day. To my knowledge it is now used in 150 different industries. It is used in the manufacture of artificial leather, artificial silk, buttons, handles to knives, billiard-balls, and other things. It is used, too, in the electrical industry. It is a non-conductor of electricity and is non-inflammable. It can take the place of celluloids. It is likely that the demand for casein will be an ever-growing one. I will furnish the Committee with a list of the manufactures in which it is used, as far as I know them.

The Chairman: In Wellington Mr. Cuddie said, "We have an officer who gives practically all his time to this industry."

Witness: I understand he alludes to Mr. Pedersen; but that officer looks after not only the casein industry, but also pasteurizing, instructing in buttermaking, and so on. Mr. Pedersen got the knowledge that was imparted to us by the chemist who came from Australia. Subsequently he was sent by the Government to Denmark and Germany, where he found that the method we had acquired was really the best one, and since his return he has given instruction from time to time in the making of casein to factory-managers. He has never done us any good, however.

To the Chairman: The New Zealand Casein Company have been manufacturing buttermilk casein for the past three years. The Department in Wellington say that an officer of the Department has discovered how to make casein from buttermilk. It is not likely, however, that the Department will get a patent, as their method is an infringement of ours. We get on well with all the officers of the Department except Mr. Pope. The industry is a successful one, and we are doing well. We think, however, that the question of a bonus might be brought up again. We have been unfairly treated, and we hope to get some of it, considering the money we have expended on our experiments. We hope to develop a large industry by manufacturing goods from casein. For one thing, I think that concrete as a building-material will be largely used, and only casein paint can be successfully used on concrete. It is in a matter of that kind that we would like to get expert advice from the Department in order to assist us, and then, when we have advanced a certain distance, we would like some protection.

W. P. HESKETT examined.

The two best-known deposits of iron-ore in New Zealand are the brown hæmatite in the Collingwood district and the magnetic ironsand of the Taranaki Province. I will take the Parapara iron-ore first, and I think a pertinent question may here be asked: Would this iron-ore be used if situated in Europe or America? And the reply is undoubtedly Yes. Perhaps a comparison of some of the European ores with that of Parapara may be instructive, and it will be shown that some of the Spanish ores (hundreds of thousands of tons are imported annually into Britain from Bilbao, Spain) are practically of the same quality as the Parapara ore. [Comparative statement of analysis of ores quoted.] It has been stated by previous witnesses before this Committee that the phosphorus in this ore is rather high—namely, 0·13 to 0·15 per cent.; but since the advent of the basic process pig iron containing up to 3 per cent. of phosphorus is daily used in the Bessemer converter. It would be necessary when using pig iron for the manufacture of steel from the Parapara ores to use the basic process, preferably the Siemens open-hearth method. In conversation with Mr. Delprat at Broken Hill in 1913 he informed me that they intended using the basic process at Newcastle, as they were on the danger-zone of phosphorus for the acid process—namely, 0·09. As to coke, it is absolutely necessary to have coal that is low in sulphur in manufacturing coke for the smelting of iron ores when the object is making steel. In this respect New Zealand is happily situated, as we have coal as low in sulphur as in any part of the world—namely, those of Paparoa, Liverpool State, at Greymouth, and the Granity duff coal, at Westport; and as the sulphur from the coke is nearly all taken up by the iron the reason is obvious. The distance between the coalfields and the iron-ore is much less than in many countries. For instance, iron-ore is taken from the head of Spencer Gulf, South Australia, to Newcastle, New South Wales, about 1,250 miles; from Bilbao, in Spain, to Great Britain, over 1,000 miles; from Lake Superior to Pennsylvania, United States, 1,000 miles; whilst the distance from Greymouth to Collingwood is about 100 miles. Coal previous to the war was carried from Newcastle, New South Wales, to Melbourne, about 500 miles; then carted to Brunswick, a suburb, three miles; manufactured into coke, and distributed to the foundries in Melbourne at 35s. per ton; so I think I am safe in assuming that coke can be manufactured at Parapara or Taranaki at the same price. Limestone is, I understand, alongside the ore; whilst at Newcastle they ship it from Tasmania, which is a considerable item when we consider that it takes on the average 5 cwt. of limestone to the ton of pig iron. I estimate the cost of producing pig iron at Parapara at present prices and freights at £4 18s. 6d. per ton. We will now take the Taranaki ironsand. The difficulty in treating this ore in its natural state in the blast furnace is due to its extreme fineness; and it is absolutely necessary before putting it into the furnace to prepare the ore into briquettes or lumps of a consistency that will stand the crushing weight and constant friction of travelling from the top of the furnace to the smelting-zone without disintegration; otherwise it will be either blown out of the top of the furnace by the pressure of the blast or filter down to the bottom of the furnace and close up the hearth. The sand can be

magnetically separated at a low cost up to 98 per cent. oxide of iron, and is then the richest commercial iron-ore in the world, giving about 70 per cent. metallic iron. For economic smelting and fluxing of this high-grade ore it is necessary to add a known percentage of silica to it; and advantage has been taken of this fact to incorporate with the ore silica and other ingredients, the whole being mixed together and baked by the waste heat of the blast furnace, producing a compound that will stand a pressure of 2,000 lb. per square inch, and yet sufficiently porous to allow the gases of the furnace to act upon it and reduce it to the metallic state. The samples shown have been manufactured at Patea, and can be prepared ready for the furnace at 4s. per ton, and will give a return of 60 per cent. of pig iron. It has been stated in previous evidence that one blast furnace will only produce one grade of iron. This is misleading. We will suppose that a furnace is running Nos. 1, 2, and 3 grey iron, and it is required to alter that to Nos. 4, 5, and 6: all that is necessary is to alter the charge, and in from forty to seventy hours, according to the height of the furnace, the required alteration in grade will occur. In a trial run at Patea 20 tons of pig iron have been run of varying grades from what is termed a cold-blast furnace by the use of hot blast, which is heated by the waste heat of the furnace, a much softer and higher grade of iron can be produced which will meet all the requirements of foundries, also iron of the necessary purity for the manufacture of steel. I estimate the cost will not exceed £5 per ton at the present prices.

To the Chairman: We turned out 20 tons of pig iron two or three months ago. I think it is a good marketable article. Samples have been tested at the works of P. and D. Duncan and R. Buchanan, Christchurch, and we have the reports of those tests. It is a syndicate that is operating at Patea.

To Mr. Pearce: We have not sold any of the product yet. Some business has yet to be completed before we can go any further. We have ceased work at present, but I have got a ton of the product down here, which is going down to Murray's to be tested. We propose to get our limestone from Toko by rail, or ship it from Parapara, from the marble-deposits. Our syndicate has a fourteen-years license from the Harbour Board exclusively to remove sand for four miles on both sides of the river. Our syndicate is a private speculation. It was intended to be formed into a company; but there has been delay owing to several matters. I think there is some embargo on getting capital during the war, and we were not sufficiently far advanced to warrant us in going to the public for capital until we had a trial run, and nothing has been done in the matter. My idea is to ask the Government to assist us to the extent of pound for pound in respect to capital: if we subscribe £10,000 that the Government should assist us to a like amount. Of course, the Government would naturally take good care to safeguard their interests. For smelting ironsand into pig, without going into steel, we would want £20,000. We could turn out 100 tons per week—5,000 tons a year. I do not think it is wise to expect that any firm starting in New Zealand is going to capture the whole of the New Zealand market right away. I have not seen the Parapara deposits. I have seen the ore and read the reports. I do not think the making of the briquettes would make it much more expensive to produce iron from ironsand than from the iron-ore at Parapara. We have the sand right at our hand; we will have no mining to do. We can pump the sand into the works or elevate it by bucket elevators. Under those conditions I think it would be as cheap to work the ironsand as the ore, and taking into consideration that we have at least 10 per cent. more iron than there is in the ore. The quality of the iron from an analytical point of view is better than Parapara; it is lower in sulphur and phosphorus.

To the Chairman: We have had no trouble with titanium. As a matter of fact, in making iron for steel of the harder-quality titanium has never been found in the white iron; it is only in the higher grades of iron for foundry purposes that titanium has been detected. There are several other places where there are ironsand-deposits; the chief one is on the Pacific coast of America. But there is no coal there: they would have to bring their coal three thousand miles or take the ore three thousand miles. There are no works in operation for pig iron. I believe they are working it on a very small scale at one place, with a furnace making it into semi-wrought iron. Whether it is commercial or not I do not know.

To Dr. A. K. Newman: We get rid of the titanium by fluxing it in the furnace; it goes off in the slag. It is a new process. In the event of receiving a loan from the Government of £10,000 the Government would have the security of our plant. If the process is a success I think the Government under those circumstances would be entitled to a share in the profits. I have spent four years and a half in constant experiments, and I am satisfied that we have got absolutely down to bedrock. I am as certain as I am standing here that if Taranaki ironsand is going to be made into pig iron it will have to be made something after this form. There may be other forms evolved later on, but there will have to be something in the nature of what we call a "centre" in the product—an ingredient that will hold it together. In smelting we did not use any scrap iron; as a matter of fact, to put scrap iron into it would make it worse.

To the Chairman: I got a committee to be present at the experiment at New Plymouth.

To Mr. Poland: I think the Government should make an advance of pound for pound in the same way as they do to local bodies and mining companies. I think if assistance were given in that way it would be a good thing for the country.

To the Chairman: Three or four years ago the Government offered a bonus of 12s. per ton on pig iron, and 24s. a ton on steel.

To Mr. Pearce: I am prepared to accept a bonus now instead of the advance.

To Mr. Poland: I think the terms of the bonus would have to be made more easy than on the previous occasion. If I remember right we had to turn out about 1,000 tons of pig iron before the Government paid anything.

To the Chairman: I think 100 tons would be a fair quantity upon which the bonus should be paid.

To Mr. Hudson: I think the offer of a bonus lapsed about three months ago. I think the position is such as to justify a start being made with the smallest commercial furnace. In regard to Parapara ore and ironsand, I think there should be two separate plants. In the case of Parapara I think it would be advisable to bring the coal to Parapara rather than take the ore to Greymouth.

To the Chairman: I think it would be a good thing to import the best scientific men procurable in connection with this matter. We have had no report from Government officials in connection with the project at Patea. I recognize that before the Government could grant any loan they would have a thorough investigation made. I think the Government should lend us pound for pound up to £10,000; then bonus might be dropped after that. In the event of their not making an advance, I think they should offer a bonus on the first 100 tons. As to the bonus, I think we should have pound for pound up to 5,000 tons. We have expended £6,000 in testing this matter thoroughly—to see if it is possible to manufacture Taranaki ironsand into pig iron commercially, and we are satisfied that we can do so.

EWEN A. CAMPBELL examined.

I have come from the Chamber of Commerce to give evidence in regard to the question of forestry in New Zealand. Ever since timber-mills started the forests have been gone through, and timbers such as rimu, matai, and totara have been taken out, and then the bush is usually cleared or burnt. I think steps should be taken by the Government to see that timber useful for other purposes should be made use of before our forests are finally destroyed. I may mention that I have at my place a chair that was made in 1849, and the rungs of titoki are sound, and can be bent like lancewood. The rata and pukatea are also sound. The chair has been subjected to rough usage; washtubs have been placed upon it. That chair is sound still. In my early days we always made cart-wheels of rata. Titoki can be used for making the finest shafts for carts. In the old days axe-handles, &c., were made of heart of kowhai. The poles and some of the shafts were made of titoki in those days. The vehicles stood very hard wear. I mention this to show that we have got valuable woods in our forests at the present time that are destroyed.

To Mr. Poland: I suggest that when the Government let bush to millers provision should be made with respect to the use of the whole of the timber that can be used in the different manufactures in New Zealand.

G. H. POWNALL, delegate Wanganui Chamber of Commerce, examined.

I desire to bring before the Committee the question of roads. The Victorian system, roughly, is that a Board of three members is set up to administer all the roads that have been denominated arterial roads; and instead of local bodies having to find the money and get a Government subsidy, the Government finds the whole of the money, and the local bodies repay them that amount over a period of years. I and my Chamber do not think that goes far enough so far as New Zealand is concerned. Many of our roads in New Zealand, and particularly country roads, do not lend themselves to the efficient marketing of our primary products. I could give some instances in support of that statement. On one farm up the Wanganui River—which is by river twenty-five miles away, and by road forty-two miles—this year the settlers inland from the river had to pack their wool ten miles, taking one day. To pack a single bale down the river they had in addition to pay a freight of 4s. 5d. There is no doubt that under ordinary circumstances river freightage should be cheaper than road freightage, but under existing circumstances that is not the case. In another case the settlers have enormous trouble owing to there being absolutely no metal on the road. The rates collected are inadequate to enable the settlers to raise the money themselves, and unless something in a national way is done the opening of those roads is going to be a matter of impossibility. On the western side of the railway, perhaps Taranaki has better roads than in any other part of New Zealand. The result is that the dairying industry has gone ahead enormously.

To the Chairman: The dairying industry was certainly going ahead before the roads were good; but my point is that the expenditure of money on roads would encourage the dairying industry in other parts. We ask that the Government be urged to bring in a scheme of road control similar to the Victorian State system, and extend that system. In Victoria the Board is left to decide which roads are arterial, and they must be of opinion that they are of sufficient importance. We think that practically every road is of sufficient importance to be brought under the operation of that Act. The Government, of course, would have a say in regard to the matter, and rightly so, too. I take it that the Government would have representation on the Board, and would see that no roads would be formed unless there was a fair chance of there being a good return.

To Mr. Veitch: Half the cost comes from the Consolidated Fund, and the other half is paid back. The local bodies pay it back spread over a period of twenty-five years.

To Mr. Pearce: The main roads are under the control of a special Board. I am not aware that local bodies in New Zealand are paying about two millions per annum for roads. If the country is prepared to help itself to the extent of two millions a year and the Government is prepared to grant more assistance, we would soon have better roads in New Zealand than we have now.

To the Chairman: I think the whole question of roads would be put on a more efficient basis if more up-to-date machinery were provided than exists at the present time. I think it is iniquitous that local bodies should have to pay duty on roadmaking machinery. I think the majority of members of the committee of the Chamber of Commerce are in favour of toll-gates.

L. A. GRANT, Tile-manufacturer, Taumarunui, examined.

I wish to enlist the sympathy and help of the Committee with regard to roofing-tiles. Taumarunui is the first place in the Dominion that has made roofing-tiles to any extent. It is a fair article, but it is not ideal. [Sample produced.] There is a difficulty with regard to getting a proper analysis of the clay and in getting to know the right machinery to procure. There is also the question of the right treatment of the clay. These things are serious matters to the company. The company has small works, but prior to the war there were sixteen million tiles imported into New Zealand in one year. They were not of the pattern produced, but more of the Marseilles pattern. The tile I have shown to the Committee is one that architects like. There are several buildings in Wanganui covered with that tile, and the Glaxo factory used 370,000 of them. The asbestos tile is not as good as the earthenware article. This tile is nailed on to the batten, and there are clips that help to hold it. The cost is less than the Marseilles article, taking the covering surface into consideration. The price is £4 per 1,000, and there are 550 to the square. The Committee can assist us by giving us an analysis of the clay. We can send it to Wellington. Then we want information with regard to the best machinery used in connection with the English shingle tile. I do not suggest that the Government should obtain the machinery, but it might obtain information as to where to obtain the best machinery. The machine that is being used at present makes the tile fairly heavy. The best class of kiln for burning and the best class of buildings and drying-sheds are other matters about which we would like the Government to obtain information. Then there is the question as to whether burners might be induced to come out here. There are practically no clay-burners in New Zealand. As to the carriage of machinery, the cost on the railway is very heavy. I suggest that some allowance should be made on all machinery for a new industry. The company cannot supply the demand for tiles, and it is probable that another company will be formed. In placing my requests before the Committee I speak in a general sense. If the Government cannot get from England the information we are seeking they might try America. Earthenware tiles are cool in summer and warm in winter; they are quiet, they require no paint, and they will be tiles a thousand years from now. We have no protection under the tariff. We have to pay a duty on goods sent to Australia.

To Dr. A. K. Newman: We have any amount of clay at Taumarunui specially suitable for tile-manufacture. There is enough similar clay there for the next two hundred years.

To Mr. Veitch: We are in touch with the railway, and our factory is well placed for distribution, being right in the centre of the North Island.

G. McGREGOR, Farmer, Morikau, examined.

I wish to speak about flax, grass-seed, and compulsory afforestation. The flax-plant is one that ought to be developed. Little or nothing has been done to improve the quality of the flax. Almost every other plant of market value has been improved. The difference in the varieties of flax is remarkable. Some of the fibres are 100 per cent. more valuable than others, both in quantity and quality. I suggest that the flax, being such a valuable plant, should be taken up by the Department of Agriculture and improved, either by cross-fertilization or by hybridization. No doubt it would take a long time, but the plant is of such value that the matter ought to be gone into scientifically.

To Mr. Hornsby: A machine without a beating-bar would do away with the breaking of the fibre, but it would not improve the leaf in any way.

To Mr. Hudson: The flax grown in New Zealand is not of a low quality, but the quality can be vastly improved. Flax is largely grown from seed, but it is not always true to seed. The quality could be improved largely by plants.

To Mr. Veitch: As a result of my experience I suggest that a number of the varieties which the Government already have in their experimental farms should be cross-fertilized or hybridized, and experiments should be continued in the hope of finding something better. Careful scientific selection has produced wonderfully improved conditions in other lines, and I suggest that the same careful study should be applied to the development of flax.

To the Chairman: I have made representations to the Department of Agriculture and also corresponded with the Government, but have not been successful.

Witness: The next matter I wish to refer to is that of farm seeds. It is only through carelessness in importation that we have such a number of weeds as we have to-day. The country is a hotbed of weeds from one end to the other, and it is owing largely to the careless manner in which seeds were imported without supervision. I understand a Bill is being prepared for the House dealing with farm seeds. I say that all seeds should be sold on their ascertained percentage of purity and germination, with the responsibility on the seller. I do not see that that would be a hardship on the seller. The grower offers a wholesale firm a parcel of seed; he ascertains the value of the seed from the Government Biological Department, and if the seed is not up to the test the responsibility rests on the Biologist. In a parcel of rye-grass you will get anything up to 20 or 30 per cent. of extraneous seeds, and these weeds should not be paid for.

To Mr. Veitch: Seed might deteriorate after its germinating-value has been ascertained, but the merchant could give a certificate that its germinating-value was so-much at the date when the test was made. That is done in other countries. The finest seed-testing factory in the world, until a few years ago, was at Buda-Pesth, the next in Germany, and the next in France. There has been no difficulty in these countries. There must be a certificate of the age of the seed.

To Mr. Pearce: A certificate might be given with each lot of seed with regard to its germination and age. In other countries the responsibility is fixed on the seller through the Biological Department. That Department should be primarily responsible, and the responsibility would be recognized through the various gradations down to the farmer.

To Mr. Veitch: In other countries the testing is done by the biologist. The seller, in disposing of seed, would say to his client, "There is the certificate given to me, and there is the date on which it was given"; and so long as it could not be proved against him that he had told an untruth with respect to the age or the quality as certified to he would not be responsible. To my mind, that would be sufficient.

Witness: As to afforestation, I think that without compulsion it is absolutely useless. My idea is that throughout certain districts the Agricultural Department should acquire small areas, say, 10 or 20 acres, which should be planted with trees suitable to the localities. These plots or nurseries should be planted by the Government and the trees sold to the farmers at bare cost—interest on the land, labour and planting, and so forth. Farmers should be compelled to plant a certain proportion of their land from these nurseries, and to keep them in such a state that the trees would grow. These trees would be valuable in years to come as timber, and extremely valuable as shelter and shade. By this means plenty of timber would soon be available for fencing, firewood, and so on, and in fifty years ample timber would be available for rough buildings. As a farmer I would be prepared to devote a portion of my land to tree-planting.

To Mr. Veitch: The imposing of this condition on farmers generally would be a profitable investment to them. There is a farm of 400 acres not far from here with a large amount of timber on it. It was planted twenty-seven years ago. Any fencing, firewood, battens, and so on used on the farm are drawn from this timber, and they have ten times as much as they require.

To Dr. A. K. Newman: The trees are mostly wattle and gum. In twenty years from now the owner will have timber suitable for building.

To Mr. Hornsby: There are white-pine buildings in this town that were put up fifty years ago. Some of the white-pine is good lasting timber. It is vandalism for the Government to mill one stick of the timber on land intended for soldiers except for the benefit of the soldiers themselves.

HAWERA.

FRIDAY, 11TH APRIL, 1919.

D. L. A. ASTBURY, Farmer, examined.

I was appointed by the Taranaki Branch of the Farmers' Union to wait on the Committee to deal with two matters—afforestation and hydro-electric power. As you have had the question of afforestation before you previously, I wish to deal with it purely from the local point of view. I understand there has been an association formed in New Zealand to preserve our forests. I do not see how it can apply to Taranaki, especially around the mountain, because the forests have been cleared for settlement; but in the hinterland, where there are still areas that are not cleared, and where there are areas that have probably gone back in condition somewhat owing to the war, there is scope for its operations. The probabilities are that the State should preserve those forests. On farms in and around Egmont the State should undoubtedly encourage plantation on the waste lands on some of the farms. A payment might be made for the initiation of plantations and contributions made to them, so long as they were maintained. If this were done it would establish a certain amount of plantation that would be valuable in the future not only from a timber point of view, but also from a climatic point of view. The suggestion has been made that three-quarters of a mile of the Egmont Forest Reserve might be settled. I hope that if application is made for such settlement it will not be allowed. The forest should be preserved as it stands. If there was a Forestry Department controlled by the Government it might be possible to work on a scientific basis, taking out the trees that have matured and proceeding with replanting, but to part with the land for settlement and clear the forest off the ground would be disastrous to Taranaki. Unquestionably the forests have an effect on the rainfall. I hope, then, that the reserve will not be interfered with. At the same time there is no reason why, under a Department of Forestry, the State should not get a considerable amount of profit out of it and yet maintain it in its beauty.

To Mr. Pearce: There has been no public movement for taking a portion of the Egmont Park. I am aware, however, that settlers around the mountain have been thinking of it—it would bring them nearer to schools and good roads. Speaking as a settler here, I know it is very difficult to maintain a few acres of native forest on a section of, say, 100 or 200 acres, but it could be maintained if planted around with pines or other trees.

To Mr. Hornsby: The native pines might be substituted for the trees taken out. I see no reason why the future should not see those trees renewed by nature. The reserve is full of young trees. Mr. Maxwell, of Rahotu, who is an authority on these matters, maintains that the *Pinus insignis* is one of the finest trees we could plant. After thirty or forty years it is suitable for timber for many purposes, even for building. I have trees on my farm thirty years old, and they are from 2 ft. to 2 ft. 6 in. through. The early settlers planted them for shelter and for ornamental purposes and not for timber, but there is a good deal of timber in them that could be used for butter-boxes, cheese-crates, and building purposes. I do not know of the red-gum growing here. The ordinary gum does well in Taranaki.

To Mr. Veitch: If a farmer desired to plant a certain area he could notify the Forestry Department of the area he intended to plant, and it would give him advice and probably assistance, and provide him with trees for his particular locality; and provided he attended to the plantations he should be allowed an advantage, either by a remission of taxation on the planted area or by assistance. The Government might also advance money at favourable rates to enable farmers to carry out the work.

Witness: Hydro-electricity is another matter upon which I wish to speak. In Wellington Mr. Parry, the electrical expert, was interviewed by a *New Zealand Times* reporter, and made the statement that if the proposal of the *New Zealand Times*, that a rate of ⅞d. should be struck on the unimproved value of the land in the North Island, was adopted, it would pay the interest and sinking fund on the sum total of the cost of installation of the power in the North Island, the cost being £500,000. He also said that if that were done the cost per horse-power, instead of being £5 18s. to £6, would be from £1 15s. to £2, and he added that New Zealand would be, next to Norway, the cheapest country in the world to provide electricity to the users. If this Committee could recommend a scheme of that kind it would give an enormous incentive to the use of electricity for productive and other purposes.

To Mr. Pearce: If the Province of Wellington is the first to have the benefit of the hydro-electricity the scheme might be confined to that province, and as the idea expands and other provinces are brought in there is no reason why the whole proposal should not be adopted. It might not be possible in the first place to include the whole of the North Island, but it might be started in Wellington and extended as time goes on. Hydro-electric power is coming in New Zealand, and if it will increase the productivity of the land it seems to me that as the land-value will get the ultimate benefit you would be justified in collecting ⅞d. from all parts of the North Island to pay interest on the principal. I think that Mr. Parry is competent to express an opinion on the matter as an individual who is gifted with a certain amount of intelligence. It is not always that the people as a whole are perfectly clear on what is good for them: they need a lead.

To Dr. A. K. Newman: Under the scheme referred to you would have to tax small outlying farms to supply cheap electricity to the towns. The interest would be paid by the value of the land of the North Island. It seems to me, however, that though an individual might not use the hydro-electricity himself he would be getting more than an equivalent for his payment before he was asked to pay a penny. Many indirect benefits would come to the farmers.

To Mr. Veitch: I am aware that the city landowner pays land-tax as well as the country landowner. Any tax on land for the purpose of developing hydro-electric power would not be paid by the country people alone. When hydro-electric power is developed the country people will benefit by the use of it as well as the city people. Even if they do not use it they would benefit by it because it would enhance the value of their land.

R. DUNN, President, Taranaki Farmers' Union, examined.

I have been deputed to say a few words with regard to land-settlement and production. I wish to emphasize the necessity of putting more life into the land-for-settlements policy. In the past it has been the practice for settlement to go ahead of roading and postal, telephone, and other facilities. It ought to be the other way about. Roads and railways should precede settlement or be made simultaneously. With regard to production, it is absolutely necessary, owing to the great expense brought about by the war, that the productivity of our lands should be increased. In land-settlement the most progress has been made by the Government in country that is already settled. I think they ought to open up new lands as quickly as possible. The already settled lands, with the increased taxation that will be put on them owing to the war, will naturally be cut up without the Government's interference. Then, in order to settle the lands of the country we must have population, and I contend that the time has arrived when the Government should introduce a vigorous policy of immigration. It would pay them to spend a considerable sum of money to bring people to the country. The rates of passage ought to be lowered and other inducements given, and the immigrants allowed facilities to settle in New Zealand. Next, I think that sufficient has not been done to induce the Maori population to become producers, and to produce to the utmost of their ability. Maori lands should be individualized wherever possible to induce the individual to do something for himself and for the country. The communal system of the Maoris does away with incentive for individual exertion, because if one Native cultivates a piece of land the others come and live on him.

To Mr. Pearce: I would like every Maori to cultivate his land if he has a piece, and to make him do that the land should be individualized. He should also be instructed in cultivation. I believe many of them would work the land if it was individualized. I have seen some Maoris who have "whips" of energy. With regard to land-settlement, the Government must find money to open up new lands. The settled lands are already productive, but the others are not. The unsettled lands of the North Island ought to be opened up and made productive.

To Mr. Hornsby: The Farmers' Union is opposed to land-aggregation beyond a reasonable amount, but have taken no active steps to stop it. There is not much aggregation going on in Taranaki; in fact, the tendency is towards subdivision. The highest prices being given in this district are for small sections of from 50 acres downwards. As to bringing unsettled land into profit, I am not in a position to point out the lands that might be dealt with. Native land and unproductive land ought to be taken in hand. The statistics show that at present about two-thirds of New Zealand is unproductive. I know that some of it is mountain-tops. In the north, however, there are large tracts that are lying useless. I suggest that a Commission should be set up, consisting of men with a knowledge of the subject, to ascertain what land is available, the class of it, and so on. If there is an influx of population owing to a vigorous policy of immigration, provision ought to be made for the making of roads and railways, and money would have to be borrowed for that purpose. The money would be reproductive, in a sense. A large revenue would not be returned at the beginning, but the faster that settlement was pushed on the more the revenue that would be produced. Necessary works would provide employment for the immigrants, in the first place. As to the immigrants, we do not want engineers and bootmakers and that class of worker, but working-men who have some knowledge of the land. I do not know of

any scheme the union has to bring into use lands now lying idle. The Natives should have sufficient land left to them to be able to live properly—sufficient for their own use. Any land over and above that should be resumed by the Government. I have not heard of a scheme under which all tribal land would be declared Crown land and the rent paid to the Maoris. I think the Native ought to cultivate his own land. We have some Maoris here who are doing as well as the Europeans. If, under the individualization of titles, some Maoris would get only half an acre, then I say that, at any rate, so far as possible individualization should be carried on.

To Mr. Hudson: I advocate the loading of the back country with a portion of the cost of roading.

To Mr. Veitch: Notwithstanding our present system of land-settlement the cities are increasing in population in greater proportion than the country. This shows that the land-settlement scheme is unsatisfactory in some respects. Many settlers who have gone on to the land have given it up owing to the discomforts of country life. They have not all got the grit to stick it out and wait for things to come along without aid. The Government must help people with regard to finance if they are to get them to settle on the land. They must bring civilization to these people as much as possible.

To Mr. Poland: I think it is not advisable to bring people into the country without defining a policy for employment and so on. That policy is a matter that ought to be left to the judgment of our legislators. No one will say that we are over-railed in New Zealand, and money must be found somewhere to build the railways. Money must be borrowed for productive works. The Government should provide money for a big public-works policy of roads and railways, and then induce immigrants to come here for settlement.

To the Chairman: I think the Government should provide means to bring out people at a cheaper rate than the present rate of £80 for a second-class berth.

G. H. Buckeridge, Secretary of the Taranaki Executive of the Farmers' Union, examined.

The question I have been asked to speak upon is that of land-settlement. I have had a fairly wide knowledge as a surveyor in the first place, as a settler in the second place, and as one who has travelled a good deal over the country in the third place. As a surveyor I was always under the impression that the system of cutting up and roading lands was wrong, and my experience of something over thirty years has strengthened my conviction that the system of cutting up lands and roading after cutting up has not brought about the best results from a production point of view. The reason is that the settler who goes on the back country has such a hard time that in many cases he is not able to make a success of his farm. I know of instances where settlers have been on properties for decades without a road, and after waiting and waiting they have had to leave their holdings and come into the town to educate their children. No facilities have been given to them to get into towns and no schools have been provided. A few weeks ago, in the hinterland of Taranaki and part of the hinterland of Auckland, I saw thousands of acres that have gone back to ferns and weeds. Much of that land will not be settled for many years, and not even then, I think, unless the Government give financial assistance. It seems to me that in the settlement of the land the Government have neglected the good land that could be cut into small holdings. I know holdings not far from this town that ought to be cut into smaller holdings. The policy of settling men on blocks of land and letting them work out their own salvation has probably produced hardy settlers, but there are many excellent settlers who have gone under in the process. If settlement is spread out less rapidly and if the blocks opened up are properly roaded, the settler will stand a better chance of making a success of his selection than if he is planked down in a block which is twenty or thirty miles from a railway and has no road to it. There are 200- and 100-acre blocks in this district that ought to be cut up into 50-acre blocks or less. I know one farm of 27 acres on which the holder is making a comfortable living. He is farming it to its maximum extent. If we can settle four farmers on 200 acres where to-day we settle one man it will increase production and also provide labour, which is a great difficulty in the country at the present time. There are also blocks of land of 1,000 acres, and the need for cutting them up is greater. Then there is the question of providing money to farmers and settlers at a cheap rate. I advocate the establishment of agricultural and credit banks, such as have been in operation for a number of years on the Continent. In 1910 one of these banks advanced as much as £200,000,000. The interest charged by these banks is about 1 per cent. more than the ordinary bank rates, but the extension of the credit is the main thing. On the Waimate Plains 50 acres would be sufficient to give a man a living, though other blocks might be as low as 30 acres. In regard to rougher lands, such as those at Omoana, nothing less than 500 acres would be suitable. Further, something should be done to stabilize our population. We have far too much exchange of titles of land. The land is not taken up to farm, but to get another kick out of it, before passing it on to somebody else. That is highly detrimental to getting the best out of our land, and restrictions should be placed on the transfer of freehold land—at any rate, a time-limit should be insisted upon.

To the Chairman: I suggest that the State should provide school facilities for a minimum of, say, five children.

To Mr. Pearce: When the rise in values stops or when values come down it will prevent the resale of properties for profit. I do not think that in South Taranaki in the last ten years the number of farmers has doubled. I do not know of any aggregation in south Taranaki. Generally speaking, the cutting-up of properties has been done privately.

To Mr. Hudson: I approve of loading the land with the cost of roading, and if the land is so loaded it will not prevent a man from taking up land.

To Mr. Veitch: I know that we have the Advances to Settlers Department and co-operative companies that advance money to farmers, but I consider there is still need for the agricultural

banks, which will cover ground that neither of the other institutions cover. The banks would go further in the matter of credit in deserving cases. I urge that a man should be prevented from acquiring a new transfer within, say, from five to seven years. In this matter I am expressing my own views: I do not speak for the Farmers' Union.

T. W. Owen, representing Taranaki Executive of the Farmers' Union, examined.

I have been deputed by the Farmers' Union executive to lay before the Industries Committee some of the ways in which the production of Taranaki can be maintained and in some measure increased. The true basis of the production of this province is the pastures, and it is with them that I propose to deal principally. The soils of this portion of the Dominion are of a volcanic nature; they are light and friable, easily worked, and are what may be termed "generous," because they give out freely of the constituents which go to make up our pastures, assisted largely by a climate which is warm, with an abundant rainfall. These favourable conditions are largely responsible for the valuable exports which leave this district with almost constant regularity, and which have been on the increase for the last thirty years. That being so, is it reasonable to expect that this heavy drain on the resources of our soil can be maintained without some assistance? I say unhesitatingly that it cannot. Already thousands of acres of the lighter soils are showing unmistakable signs of lessened capabilities of production, and if timely warning is not taken and practical methods adopted, then it is certain that our present rate of exports cannot even be maintained. Very great improvement can be made in the laying-down of pasture. A badly-laid-down pasture is not only a loss to the individual farmer, but it is a loss to the whole community. Thorough cultivation and the eradication of weeds and couch-grass before sowing down are the chief essentials; also the judicious application of suitable manures. Then we have to deal with the large areas of land which come under the heading of old or original pastures. In many cases the best grasses have died out, and only the inferior kinds, which provide a poor quality and a small quantity of feed, remain. How to in a measure bring back this land without going to the great expense of going through an expensive course of cultivation is a big problem which must be met in a practical manner. Cheap and effective manures may do much, and in this respect the assistance of an expert thoroughly versed in agricultural chemistry and the best methods of the application of manures would be invaluable to the district; and I would recommend that the Government be advised to obtain the services of such a man. The present experimental methods of applying manures are, I am sure, most wasteful and often very disappointing. Supplies of manures of good quality at reasonable rates are a great necessity to the district.

To the Chairman: The experimental stations at Stratford and Moumahaki are of value to the farmers in a certain degree. I am not acquainted with the experiments which have been carried on at Stratford, but I have been to Moumahaki on several occasions. Valuable experiments are being carried on there, and valuable information has been given to the farmer; but, on the other hand, I question whether the ordinary farmer could afford to pay for the labour employed at Moumahaki, and if he could pay for it he could not get it. The system carried on there is rather beyond the reach of the ordinary farmer. I question whether even in ordinary times every farmer could afford to employ the amount of labour that is employed at Moumahaki. Farmers from this district go to Moumahaki to get information, but in order to carry out the system adopted there would require more labour. It has been a very good thing to establish an experimental farm at Stratford, because the soil there is lighter; and if the Government officers can get the best results it is more creditable to them. There is a great variation in the soil of Taranaki, and I am sure that a system that will suit one portion of the district will not necessarily be successful in another. In Manaia you have some of the richest soils in Taranaki, and experiments carried out there are not going to be a success at Stratford. Of course, both experimental farms give assistance to some extent. During the past four years farmers have been too busy to visit other farms in order to see what is being done in the way of experiment. I am not aware that the Farmers' Unions have applied to the Government to appoint an expert to give instruction in regard to manures. If such a scientific expert got sufficiently into touch with the farmers he could get the practical knowledge from them to enable him to thoroughly discharge his duties. I think the Farmers' Unions might co-operate with the Government in that matter; it would be a splendid investment for the farmers. I am aware that the Education Department has sent round men who have given us valuable information in some respects; but I could point out instances which have come under my own notice where these men have advised farmers to adopt a certain mode of cultivation, and it has been an absolute failure. I think it would be better that the instruction to farmers should come from the Department of Agriculture.

To Mr. Pearce: As far as I know, club-root is brought about by bad farming. If the soil is robbed of certain necessary constituents the plants become more liable to disease. I am aware that club-root is a very serious trouble. It has come to my knowledge that on some farms club-root has occurred the first time a crop was put in. If the officer I have suggested were appointed and he was a thoroughly scientific man he could investigate the question of club-root, as well as other troubles. I think personally that a good deal of the trouble with regard to club-root is owing to too many crops being taken from the land, but I know it is not always so.

To Mr. Hornsby: The assistance given to the dairy industry by the Government has certainly been splendid, and what has been a success in connection with dairying could also be made a success in connection with other branches of farming, providing the proper men were appointed.

To Mr. Hudson: I regard the experimental farms as being a distinct advantage to the farmers. For instance, it was demonstrated at Moumahaki that lucerne could be grown with success and advantage. I question whether we would have the amount of lucerne that is grown in the district to-day if it had not been for the experiment at Moumahaki. I think the Minister

of Agriculture should extend similar facilities throughout the Dominion. Speaking as a farmer, one must admit that our methods of farming are rather crude.

To Dr. A. K. Newman: You can get a certain amount of information from the results of the experimental plots and from analysis of the soil; but can the Department tell us what is the best thing to do with the depleted soils of Taranaki?

To Mr. Veitch: It is very hard to say to what extent the purity or impurity of seed affects the pastures in Taranaki, speaking generally; but there is no doubt that inferior seed is a very serious detriment. It has been commonly reported that Californian thistle has been gradually disseminated in the district through grass-seed. It makes one almost afraid to buy grass-seed if it is going to introduce these pests. Farmers have told me that numbers of patches have been brought in by grass-seed. I think more drastic laws are necessary; weeds are getting too great a hold in this country.

F. MILLS, representing the Taranaki Executive of the Farmers' Union, examined.

The Farmers' Union has asked me to speak on the subject of agricultural education. The subject is too big for me to deal with in a general way. I propose to refer first to the question of experimental farms. Mr. Owen has referred to that matter. It seems to me, if he will permit me to say so, that he has just missed the kernel of the matter. My idea is this: the difficulty in the case of a farm like Moumahaki is that it is a combination of an experimental and a demonstration farm. The combination of the two to my mind is wrong. Mr. Owen has said that he could not see how practical farmers could grow root crops as they are grown at Moumahaki. As a matter of fact, they were growing on experimental lines and without any idea of making that particular part pay. I think that is the difficulty. The man who is to run the experimental side satisfactorily should be a highly qualified scientific man. We also want a qualified man to conduct the demonstration side. At present we are asking one man to conduct the two sides and make them both a success, which to my mind is absurd. That accounts for the difficulty and for the dissatisfaction in the minds of a number of farmers when they visit Moumahaki. The present position is not satisfactory from the farmers' point of view, and I should think it is not satisfactory from the manager's point of view. It is not possible, I think, to get a manager to satisfactorily conduct the two branches. I am not going to say that Moumahaki is not a good institution in some respects; but in some respects I think it is on wrong lines. The two departments should be quite separate and distinct. Another thing that has struck me is that they make a pretence of going in for purebred stock. I think that if the matter of purebred stock is to be taken up there should be some definite policy. I have not been able to discover what their aim is in connection with purebred stock. As to secondary education on the agricultural side, there is one very striking want, and that is the lack of facilities for the training of managers for our factories. We have here the dairying industry, which, of course, is our great industry, and it is a very important industry throughout the Dominion. There are factories which are managed by men who have no scientific knowledge of their work. When we realize that the processes, particularly in connection with cheese, are so intricate, that the chemical processes which take place are so delicate, so easily upset, it must be clear that it would be a great advantage if the men in charge had some scientific knowledge of the principles underlying their work. If even a little better result is obtained from a factory, see what it means; and if such better result is obtained throughout the whole industry it means a great advantage to the Dominion. At present there is no facility for a factory-manager to improve himself, and in respect to our future managers the position is just the same.

To the Chairman: I think a branch of the technical high school should be devoted to the training of our factory-managers, and I think that work should be under the very best men we can find. The advantages to be gained from that would be very great indeed. If we could get a suitable man there is just the possibility that we might get a certain amount of research work done. In the dairying industry there is room for improvement and extension.

To Mr. Pearce: I am aware of the provision in regard to the practical training of cadets, and I agree that that is a good thing. I would like to say that before the war more and more farmers were taking advantage of the instruction to be obtained at Moumahaki.

To Mr. Veitch: I have tried to find out what they are aiming at in regard to purebred stock, but I have not been able to discover that. In regard to cheese, I do not know that they are in a better position in other countries than we are in, but I do say there is room for improvement, and very much room for improvement. If we could as a result of certain action bring all factory-managers even up to the level of our best managers we should have done something worth while. I am quite satisfied there is room for big improvement beyond that. So far as I know, our cheese is quite up to the level of any other cheese, except the Home product itself. Generally the British-made cheese sells at a better price; possibly that is due a great deal to prejudice, but I cannot say. Taranaki cheese is good, but there is still room for improvement. In connection with the breeding of stock I cannot see what their policy is at the experimental farm—I cannot see what they are aiming at.

H. A. WOOD, representing Taranaki Executive of the Farmers' Union, examined.

I have been asked by the executive of the Taranaki Branch of the Farmers' Union to speak on the subject of noxious weeds. I had much rather that a more experienced speaker had been selected for the task. I will deal chiefly with the blackberry. Blackberry is the weed that gives more trouble than any other in Taranaki. I have every opportunity of getting reliable information on the subject, for I have relations scattered throughout the whole of Taranaki. It is about twenty-five years since this weed began to give us trouble in Taranaki. At that time blackbirds, quail, &c., began to increase here, and the blackberry began to appear on many

sections where it had not been previously seen. The blackberry pest has extended very greatly. I consider that there is no less than 300,000 acres, chiefly in North Taranaki, that is what I would call infested with this weed. Out of that 300,000 acres there is no less than 5 per cent., in my opinion, that has become totally unprofitable—covered by blackberry, and not a blade of grass growing underneath. That 15,000 acres if under grass would produce—reckoning one cow to 3 acres—a return of £15 per cow—that is £5 per acre: that amounts to a total loss of £75,000 per annum. Are we going to allow that to continue? At the present rate of progress all our efforts in other directions will be more than counterbalanced by the spread of the weed. The mistake that has been made in the past has been the great quantity of the weed that has been allowed to go to seed from year to year. A great many farmers shirk the duty of clearing the weed, and others cut the weed too late—when the fruit is ripe and is carried away by the birds. Other farmers have tried to eradicate the weed by clearing a little patch at a time, letting the weed grow on other portions of the farm and go to seed. The result is that while one portion is cleared the weed spreads to other parts of the farm and also to other farms. If this weed is to be checked we must stop the seeding. In order to cope with the trouble the Noxious Weeds Act should be amended. The process of clearing provided by the Act is too slow. Every occupier should be compelled to cut the weed and prevent the seeding of every plant on his farm. It may be considered that that order is too large to enforce all over the Dominion. I think that it is no less than a crime that our clean land should become infested with this weed. There is not the slightest doubt that much of the best of our land will become infested if the present conditions are allowed to continue. I admit that it does not travel so fast on well-cleared land, but as the weed gets possession of hedges and gullies it is sure to spread over other land. If the seeding were stopped and the runners were cut there would be no further spreading of the weed, and I believe in time the old plant would die. It has been proved beyond doubt that in swamp country this weed flourishes far more than on dry, hard land. When this class of land is infested with the weed it is practically impossible to eradicate it. In the case of the Ngaire swamp land, if proper means had been taken to deal with the pest some years ago the result would have been of great importance to the country and to the owners of the land in that district.

To the Chairman: I think the best method of dealing with the weed would be for the Government to appoint reliable men as Inspectors to inspect properties and see that the weed is cut early in the season; it should all be cut, say, in December. If the work is not done by the occupier I think the Inspector should put a man to do the work at the cost of the owner. I suggest that the cost to the Department should be a charge on the land.

To Dr. A. K. Newman: Persistent cutting will not kill the weed in Taranaki, nor will weed-killer poison it.

To Mr. Hornsby: Angora goats will eat and kill the upper portion of the plant, but the roots shoot up again.

G. H. BUCKERIDGE, Secretary of the Taranaki Executive of the Farmers' Union, further examined.

The Taranaki land is deficient in lime, and a supply of lime for agricultural purposes is necessary. We have not within easy access deposits of lime of anything like good enough quality to allow it to be used at small cost. For a number of years the union, in conjunction with the Board of Agriculture, has been endeavouring to obtain the free carriage of lime on the railways, even though it may first of all have been borne by sea. Such a concession would enable us to make use of limestone-deposits from Nelson, Auckland, or Kawhia. I have here the prospectus [produced] of a company which it is proposed to start on Kawhia Harbour, if we can obtain the concessions necessary. It is estimated that in two outcrops at Kawhia there are 3,000,000 cubic yards of high-grade limestone, containing from 93 to 96 per cent. of pure carbonate of lime. The limestone is easy to work, and does not require drying. We estimate that we could turn it out at 7s. per yard, and the cost of the sea freight is 12s. 6d. per ton. It is a co-operative farmers' company. As we consider that the sea freight is excessive we are endeavouring to obtain a boat of our own. Engineers have reported on the hydro-electric power available at Kawhia, and the best in sight is that from the Marakopa Falls, fourteen miles away. It would be possible for us to put the necessary plant and machinery on the ground for about £12,000, and out of the 4,000 horse-power generated we would use 100. Settlers and dairy factories along the road could also be supplied with power. We ask therefore for facilities to enable either a Board or the proposed company to obtain the required horse-power by utilizing part of the falls. Around Kawhia Harbour there are large deposits of low-grade coal, but it would be cheaper to use the power from the falls than this coal. I urge on the Committee that the company is not one that is desirous of making dividends on its share capital. The prime use to which we hope to put the capital of the company is to provide the farmers with their requirements of lime at the cheapest rate at which it is possible to obtain it. The concession we ask from the Railway Department would be a small one in comparison with the greater traffic that would follow later on through increased production, and we consider it would be in the interests of the district, and therefore of the Dominion, that the concession should be given.

To the Chairman: The company would land the limestone either at Waitara or New Plymouth, and its works at Kawhia would also be used to manufacture cement and carbide of calcium.

W. D. POWDRELL, Chairman and Managing Director of the Patea Freezing-works and of the Kaupokonui Dairy Company, examined.

I wish to refer to the great shortage of workers' dwellings not only alongside the works in those districts, but all round this coast. The high cost of building-material is one of the causes. There is also the high cost of labour. This makes a very dear house. At Whakatane seven or eight five-roomed houses were built on a standard principle, costing £800 each. Parliament

should seriously consider the question of building houses on a standardized principle, the houses to be sold to workmen on deferred payments. Men have taken up work at our factories, and time after time they have had to leave, as they could not get board or lodging. If the Government were to build houses and sell them on deferred payments my company would guarantee the Government against loss. At present the shortage of houses is interfering with the great industries of the country.

To the Chairman: My company is losing thousands of pounds a year through the shortage of labour. There is waste all round because we cannot get labour. There is no risk in building the houses. It is a matter of money. It would be a good investment for the Government and a fine thing for the company if the houses were built. The Borough of Patea is offering land at a very low rental provided a house is put on it. The price is £60 per quarter-acre for town sections.

Witness: I also wish to bring before you the interference at times by the Government in the products of the country. Many producers are getting frightened at the continued interference. The other day we went to the sales and purchased farmers' hides. We got them to Patea, and then sold them to go to Australia. We were offered much more money by the Australians than we could get from any one in New Zealand. But two days later the Government put a restriction on the export of hides except under license, and the consequence was that we could not dispose of the hides at what we had given for them. Then the farmers object to the butter-fat levy. Not only have they to give butter to the country at a low cost, but a certain amount is deducted out of the fund, amounting to £1,800, for auditors' fees. It has been asked, How can we increase the production of the country? I say we can do it by having more labour—by having a world's labour bureau. If it was known all through the world what price we are paying for labour more workmen would come here. We could increase the production of the country by more scientific farming and by educating the farmers. The State farm has been a great benefit to the farmers on this coast, and if it had not been for the farm we would not have the lucerne that is to be seen on most of the farms in this province. If it is pointed out to a farmer what grasses he should put in it would do much to increase the production of the country. We can increase the production by making smaller holdings of good land, say, 50-acre sections. Some farms of 50 acres are yielding £1,000 per annum. Then, I think that many of our soldiers are being put on a wrong class of land. Land is being purchased for them in this province that a practical man would be ashamed to put a soldier on. It is low-price land, and it is not suitable. Low-price land is not cheap land. I have seen drained swamp land which is very rich, and it is land of a rich class that the men ought to have. They would then earn a living from the start. With regard to State banks, we have a financial system on this coast which has been very helpful to tenants. We form small companies, which are worked in conjunction with the dairy factories to help poor people who are worthy of help. The system works in this way: Six individuals put in £1,000 each, and the bank lends about £2 for £1, the company guaranteeing the account and depositing all the securities with the bank as additional security. The companies have been very successful, and have helped many hundreds of farmers on to the land. The members of the company know the country on which they are settling the people. There is no risk of bad debts, and as long as a man will work a farm with his family there is no chance of failure.

To Mr. Veitch: I believe that the labour shortage will be acute even after the men return from the front.

To the Chairman: In reference to workers' homes, the Kaupokonui County is building its own workers' homes at present, but it could do with more. We are building five-roomed houses. The cost two years ago was from £450 to £500. I recommend concrete for houses, so that they may be built in one mould. At present some of the men working at Patea live in Hawera, twenty miles distant.

D. L. A. Astbury, Farmer, further examined.

On the question of subdivision I am expressing my own opinion and not that of the Farmers' Union. I am a farmer and a landowner, and as a farmer I find I am taxed considerably more than on my land-values. I believe you could get rid of many of the troubles by changing the incidence of taxation. Tax is heaped on the man who is working the land, and we are taxing a man's labour. The incidence of taxation is bearing too heavily on a man's labour and too lightly on the man who does not labour. We are told that subdivision will mean intensive and increased production in Taranaki. It seems to me that the common-sense solution is to compel subdivision, and the only way you can compel a man to confine himself to a small area and to farm it well is to tax the speculative value in the land out of it, so that he will farm and not speculate. We are allowing men in this district to make more money out of the sale of land than out of the farming of land. In the last ten years my income from a landowning point of view is greater than my income from a farming point of view. I repeat, as a farmer, that the solution of the difficulty is to load the landowner with more taxation than he has on his land to-day and to ease the farmer from a working point of view. If farmers who are also landowners kept accounts, setting aside what they earn as landowners and as farmers, and charging themselves with their land increases and what they would pay as farmers, they would know how they stood as farmers and as landowners.

J. B. Murdoch, Chairman of the Hawera County Council, examined.

I wish to speak about some branches of the dairying industry. The company I represent has been considering the question of going into other channels of manufacture—sugar of milk, dried milk, and casein. The position, however, is a very hard one to overcome. There is

machinery patented in other countries for the manufacture of these products, and there is a compulsion on the users of it to sell to a specific person or body. Not only is there that burden, but also a commission to a person who sells our product. These machines are also patented in New Zealand. It is not a question of the patent we are looking at, because we expect to pay for a patent, but after we have made the product we object to that product being handed to a firm to be sold on the market of the world. We hope that the Committee will look into the matter and see that we have a free market.

To the Chairman: There is no difficulty in regard to casein, but there is in regard to dried milk. My complaint is in regard to the machinery and the control over the product that the company manufactures. The Trufood Company have control of the product in England. There may be other machinery available, but the machinery I refer to is the best for our requirements, and it is a pity that the best machinery should be under restrictions. I think that the Government are not aware of the restrictions placed on commodities manufactured with certain patented machinery, and I consider it is the duty of the Government to go into the matter with the Imperial authorities to see if something cannot be done to overcome what might be a dangerous precedent in the future. With regard to our attempts to establish casein and sugar-of-milk branches, we are on the eve of sending experts to other parts of the world to find out the conditions obtaining there.

The Chairman: Can you suggest how an increased production could be brought about per cow?—A suggestion in that direction was made some years ago. We considered at the time that dairy stock should be judged by an expert dairyman. If he found that in a particular herd there were cows that were unremunerative for the production of butter-fat those cows should be disposed of. If they were sold they should be branded, so that a dairyman would know that he was buying a cow that had been rejected by another man. I consider there is not enough being done in regard to the dairying industry. Take, for instance, the manufacture of our products. There has been nothing done in the way of educating experts in the industry. We should have a dairy institute to turn out men capable of manufacturing cheese or butter. At present, when a factory wants a manager it picks up whoever it might be. That man has to be proved, and he may be a success or he may not. He has no certificate to show that he has gone through any course of instruction. If we are going to increase production a dairy institute should be established in New Zealand as soon as possible, and we should get the best expert in the world to teach our young men in the dairying industry.

Does your factory do anything in the way of cow-testing?—We had it running for a number of years, and it was a great success, but it was all hung up during the war.

Do you suggest that the Government should do more in that connection?—What I suggest is that the Government should make it easy for us to get expert men. We cannot get them in New Zealand.

And if you got the men you would pay the salaries?—Yes.

After a cow is tested and found wanting what happens?—It is sold and another farmer buys it, and that is the trouble.

To Dr. A. K. Newman: Casein has been manufactured in Taranaki for a number of years. We have just established a rennet-manufactory in Taranaki. We tried to obtain from abroad the services of an expert, but were unsuccessful. We could get no information at all from abroad. We were blocked. We then experimented under one of our own managers, and now this man has made a success of it, and we are establishing a manufactory for rennet.

To Mr. Hornsby: The patent rights in connection with dried milk make it imperative for those who manufacture it to sell the product to a certain firm. The makers of the machine make it compulsory to sell the product to a specific firm or to hand it to them for sale, so that they may get the commission out of it.

To the Chairman: No cow should produce less than 200 lb. of fat, and that is a low figure. Some cows go up to 400 lb. or 600 lb., and even higher. There is not sufficient being done by the Government to raise the standard of production per cow. It pays to go in for the high-priced cows. I suggest that the rejected cows ought to be branded.

To Mr. Veitch: The man who does the branding should be a Government officer. He should have power to do it without consulting the owner. He would get the test from the factory. Of course, the farmer might use the cow, but if he sold it it would be branded.

Witness: I also desire to draw attention to the question of railway rolling-stock. At the height of the season trucks that are used for carrying meat are also used for taking dairy-produce. Then we have difficulties in getting trucks to bring timber for our dairy factories; and the timber through want of proper covering gets saturated with coal-dust when going through tunnels. The tarpaulin sheets cannot be got at times. We cannot hold our foodstuff in the yards, and we have to send it to our cool stores for proper keeping. We have tried to shake up the Department, and we hope the Committee will assist us in this respect. I may mention that during the month of February the dairy company had some three hundred crates of cheese waiting for trucks; the trucks had not come along, and the cheese was left in a position where it was open to rats and everything else. There is another thing in regard to which this Committee may be able to assist us, and that is in obtaining machinery from England. Some dairy companies, and also other industries and local bodies, have had orders placed in the Old Country for machinery for quite a long time, and it has been absolutely impossible for us to get this machinery along. We would sooner obtain our machinery from the Old Country, but we are practically forced to go into the American market to obtain our machinery. We think that something should be done to bring before the Imperial authorities and manufacturers the desirableness of supplying as early as possible the machinery necessary for our industries. With regard to local bodies' requirements,

according to the Act there is only one kind of machine that is exempt from duty, and that is the road-roller. Road-rollers are necessary, but there is quite a lot of other machinery in connection with the making of roads, and that machinery is all subject to Customs taxation.

To Mr. Hornsby: The roadmaking machinery I refer to is not made in New Zealand; it is more for the transit and carrying of the stuff. We are trying to make our roads into asphalt or tarred roads, and we require special machinery for the purpose. With respect to taxation, there is one thing that I think is unjust. It appears to me that in localities where the best roads are made and the best facilities are thus given to the people for working their land, the value of that land for Government purposes is shot up in valuation for Government taxation purposes. That is practically taxing a man's energy. I think it is a very unfair principle of valuing land.

To the Chairman: There is no aggregation going on on the Waimate Plains; in fact, it is the other way about. I think that in some parts of New Zealand aggregation should go on more. I have heard the statement made that the land in south Taranaki should all be cut up into small holdings. I do not agree with that. I contend that if you had, say, fifty settlers, and you had two or three large holdings, it would be very useful to the small settlers in order to get rid of their stock, to have them fattened on the bigger areas. I think a few large holdings in a lot of small holdings is a very necessary thing. I admit you want small holdings. Where land is of good quality I should say it is a mistake to have aggregation. We have no aggregation in this district. The higher the value put on the land the smaller the holdings will get.

To Dr. A. K. Newman: I think a man ought to make £750 gross income off 50 acres of good land; he may make £1,000 off some land. I know a man with 52 acres who last year took £970 for butter-fat alone.

To Mr. Veitch: He does quite a lot of cultivating for feeding his stock.

To the Chairman: There are two or three farms outside of Hawera of 1,000 acres, but they were purchased many years ago. The danger of aggregation is not very serious here.

W. D. Powdrell further examined.

I would like to state further that the difficulty is not in connection with the high-priced land—the high-priced land is the cheapest—but the difficulty is owing to so many mortgages on farms. Some farms have six mortgages at the present time. We find men buying farms with one or two mortgages due in a couple of years' time. There is very great danger in the position. I think in case of any man selling a farm where there are five mortgages, his mortgage should be a perpetual one, or probably up to the fifth mortgage. It will certainly bankrupt a great many of these people if these mortgages are pressed. The suggestion I make would secure a man from an unscrupulous landlord; he could not foreclose.

To Dr. A. K. Newman: It would be better if there are several mortgages that the State should compel it to be a perpetual mortgage.

To the Chairman: I should say that if after the second or the third mortgage it were decided that it should be a perpetual mortgage, then a man could not be ruined. That would check gambling to a certain extent.

A. Hunter, representing Farmers' Co-operative Association, examined.

There are two or three matters I intended to speak on, but after the evidence that has been given, and in view of the late hour in the afternoon, I will cut them out. Before I mention anything else I would like to bear out what Mr. Powdrell has said with regard to the last matter. As chairman of a farmers' co-operative concern I have seen a good deal in connection with the financing of the struggling farmer—helping him on to the land—and I can bear out what has been said. The first subject I desire to speak about is the taxation of co-operative concerns. As you know, the Government has recognized the principle of exempting the profits of dairy-factory companies from taxation except in so far as that is devoted to the paying of interest on share capital. The co-operative concerns are placed much on the same basis. Of course, co-operative concerns are not all truly co-operative in the highest sense of the word—probably even the dairy companies are not; but personally I think they are the nearest to perfect co-operation that we have. Take a company like our own: we are just a young company, and our capital has been arrived at slowly, like most of these concerns, whereas the business increases very fast, and we are called upon to carry out more than the capital really warrants at times; but our profits are taxed—and of course they come to be fairly large—and they meet with the 7s. 6d. tax—that is the limit in the taxation. In our own concern for the years 1917–18 the taxation amounted to 7·2 per cent. on our paid-up capital. That is the income-tax. If you take the average taxation for twelve months it means that this is approximately 8 per cent., which is a pretty heavy thing.

The Chairman: It shows that you are doing pretty well with your capital?—Yes; we have 3,040 shareholders, and 1,874 of those shareholders have less holdings than four—that is, three, two, and one. There is £10 called up—half. The average on the whole is only 3·95, so that you will see it is pretty evenly distributed. Although some of them are comparatively wealthy men, yet the bulk of our shareholders are small men. All the men we finance are shareholders of the company, and they therefore are taxed on the highest scale on the amount that goes back to them from the association. I do not suggest that we should ask for full exemption. It is only right that we should pay taxation on what we pay in interest or dividends; but what goes back to the shareholders in rebates on their purchases or commission from the sale of stock at auction—that should be exempt. If it is not exempt, we think it should be taxed on a flat rate and not on the graduated scale. We think we should have the same treatment as the dairy companies. The next point I wish to speak on is the working of the hill country. As you know, although Taranaki is looked upon as a dairying province, we have actually more sheep-country than dairying-country.

Of late years, especially during the war, we have found a tremendous difficulty in working the back country. One of the principal difficulties is with regard to the man on the land. The same remark applies all down the coast; facilities for educating the children in the back country are practically non-existent. Men have taken up farms—young men have gone on land, and they have worked it and have done well; and when the land is beginning to return them a reasonable profit for the labour and capital they have put into it they find they have to move in order to give their children a chance of being educated. For that reason land often changes hands without the people who should get the benefit out of it receiving their dues. That has an influence in preventing men taking up land of that sort. The same thing applies to managers who may take their place. If a man does not wish to part with a place he probably moves nearer to town himself and puts in a manager; but the same remark applies to the manager. The owner is thus practically confined in his choice of manager to single men, and, as you all know, we do not get the best results from single men in anything. A man who has his home there puts most into it and gets most out of it.

To the Chairman: I advocate special provision in the way of school facilities. I agree with the suggestion that schools should be provided where there are five children; but I also think better provision should be made for taking the children to where they will receive better education. The result of the small schools appears to me to be this: that the least capable teachers are put into these schools, and, of course, the capitation acts against it too; it does not act in the best interests of education. Probably a different scheme of capitation would be better than that in vogue. But I think it would be better to take the children to the bigger schools; they could be transported to the larger schools. They might be brought to the ends of roads and picked up by motor vehicles or something of that sort. There are motor mail-services on most of these roads now.

To Mr. Hornsby: The system adopted in America of appointing itinerent schoolmasters—thoroughly qualified masters—might be of considerable advantage. I think it would be better than the children being placed under more or less incompetent instructors.

Witness: There is another point in connection with the hill country sheep-farms, and that is in connection with the weed commonly known as "biddybid." I think the Department should make a very careful study of the plant and of its natural enemies, and of the best methods of dealing with it.

O. HAWKEN, Member of Board of Agriculture, examined.

In regard to the question of the subdivision of land and housing, I would like to draw your attention to the necessity for some aid being given not only with respect to houses in the towns, but also in the country. As a matter of fact, I believe that a great deal can be done in the way of subdividing the land by providing a method of helping the people to build houses on their property at a cheap rate, and apart from the first-mortgage business. I think the Government could subdivide land by providing houses, and so save themselves a very large amount of money in buying land. I should propose that houses should be built for people who wish to subdivide the land. The system would have to be worked on the suggestion as to the perpetual mortgage. Under the advances-to-settlers system no man who has a mortgage on his land can borrow money to build a house; the Government does not lend money on second mortgage. If the Government adopted this suggestion men would build houses and so sell a portion of their property. I believe that a great deal could be done by the adoption of that principle for the returned soldiers, for instance. It is even more necessary, I think, to provide houses for country workers than for town workers.

To Mr. Hornsby: Arrangements might be made to have a sort of village centre; it would have to be judiciously chosen. At present the drawbacks in connection with educating children in back country are generally recognized. A suggestion has also been made with regard to seeds. I think we should deal with this matter somewhat on the lines of the British Act passed about two years ago; otherwise this country will become the dumping-ground of all the bad seeds of the world. I think that Inspectors under this Department might in many cases be appointed from our returned wounded soldiers. I think many of these men would be suitable for this class of work. My observation is that right throughout the coast here noxious weeds are being spread rapidly—Californian thistle and all sorts of weeds. Farmers understand the difficulties which confront the Department of Agriculture; but at the same time I am certain that the work cannot be carried on properly with the present vote. More attention should be devoted to scientific research in connection with agriculture; and here again there is a field for the employment of some of our younger men—men who have perhaps lost their health. Let suitable men be trained in specialized occupations which might be very suitable for them—trained in work that would be for the good of the country. Much more might be done with advantage in the way of research work.

To the Chairman: This research work might be done on the experimental farms. It would take some time, no doubt, to bring it into order. With respect to stock, there has been no real policy, and they have been starved for money. A question has been asked about agricultural education. My opinion is that the primary schools should not trench on the Agricultural Department's proper sphere. The Department of Agriculture should deal with the men, and the primary schools with the boys. Reference has also been made to experimental farms. I think the American system is the best. More good is done by sending round thoroughly qualified men—men with scientific knowledge and training, and men whom the farmers respect—than by asking farmers to pay periodical visits to experimental farms. I would not for a moment advocate the selling of the experimental farms, but I think their activities should be restricted to demonstration purposes. I may say that recently I went into the question of the losses in sheep. I examined the statistics. I have gone into the statistics and the question generally; I have worked out the

figures carefully, and I have come to the conclusion that for the past ten years there has been a loss of two million sheep—that is the average. So that you see there is an immense field for research there—as to the cause of the loss of that large number of sheep from preventible causes. The whole question comes back to scientific research and the employment of skilled men.

To Dr. A. K. Newman: The loss occurred mostly in hoggets; the Department itself estimated a loss of a million and three-quarters last year. The problem is a big one. The figures I think are reliable, because the Department's figures are very complete.

To the Chairman: The Board of Agriculture has this matter under consideration.

MANAIA.

SATURDAY, 12TH APRIL, 1919.

On the Committee visiting Manaia, Mr. T. McPhillips, Chairman of the Waimate West County Council, extended a hearty welcome. He said that one of the most important matters it was desired to bring under the notice of the Committee was the installing of hydro-electric energy. Taranaki was a district that required a considerable amount of energy, either electrical, steam, or petrol. There was not a factory that was not using power of some sort, and in the near future their operations, owing to the high price of land, would have to be extended to include the manufacture of dried milk, sugar of milk, &c. Electrical energy was the coming power—was indeed the existing power if they had it within their reach. It would not cost more than one-third that of petrol, the money for which all went out of the country. Milking-machines were now installed on nearly every dairy farm in Taranaki, and an adequate supply of electric current at a cheap rate would induce farmers to take more interest in their holdings, and induce them to remain there and develop their land instead of wishing to get into the towns to live. The supply of coal presented a serious problem. Industries were now working from day to day, and should there be a strike, where would their industries be? The country must have a large revenue; this must come mainly from its products, and every effort should therefore be made to protect these. He asked members of Parliament present not to stick at five, six, or even ten millions of money to install complete systems for the whole of New Zealand. It would be an excellent investment, and would amply repay the country. The roading problem in this district was a big one, and he urged members to assist in pushing the Opunake railway to a completion with the least possible delay. If the railway were completed it would relieve to some extent the toll-gate nuisance. In place of toll-gates he would suggest that the Government provide money as cheaply as possible for road-construction. It was impossible to construct roads to meet the changed traffic out of rates; but once roads were properly put down and tar-sealed no public body need fear motor traffic.

Councillor T. Long, Councillor J. Stevenson, and Mr. W. D. Powdrell also addressed the visitors.

The Chairman expressed the Committee's appreciation of the cordial welcome given to it.

NEW PLYMOUTH.

MONDAY, 14TH APRIL, 1919.

W. J. PENN, representing the New Zealand Iron-ore Smelting Company (Limited), examined.

The company I represent was formed about two years and a half ago, with a capital of £65,000. £25,000 of it was allotted—fully-paid-up shares—to a syndicate which had been experimenting with the ironsand for about two years previously. Of that syndicate the late Mr. Duncan Rutherford was a member. The company took over a lease of about ten miles of the foreshore on either side of the Breakwater at New Plymouth. It took over the patent rights and other concessions from the syndicate, and it started operations about the beginning of 1917. On account of the very great difficulty in getting material, and labour difficulties too, it was nearly a year before we could get our furnace going. We started an experimental furnace and succeeded in smelting a considerable quantity of iron; but it was of very variable quality. Some of it was soft grey iron, suitable for foundry purposes; but most of it was mottled and hard white, which is practically unsaleable in New Zealand. Our object was to get good foundry iron. After experimenting with the small furnace we got it to such a stage that our mineralogist and engineer said we might go on to the bigger furnace. That was put into commission, and our first result gave us much the same quality of iron as before—variable. Mr. Frank Reed, of the Mines Department, came up and inspected, and he advised the company before it went any further to try to obtain the services of the very best expert we could secure from Australia, England, or America; and he suggested one or two names. We eventually succeeded in getting a Mr. Aubel, a young American mineralogist and engineer, who was second man in charge of the Broken Hill Company's iron and steel works at Newcastle. His three years' engagement with the company was just about terminating. He was anxious to go back to America to his own people, where he was advised there was a wonderful prospect in the iron and steel trade; so he decided not to renew his contract with the Broken Hill people, but to go home to America, and to put in two or three months with us on the way. We had to pay him a very big fee. He recommended certain alterations in the works. It took us so long to get those alterations made that we actually had him here for six months, and before he went away we had the furnace in commission for about a week or ten days. It started off with iron 8 per

cent. silicon content. Any one with knowledge of the iron business knows that is a wonderfully rich grey iron. Mr. Aubel at once took steps and brought down the percentage to about 2 per cent. Then defects developed in the furnace, and we were compelled to blow down. We could not afford to keep Mr. Aubel here any longer, and he went home. Subsequently I saw Mr. Massey and put the position before him, and asked him if he could see his way to assist us. He asked me in what way, and my suggestion to him was this: that we believed that we had overcome the chief difficulty in the way of the smelting of the ironsand, but on account of the bad name ironsand has had and the prejudice against it owing to so many failures during the last fifty years, it is very difficult to interest people in it—to put their money into the project. I asked Mr. Massey that he should try and obtain an expert from England who would come here and thoroughly investigate what we had done, and report as to whether there was a reasonable prospect of making it a successful industry. I also told Mr. Massey that I believed my company, if the Government wished to take it over as a State industry, would be prepared to sell out to the Government on reasonable terms. Mr. Massey did not think a great deal about that; he thought that it should be done by private enterprise. Then I said we might want some financial assistance; but before asking for that we would like him to satisfy himself that we were on good lines and that there was a reasonable prospect of success. He submitted the matter to Cabinet, with the result that at the end of the year or the first week of January the Minister of Mines wrote to the High Commissioner at London instructing him to try and obtain the services of an expert to come out to New Zealand and report upon this proposition. That is about three months ago; there has not been time yet to hear from Sir Thomas Mackenzie. We are awaiting his reply. In the meantime the directors managed to finance a little with the bank's assistance, and a further trial took place at the beginning of January. The result of the trial was that we made further discoveries. We found that we could very much lower the consumption of fuel and could smelt the sand direct without any previous preparation. It reduces the cost very materially indeed, and makes it look a very good commercial proposition. But, unfortunately, before that we had been running the ironsand for more than two days—the ironsand alone without any preparation—our coal-supplies ran short, and we have not been able to get further coal or coke until this very day. Two or three weeks ago we managed to secure some coke from the Wellington Gas Company. We tried to get it sent up by steamer in anticipation of the Committee being here, so that we might have the furnace running. We could not get space in the steamer in time, so we have had it sent up by rail at considerable extra expense. Three or four trucks are in the yards, and more is on the way I hope. We think that by this time Mr. Heskett has been able to light the furnace, and we may be able to show you the smelting late this afternoon or to-morrow. We have arranged for the Wellington Gas Company to keep us supplied with as much coke as possible, so that it is possible we may be able to keep the furnace going for a considerable time on the ironsand. At the two previous trials we have obtained about 60 tons of grey iron and about 80 or 100 tons of white and mottled. The grey iron was sold to foundries at from £16 down to £12. About six months ago we sold some at £16 a ton to one foundry, and they were so pleased they sent back their cheque at once, and gave an additional order for more. The foundry was that of George Fraser and Sons, Auckland. Reid and Gray, of Dunedin, had a few tons in October or November last, and they were so pleased with it that they said they were willing to take a further 50 tons. We have sold a few tons since the beginning of the year; and on Saturday we got another order for a few tons of white iron. They reported very favourably on the grey iron. Shacklock's, of Dunedin, had, I think, 5 tons of the grey iron about October. In November I wired to them when I was with Mr. Massey and asked them what they thought of it. Their reply was, "Iron not quite suitable for our ordinary purposes, but we shall be glad to have another 30 tons." The foundry at Hawera had a few tons about October. At first they thought it a little bit hard, and were not quite taken with it. We asked them to persevere with it, with the result that they have given us further orders, and they said they were very pleased with the iron. The iron is capable of taking up from two to three parts of scrap and giving very good results. It can be used pure, just as we supply it, or mixed with two or three parts of scrap, and the results are always good. We had some test bars made in Auckland by Fraser and Sons. These were tested on the Harbour Board's testing-machine. Some of the bars could not be broken with the machine; they went far beyond the Government standard test. The machine would not break them; they were afraid of breaking the machine if they put greater weight on it. The iron is reported on by foundries taking it as being easily worked. It is rich and of very great strength. But our position is that we have never been able to keep the furnace going for more than a week or ten days. That, of course, increases our cost immensely. We have not the capital to put up coke-ovens, consequently we buy our coke, which is a greater expense than if we coked our own coal. We have not the capital to put up coke-ovens. The directors are under a joint and several guarantee to the bank, and financing is a little difficult; and until we can establish thorough confidence in the proposition it is difficult to go on the market for further capital. If we can get an independent Government report—a favourable report—that the proposition has a reasonable prospect of success I think our financial difficulties would be at an end. We could then get capital in New Zealand or go to England for it. But, as I have said before, there exists a very strong prejudice in regard to Taranaki ironsand owing to the many failures and disappointments in the past; and we have not yet quite succeeded in living that down. There are four or five foundries which have tried the iron, and they are very pleased with it. Possibly before this Committee's report is laid before Parliament the Government may have obtained an expert for us, and our financial troubles may be over; but, on the other hand, they may not; and that is why we would like to enlist the sympathy of this Committee, if they see fit to make a favourable recommendation to Parliament. As for myself, I know nothing about iron except the little bit of knowledge I have gained during the few years I have been a director of this

company; but I come from the centre of one of the big iron districts of the Old Country, and I know what the iron industry means. I know it is the foundation of nearly all industries. It is *the* industry of all others to try and establish in any country. This company has been trying in a small way—honestly trying—to develop this industry, and we consider that we are entitled to some assistance from the Government. A favourable recommendation from this Committee would, I am sure, assist us very much indeed. We hope to hear from Mr. Heskett this afternoon that the furnace is going, and that he will be able to tap it late in the afternoon or in the evening, and I should like the Committee to see it, and put any questions they wish to the expert, Mr. Heskett. He could not leave the works to-day because he has no one to leave in charge, and that is the only opportunity he will have of giving any evidence—that is, if the Committee will visit the works.

To the Chairman: I think about fourteen hundred or fifteen hundred shares have not been issued.

To Dr. A. K. Newman: No scrap iron is used in the smelting. As I have said, this iron is so rich it will take up one, two, or three parts of scrap iron. As to the presence of titanium, that is a matter in regard to which Mr. Heskett could speak more confidently than I can. As the result of experiments Mr. Heskett considers that he has hit upon a plan of overcoming that difficulty entirely. I should have mentioned that in the opinion of Mr. Aubel when he went away this is still a research problem. Mr. Heskett is convinced that he has now entirely overcome the difficulty. We have a magnetic separator; but as long as we can get the sand of fairly uniform richness it is not at all necessary. The idea was that you might one day get sand from the beach that was 90 per cent. ironsand and 10 per cent. grey sand, and another day you might get 60 or 70 per cent. ironsand and 30 or 40 per cent. grey sand. It might vary, and by putting it through the separators you would get a uniform quality to put through the furnace; but we have abandoned that. There are millions of tons of ironsand; there is quite enough to make it profitable. Before Sir Alfred Cadman went Home he made a careful inspection of the beaches; he took men for miles down the coast and had the sand measured, and he thus got some idea of the extent of the ironsand; and he was satisfied that there were millions of tons of it. I do not think that in other parts of the world there are ironsands similar to this; in Canada there is a sand that may be regarded as similar, but it is in small quantities. We want the Government to appoint an expert—a man we would have confidence in, a man whom the Government would have confidence in, and a man whom the trade and capitalists would have confidence in. We want that expert to come and say if this is a good proposition. If it is going to be a good proposition money will be put into it; and if it is not, we will be glad to have the matter put beyond doubt and get out of it.

To Mr. Hudson: The selling-prices I have given were war prices. I have other prices here, but these are estimates. We have never been able to run for more than from seven to ten days, so we are only able to estimate as near as we can what the cost would be. This is an estimate formed after the last running at the beginning of January: "Estimated cost per ton at 10 tons per day, £6 12s. 2d.; estimated cost per ton at 20 tons per day, £5 2s. 2d." On those figures it would be a payable proposition. We are convinced of it; but, as I say, the difficulty is to convince other people. We have a proposition now for the Parapara people to make use of our furnace—to send 150 tons to put through our furnace. We are quite willing to do that when we are not using the furnace ourselves. But we hope to get the furnace going now. The Parapara people, I may say, are interested in this company, and we hold a sublease from the Parapara syndicate of a beach. We are quite willing to work with them, and I think it is quite a reasonable thing to do, to test their ore here. This is the only furnace in New Zealand, I think, that could properly test any iron-ore. I do not think it would tend to economy to work the two concerns through the same smelting-works, but I am not an expert; the expert would be able to answer that question.

To Mr. Craigie: Our rights extend seven miles south-west of the Breakwater, and three miles the other way. I think the supply of ironsand is unlimited. Coke is the biggest item we have. According to Mr. Heskett's estimate on an output of 20 tons a day it is 48·8 per cent. of the cost. On the other hand, labour is only 17 per cent, so that the labour trouble is not a great one.

To Mr. Sidey: Our furnace, I believe, is capable of just about supplying the wants of New Zealand at present in respect to foundry iron. To develop the Parapara business would mean that the expenditure would be enormous, and the output would be so great that the market could not take it. Mr. Heskett has found out how to get the titaniferous matter out of the furnace separately from the slag.

To Mr. Poland: All that we ask from the Government at present is to appoint an expert. In the event of our running continuously it would be a good thing to have the assistance of an expert chemist to conduct analyses.

To Dr. A. K. Newman: There is no expert in ironsand; our officer probably knows more about ironsand than any one else. What is wanted is a trained and expert ironmaster who could analyse the figures and see what has been done, go into the question of cost, and give an opinion whether there is a reasonable prospect of its being developed into a good industry.

To the Chairman: We got some limestone from Hawke's Bay and some from Kawhia. We intend to go on if possible, and I think in a small way we can manage it.

C. D. LIGHTBAND, Leather-merchant, examined.

I will introduce myself to you as being associated with the oldest leather people in New Zealand. My forbears were the pioneers of the industry. The late Mr. G. W. Lightband settled in Nelson in 1843; and afterwards Lightband, Allen, and Co. were the pioneers of our

manufacturing. At present I am the oldest member of the family. We go back some generations previous to that in association with the leather industry. My forbears were specially associated with the tanning of glove leather in England. I mention this so that you may know that I have some knowledge of the subject I am discussing. Some nine or ten years ago I discovered that we had an immense amount of material going practically to waste in New Zealand. I regard as waste anything that is not put to its best uses. I may mention paunches. Paunches are the stomachs of sheep and cattle; the quantity of these paunches is known to members of the Committee from the published returns of the freezing companies in New Zealand. Some nine or ten years ago I started experiments to produce leather from this material. I have a few samples here for examination by the Committee. [Samples produced.] I have a rather extensive exhibit of samples at my office if the Committee can spare the time to inspect them. The tanning of these paunches has now developed beyond the experimental stage; I have introduced the manufactures to people in London. Amongst the samples are tobacco-pouches and other similar articles; and I have a report from a large Home firm stating that they are equal to goat-leather for wear. I started works at Hastings at an expenditure of £6,000 or £7,000 for plant and premises. That was in 1914. There was a certain amount of English capital invested in it. My first shipment left New Zealand—some £2,000 or £3,000 worth—in July, 1914, and, unfortunately, the war broke out in the following month. I had received instructions from London to ship all we possibly could in the following season, because there were markets for all that we could send. Owing to the war, difficulties occurred in the way of shipping shortage, &c., with the result that I suppose £1,000 worth of the material was damaged owing to the lack of chemicals. There was also a difficulty at Home in getting hands for the finishing. I may state that I am shipping these leathers in a similar condition to that in which pelts are shipped—in a tanned condition ready for the buyers at Home. The leather trade at Home is split up into special departments; the tanner very seldom dyes, and then there is the dyeing and the finishing. I am shipping goods ready for the leather-dresser; I ship about forty or fifty casks in the wet stage. I am negotiating with some people in London now with the idea of their purchasing my secret processes. But I should be very sorry to see what undoubtedly may become and can become a very valuable industry in this country—I should be very sorry to have to sell it to outside people for want of local support. The greatest difficulty I have now to contend with is vested interests and the conservatism of those interested in the meat industry. I have a difficulty in getting supplies of material. I ought to have stated that the works at Hastings were closed down owing to the difficulties I have had to contend with. I wanted to re-form my company. I introduced the matter to people in the Wairarapa district, and I have very little doubt that I could have found the capital, but I was up against one difficulty, and that was the freezing companies refused to give me concessions or to enter into contracts for the supply of this material for a longer period than three years. Three years is an absurdly short time for the development of such a business, considering the capital involved. I wanted seven years. The result was that the matter fell through. I think that the whole of the waste material can be taken over by expert men and should be put to better uses, and facilities should be given for doing so. I consider that the waste material is not only the property of the individuals interested in it, but it is a matter of national concern and interest to the community. What I should like would be some assistance, if it is possible, from the Government in that direction to bring some little pressure to bear on the freezing-works companies to consider the better use of their waste material. The material that is going through the digesters of the freezing-works, part of which is converted into manure, contains from 3 per cent. to 5 per cent. of glue and gelatine. The value of glue and gelatine obtainable from these products would run into some hundreds of thousands of pounds, and that is going down the drains. There is a company in New Zealand now that is actually sending to Australia for this waste material because it cannot come to terms with the freezing companies here. The freezing companies here are more interested in keeping the waste material for manure purposes than they are in putting it to more valuable purposes.

To Dr. A. K. Newman: I have offered the meat companies 10 per cent. on its present value to them—that is, for the waste material. One of the samples shown to the Committee is made half from the offal of sheep and about half from the offal of cattle. The only reason why more has not been done in connection with the industry is that we could get nothing done during the war.

To Mr. Hudson: In America they are in much the same position as exists in New Zealand.

To Mr. Craigie: We want a supply sufficient to satisfy investors that we can get the material for a reasonable period and at a payable price. I want the Committee to recommend the freezing companies to give me the facilities I have indicated—at a profit to themselves, of course. I am prepared to offer them a reasonable profit on its present value to them, and I want the supply for seven years.

Witness: I also want to draw the attention of the Committee to the wood-waste. It is something shameful the amount of waste that is going on in New Zealand—waste in connection with our timbers, the refuse from sawmills especially. I do not think I should be far out in stating that we are not using more than 25 per cent. of the timber that is felled for the sawmills. The branches, slabs, sawdust, and inferior timber—that is wasted. Were a plant put up, say, in connection with a group of these mills, for the extraction of alcohol, acetic acid, creosote tars, potash, and many other things, it should be a payable proposition to this country. Such a plant at pre-war prices would cost about £6,000; added to that plant would be the buildings. That plant would put through about 100 cords in twenty-four hours. There would not be a great deal of labour required beyond the collecting. I can furnish the Committee with particulars in connection with the cost and supply. New Zealand is also losing valuable possibilities in connection with tanning-materials. I do not know of any country in the world so rich in tanning-materials

as New Zealand; yet we are only using them to a very limited extent. When I was at Home I had tests in connection with tanning made with some of our New Zealand barks. We have almost inexhaustible supplies of birch-barks—brown and black—more especially the brown-birch. It is very prolific in the South Island and right through the West Coast, in Queen Charlotte Sound, and in south Otago; and there are considerable quantities in the North Island. The brown-birch bark carries about 12½ per cent. of tanning-material. Tutu also carries about 12½ per cent. of tanning-material. There are also numbers of other New Zealand trees the bark of which carries quantities of tanning-material. In the Nelson District there are very large quantities of chrome-ore, which ore is largely used in connection with the manufacture of tannic acid. At present a large quantity of fat is wasted here. If the household waste were stopped and the fat collected and treated it could be utilized for glycerine and soap-making. Glycerine is one of the most important items in connection with the manufacture of explosives. We should manufacture our own explosives instead of importing them; explosives used for commercial purposes should be manufactured here; and there should be no difficulty in manufacturing them if we produced our own glycerine. There is another disgraceful waste going on connected with our flax, or *Phormium tenax*. We have in this country a fibre that is second to none in any part of the world. Great improvements could be made in the selection of the most suitable kinds of plants and cultivating those kinds; also, great improvements could be made in the treatment of the flax. We are behindhand in many of these respects in this country; more industrial research is required.

To the Chairman: I did have patent rights in connection with the paunch-leather manufacture, but they have been affected by subsequent processes. I am holding my processes secret. The industry would be open to the general public if I got a reasonable reward; I am prepared to disclose the secret on any reasonable terms.

E. Griffiths, Managing Director of the Blenheim Oil Company, examined.

The company's works are situated at Moturoa. We started the well about six years ago with a plant capable of putting a bore down to 6,000 ft., and with a view to working in an up-to-date fashion we engaged Mr. Fedorowicz, who has had experience of several deep wells in Europe. The well is now down to 5,320 ft. We are passing through a sandstone formation, and recently we encountered the strongest pressure of gas we have had since we started, which leads Mr. Fedorowicz to believe that the oil should be close now.

To the Chairman: The Government are helping us. We have spent about £25,000 of our own capital in drilling the well, and the Government are assisting us with money. We have been delayed considerably during the war through lack of materials, otherwise we would probably have been two years ago where we now are. We have received approximately £5,000 from the Government.

To Mr. Sidey: The Government are now giving us £350 monthly, which amount pays the wages, coal, and sundries. I am not making any suggestions. We only desire to impress on the Committee the certainty that we will now get oil.

To the Chairman: When we were at 2,200 ft. we got the oil that all the wells have got at that depth. At one time we were getting up to fifty barrels a day. We have had nothing by way of bonus or grant.

To Mr. Hornsby: The £5,000 from the Government is a loan, on which we are paying interest.

To the Chairman: In the event of winning no oil we repay the Government the loan. The Government are not shareholders, but merely the lenders of the money. We have an expert in the work, and do not require assistance of that kind from the Government.

To Mr. Sidey: Our capital is New Zealand capital, largely from the Marlborough District, and hence the name of "Blenheim." The capital of the company is £50,000, of which nearly £30,000 is paid up. There have been no dividends. The companies working about Taranaki are entirely separate.

J. Fedorowicz, Engineer and Oil Expert, Blenheim Oil Company, examined.

Oil already obtained from the company's bore gives 20 per cent. of benzene, over 150° centigrade of temperature, and about 40 per cent. of kerosene product. I consider that the future of the bore is beyond question. The war delayed our work, as it was difficult to get wire rope and casing. We also had financial difficulties, owing to which the work was stopped for several lengthy periods. We are now in a very hopeful position as regards development, and although we are boring slowly we have promising indications, because the gas we have encountered is undoubtedly oil-gas. It has the smell that is peculiar to oil-gases, and the colour when burning is orange-yellow, which is the particular colour of oil-gases in burning.

To Dr. A. K. Newman: In the last 200 ft. drilled we have come across a certain amount of bituminous matter which is related to oil.

To Mr. Sidey: There might be several oilfields in the district. I have been here six years. I have had experience in Europe, chiefly in Galicia, and I saw there, previous to striking oil, conditions similar to those which now obtain here. From my experience in Europe I think there is a good prospect of oil being discovered soon.

To Mr. Poland: I have been in Dannevirke and Gisborne and examined the oil-wells there. The drills in Dannevirke have not given any great hope of success. I have not been to Kaikoura. At Ashburton there is a bore in progress, but I have not seen it. No surface indications exist, and it is only pure luck if they strike oil. It is not impossible that oil may exist in a stratum underlying the shingle on the Canterbury Plains.

To the Chairman: We propose to drill to 6,000 ft. The cost is about £6 per foot. We can hardly go deeper than 6,000 ft. with our machinery.

E. GRIFFITHS, Managing Director of the Blenheim Oil Company, further examined.

To the Chairman: In regard to the advances made to the company by the Government, in the event of oil not being struck the Government will be repaid the great proportion of their advances, because they have security over our plant. The Government are not likely to lose the whole of their advances. At the present time they are practically safe. We are very hopeful that we will strike oil before long. Although we are prepared to go down to 6,000 ft., we may not have to go down that depth before we get oil.

C. CARTER, Chairman of the Advisory Board of the Taranaki (N.Z.) Oil-wells (Limited), examined.

The chairman of the Taranaki (N.Z.) Oil-wells (Limited) is Lord Ranfurly. The company is the principal oil company in New Zealand. Its operations are on a larger scale than those of any other existing company. As you probably are aware, my company has been for several years trying to develop the Taranaki oilfields, and in its endeavours has sunk something like £150,000. Although the more successful of our bores have produced over 2,000,000 gallons, our operations have not so far been successful from a financial point of view. In 1913 the Government voted the sum of £9,000 for the express purpose of assisting the development of the oil industry in Taranaki. Of this sum, £4,000 was loaned to us on security of practically all our assets, and for the express purpose of testing the oil horizon at 5,000 ft. Out of this sum a well (No. 2 bore) was carried down, and recased with larger-diameter casing to a depth of 3,045 ft., at a cost of £3,565. Operations were then suspended, owing to shortage of funds, and until such time as the result of deeper drilling in another well in the immediate vicinity had tested the field. During the time that this well was being drilled no other assistance was given to us to maintain and further develop the shallow and at the same time prolific oil-sands, from which over 2,000,000 gallons of crude oil have been won by us from three wells. Until recently the company was in a position to more than pay its way, but unfortunately No. 5 bore stopped flowing, owing to the strong gas-pressure in the well cutting away the casing, and our bank balance has been depleted in repairing this well, which has been recased to a depth of 2,150 ft. with 8 in. casing, where the water has been shut off. Operations will again commence immediately at this well, and the same flow of oil is expected. In addition to having to repair No. 5 bore, during the time that No. 2 bore was being recased the Government money was only available for the actual drilling expenses incurred, and overhead charges and all other expenses had to be borne by us. Since the Government first assisted us we have received an additional £2,921 for the purpose of recasing No. 5 bore, and of the amounts advanced to us we have paid back £5,000. The amount now owing by us to the Government is about £2,600. With a view to showing the productiveness of the field the average yield taken over a period of three years from the Taranaki (N.Z.) Oil-wells (Limited) was as follows: 1913, 156,756 gallons; 1914, 103,077 gallons; 1915, 121,548 gallons: total, 381,381 gallons. During 1913 two wells were producing. During 1914 one well was stopped for five months, and during 1915 one well was stopped for four months. The receipts from No. 5 bore averaged over £250 per month, from May, 1915, to May, 1916. The total production for twelve months was 90,189 gallons, or 7,500 per month, and from this, on treating, we obtained the following: 14 per cent., or 1,050 gallons, of benzene, at 2s. = £105; 6 per cent., or 450 gallons, of heavy benzene, at 1s. 6d. = £33 15s.; 30 per cent., or 6,000 gallons, of fuel-oil, at 6d. = £150: total, 7,500 gallons = £288 15s. With the price of benzene now ruling (3s. per gallon) such a well would return considerably more. The extraordinary rapidity with which the known oilfields of the world are being seriously depleted makes the finding of a new oilfield in New Zealand of immense value to the Empire and the Dominion. New Zealand imports in the neighbourhood of £1,000,000 worth of oil per annum. For a great number of years oil has been won in the Taranaki field, and the same may be said of many other parts of the Dominion, but in no case has any real development work been done. In every case the work has had to be restricted for want of capital. The many indications and outcrops of oil in the vicinity of the Moturoa field, and the amount of time that some of our wells have flowed, have convinced oil men that an oilfield of no mean magnitude could be developed, provided a reasonable working capital was available; and the fact that oil exists here should in these times, when oil-fuel is becoming the chief motive power, be sufficient inducement to the Government to materially help the development of the field. The Government in the past has taken only a passing interest in the industry. The Imperial Government has realized the importance of establishing oilfields within the Empire, and is interested to the extent of several millions in the Anglo-Persian Oil Company. It also proposed to test at Home for oil by a very complete system of drilling. The Anglo-Persian Oil Company has purchased our refinery plant for the sum of £22,500 for shipment to Persia. Before completing the purchase we offered the plant to the New Zealand Government, which refused to purchase it. The company's representative has made overtures to the New Zealand Government to jointly develop the New Zealand oilfield, but the matter has not yet been taken up. The Taranaki (N.Z.) Oil-wells Company has sold over £16,000 worth of oil since 1913, and there is no doubt that if the company could be assisted until such time as it again has two or three wells producing, not only would it be in a position to continue to develop the oilfields of Taranaki, but in addition a most valuable asset would be added to the Dominion industries. I wish to add that people connected with the industry here have not lost heart; they are confident that the oil is in New Zealand, and particularly in Taranaki. None of the wells under the control of the Taranaki (N.Z.) oil-wells has ceased to flow, except through mechanical conditions becoming imperfect. Directly things were put right the oil has flowed as before. We are convinced that the oil is not merely in pockets, but is still there waiting to be won.

To the Chairman: As to future operations, we gathered from the representative of the Anglo-Persian Company that that company is prepared to join with the New Zealand Government in finding large sums of money to develop the field if the Government will consider it. I think they

are prepared to operate in New Zealand generally and not only in Taranaki. We think that the field warrants the Government taking a much greater interest in the industry than it has taken in the past. I urge that there should be a proper scheme of development put in hand by the Government, preferably in combination with the Anglo-Persian Company, because the company would be prepared to send out oil geologists.

Dr. A. K. Newman: Do you think it is wise to let a powerful outside company come in and take part in the development of the industry?—In this case I do, because they are out to develop the oils within the Empire. When they prove the field they will withdraw and allow the Government to take it over. We shall have everything we desire if we associate with a company like the Anglo-Persian Company, which is largely controlled by British capital. I am afraid our Government would not put the same enthusiasm into the development of the field that the company would.

To Mr. Hudson: The British Government have two millions of capital in the Anglo-Persian Company, and have refused eight millions for their interest in it.

To Mr. Veitch: My main reason for wishing to have the Anglo-Persian in conjunction with the Government is that the company will give us advice as to where to spend the money. That class of advice has not been available so far. We have had no proper oil geologists in the Dominion to report to us. We have had reports from Dr. Bell and others, but they were not oil experts.

To Mr. Cragie: If the Anglo-Persian Company comes in we will have plenty of money and expert advice to guide us.

To Mr. Sidey: I suggest that the company should thoroughly develop the field, because it has an expert staff at its command to enable it to do so. There are two things necessary—(1) expert and scientific knowledge, and (2) capital. I do not think the Government could secure the expert knowledge. I am of opinion that the industry should belong to the Government. It is a national concern. As to whether our company has been approached by any foreign syndicate, that is a matter I could not make public. We have five wells, all situated at Moturoa.

R. H. Bartley, Electrical Engineer, New Plymouth Borough Council, examined.

I do not propose to go into details in connection with the hydro-electric scheme. I merely want to inform you that we have a development which we intend to go on with here which will ultimately give us between 6,000 and 8,000 horse-power, and out of that amount of horse-power we estimate that the ultimate requirements of New Plymouth will be within the vicinity of 3,000 horse-power, and consequently we will have a balance that we are prepared to distribute for the requirements of the various industries within the district. The requirements of New Plymouth at the present time—that is, the highest load we have been called upon to cover up to date—is 900 horse-power. We have approximately in the town a load connected with our supply system of about 3,000 horse-power. Out of that, 1,182 horse-power is represented in motors for supplying the various industries—that is not including the tramways. As to the actual demand for current from our supply system, it is illustrated by the figures up to the end of March—33⅓ per cent. increase on the previous year. The source of our power is on the Waiwakaiho River, greatly altering the conditions under which we are working at the present time; and in respect to that I will ask Mr. Blair Mason to substantiate what I am going to tell you—that is, by increasing our head at the present station, and by making certain facilities for using the whole of the water that is in the river, and also by arranging for a very large storage of water, we are able to generate that amount of horse-power. I do not think there is very much else that I can emphasize from the electrical point of view. We are going to standardize our system. At the present time we are on the one-phase system, and we are altering that to the three-phase. That will be done as we go along.

To the Chairman: We are applying to the Government for certain assistance. Our requests will be quite reasonable, and I do not think the Government will do anything else but assist us. I shall be very glad when we get the Government scheme through in this district, and no doubt we shall be able to assist the Government in connection with the scheme. The Government can help us in permitting us to extend on the river, which we are asking for, and in regard to an increased area for the demand for the current.

F. T. Bellringer, Town Clerk, New Plymouth, examined.

I want to explain that the only reason why we have come before the Committee is this: We understand that many parts of Taranaki want assistance in respect to electric power, and we thought that if the Committee had knowledge of the present position of New Plymouth in respect to electric power and as to its position in a few years' time—that it will have electricity to spare—the Committee would be able to assist these other local bodies who are looking for power and urging the Government to give them power—that they should know that this power is available at New Plymouth. We thought that perhaps the Committee might wish to know where the power could be got to assist these people who want the power. We do not ask anything special from the Government, because we are going along the usual channels with our requests. We have not been turned down in any way by the Government. We wish the Committee to know that we have the power available.

To Mr. Sidey: Mr. Parry was not consulted either in regard to the existing scheme nor as to the new proposal. I anticipate that our scheme will ultimately be linked up with the Government scheme; but we have got no understanding with the Government officials on that point. I do not know that we will need additional water rights—probably we will; but we need to alter the position of our intake on the river. I think it is estimated that the expenditure will be £12,000.

To Mr. Craigie: We are at present charging 1d. a unit for power, and for lighting 4½d. to 6d., according to contracts.

J. BLAIR MASON, Consulting Engineer, New Plymouth Harbour Board and New Plymouth Borough Council, examined.

In regard to the detailed service which has been prepared, I may say that the scheme is turning out much better than I anticipated. The general success of the scheme has been due to the discovery that splendid storage can be availed of. The amount of storage necessary to obtain all the power of the Waiwakaiho River does not amount to more than 8 million cubic feet in the twenty-four hours. I estimate that if we get 10 million cubic feet we will be all right. The detailed service shows 32 or 34 million cubic feet. There are other storage sites which could be obtained if they were dammed, which would give another 50 or 60 million cubic feet. There is not the slightest doubt that 8,000 horse-power is now assured. I think that is a very important thing to Taranaki. It also makes one doubt whether hasty conclusions have not been arrived at with regard to the sources of power flowing down from Mount Egmont. I am inclined to think that if a thorough examination were made of the district, and the levels of the streams were taken, it might be possible to link some of them up into one, and thus get considerably more than New Plymouth is going to be favoured with. In fact, I have come to the conclusion that there is further power in the neighbourhood.

To the Chairman: 6,500 horse-power is the actual horse-power available at Waiwakaiho, but the fact that we have got this storage at our command helps any deficiency that may exist in the Waiwakaiho scheme in a dry season, and that to me as a hydraulic engineer is a very important point. It really means that the community is assured; but we must standardize our plant if we are to be assured that in a dry season that there will be no shortage of power.

To Mr. Sidey: I have not considered this scheme in connection with Mr. Parry's larger scheme from an electrical point of view. I only know Mr. Parry's views through being acquainted with him; and the figures Mr. Parry has been supplied with for Taranaki have not been verified. I do not think that Waiwakaiho was considered. The Waiwakaiho and the streams on those slopes of Mount Egmont I do not think have been discussed at all. I have been engaged in connection with hydro-electric schemes in Tasmania and Australia for years. I know generally about the Waipori works at Dunedin, but I did not report upon them.

To Mr. Craigie: If the scheme I have referred to were adopted I think the hydraulic works would only take about two years to complete. In the meantime it would supply a big area of Taranaki. As far as distribution is concerned, there is no reason why it should not take in the whole of Taranaki. I do not think the distribution losses would be high if it were taken as far as Hawera. Of course, the question of labour has to be taken into consideration. I have not taken that into consideration in speaking as I have done; I assume that the labour will be forthcoming. It will require some tunnel works. The question of labour is a general trouble throughout the Dominion. [Subsequently witness produced a plan of the Port of New Plymouth, and outlined to the Committee a number of suggested works to improve the harbour for shipping.]

D. J. HUGHES examined.

I have been a dairy-factory director for a number of years. I want to emphasize to the Committee the point as to the exchange we pay to the banks on dairy-produce in connection with the buyers in England. The payment is on a ¾-per-cent. basis. Taranaki alone was saved £19,500 last year in exchange. We would like to know if the Committee will use its influence to see if something cannot be done in regard to this matter—to "get off" that exchange. With respect to buying the produce, we pay £170,000 to the commission agent for buying the dairy-produce in this country, on the basis of last year's prices; and Taranaki alone would have had to pay £52,000. These are huge sums. It seems to me that the methods in existence in this country in connection with the buying of produce will have to be altered. At present large sums are paid to buyers travelling in motor-cars all over the country. I would like to see this country do something up to date with regard to dairy-produce. The consumer and the producer seem to be getting no closer together. I am one of those who think that the producer should try and get into touch with the consumer. I think there are great possibilities in connection with that. It is a thing that will have to be considered. I am a member of the New Plymouth Harbour Board, but I am not now speaking as a Harbour Board official representative, but as an ordinary citizen who takes an interest in shipping. I would like to see the dangers minimized in the case of men working on boats. I think that shipping companies should be compelled to make better provision in respect to lights, and in other respects, in order to minimize the danger of accidents.

To Dr. A. K. Newman: I am one of those who think we ought to have a Board in the Old Country, and have our produce handled differently in the future to what it has been in the past.

To Mr. Hudson: I think the Government should initiate some step that will make the system of handling our produce more modern than it has been in the past. The High Commissioner is a commercial man, and he understands the business, but under the existing system he has had nothing to do with this matter. It is a shame. We have not got the insulated space on shipping that we ought to have; other countries have taken most of it.

To Mr. Veitch: In respect to exchange, I think there is something irregular, and I ask if there is not a possibility of doing away with that waste.

To Mr. Craigie: The buyers here buy the produce on commission, on a level 2 per cent.; they go to the different factories and make a deal with them. There are also men buying fat cattle.

To Mr. Sidey: The banks' charge is ¾ per cent. I think the system should be more modernized. It is pretty hard for a layman—a farmer—to suggest a remedy, but there surely is some remedy.

JOHN C. SMITH, examined.

I desire to give evidence in connection with the iron industry. Mr. Tweedale and I have been experimenting for nine years in connection with this matter. We have expended about £1,000 upon it. We have proved that we can produce pig iron of a high grade at £3 10s. per ton; and we also have a by-product which we can convert into basic-slag material by the addition of chemical mixtures. We also have the raw material in the district for adding to the basic slag. We have also proved that the ironsand which we use contains other metals. On the 22nd October, 1911, Professor Jarman, of the Auckland University, gave us the following analysis of a sample which we forwarded to him: "The sample of zinc (spelter) submitted by you contains—Gold 0·15 per cent., and silver 0·45 per cent. This is at the rate of—Gold 49 oz. per ton, and silver 147 oz. per ton, of 2,240 lb." That is the highest. We also received from him another analysis, as follows: "Portion of zinc ingot—Gold 0·008 per cent., equal to 2 oz. 12 dwt. 6 gr.; silver 0·06 per cent., equal to 19 oz. 12 dwt." We also obtained platinum in payable quantities. The latest quotation for platinum is £22 per ounce. We are asking for Government assistance because we have expended all our original capital. We are prepared to give the Committee a test at any time under strict supervision. We also can make slag cement, costing about £2 per ton. We can make a 20-ton concrete block for £1, in comparison with the ordinary concrete block costing £14. We can also produce with electrical steel furnaces several different kinds of steel, and we can make steel direct. [Samples of castings of pig iron exhibited to the Committee.]

To Mr. Hornsby: We have a small experimental furnace in our yards at New Plymouth. I have here a sample of bullion metal. [Sample produced.] It takes 32 cwt. of raw sand to produce a ton of bullion metal. All these results were obtained under test conditions.

To the Chairman: I cannot understand why we do not get the support that we should do. The people who have been helping us are people of small means. We suggest that the Government should take it over and nationalize it straight away. Private enterprise has failed to rise to the occasion. I would like to further mention that Taranaki is very rich in iron deposits; in fact, Mount Egmont is built upon iron-beds. The only known deposits that I can specifically mention are the Midhirst deposits. The following is an analysis of clay ironstone from Midhirst, Taranaki, obtained by my late father some years ago: "Silica, 4·35; alumina, 2·15; ferrous carbonate, 37·70; and ferric oxide, 3·65 (equal to metallic iron 20·75 per cent.); titanic oxide, 0·10; manganese oxide, 1·20; water, 48·80; organic matter, 2·05." This analysis was made by Dr. Maclaurin, who wrote as follows: "If found in sufficient quantity this should prove a valuable ore for iron-smelting." Dr. Maclaurin also gave the following analysis of limestone from Midhirst: "This is a partially burned limestone of the following composition: Silica, 9·4; alumina, 1·6; iron oxides, 1·8; lime, 55·7; magnesia, 0·3; water of hydration, 19·0; carbonic acid, 12·2." Nature has given us suitable coals in close proximity to the ores. The fluxes for the smelting can also be obtained in the district.

To Mr. Hornsby: If the Government had a complete test made of the whole thing, so as to set at rest any doubt there might be in the public mind, I think that would be a practical solution of the whole question.

To Mr. Sidey: Every patent that has been patented for the last twenty years is a direct infringement of our patent, but I am not here to run anybody else's patent down. In the case of one of the other concerns, I do not think they put in the right proportion of flux. We only put through a certain amount for demonstration purposes. Our plant is a small demonstration plant. Our object is to demonstrate to any fair-minded individual that we can produce the crude bullion and the crude iron.

To Mr. Hornsby: We estimate the cost of producing basic slag to be about £2 10s. per ton. I suggest that £4 10s. a ton would be a fair price at which to put it on the market. We have experimented on a small scale with hæmatite and this iron-ore. The result was that the Smart Road material was shown to make a very good flux. There is some hæmatite within about four miles of New Plymouth.

To Mr. Craigie: We have found that the local coal gave highly successful results with the addition of gasworks coke.

To Dr. A. K. Newman: We have solved the titanium difficulty.

To the Chairman: I suggest that the Government should take over the New Zealand Iron-ore and Smelting Company's works and make the necessary tests; that would be fair to everybody, even if they expended £20,000.

To Mr. Sidey: The Smelting Company has the plant and we have the process; they will not yield the plant and we will not yield the process.

J. T. QUIN, Chairman of Directors, Taranaki Farmers' Meat Company (Limited), examined.

I believe the Committee wants evidence that will show how the progress and prosperity of the district will be advanced. As regards our freezing-works, the principal requirements are in respect to roads and bridges and railway-construction. We want the speedy completion of the Stratford-Ongaruhe main trunk line. We also want the hydro-electric scheme pushed on by the Government, or that New Plymouth should be allowed to go on with it. One of our principal requirements is housing accommodation for our workmen. On account of the industrial unrest all over the Dominion we think that a housing scheme for our married people, under reasonable housing conditions, would to a great extent solve the difficulty.

To Mr. Craigie: I think the difficulty might be solved by buying the land at a reasonable price, and that arrangements should be made similar to the conditions under which the Government lends money, thus enabling men to live within a reasonable distance of the works, an acre

of land being allotted to each man, so that he could cultivate a garden in his spare time. He should be within reach of a school for his children, and also within reach of the works. When we started the meat-works less than three years ago we had to have a siding, and the Government penalized us for a siding to the extent of £4,400. There was formerly a siding there. We were informed that a certain amount of money would have to be expended in straightening the siding; the siding was straightened, and the Government charged us £4,400. Previous to that there was a public siding there. That is a very sore point with us, and we are going to try in every way to get redress. We also have to pay a certain sum per annum for the siding.

To Mr. Hornsby: The annual charge for the siding is £50. This is not a private siding—it is a public siding.

To Mr. Poland: We are not in a position to build the homes. Thirty workers' homes would be required. The works are about three miles from the centre of the town.

To Mr. Sidey: The works are outside the borough.

J. MILNE, General Manager, Taranaki Farmers' Meat Company (Limited), examined.

I can only add to what Mr. Quin has said that as far as the productivity of Taranaki is concerned it depends on the facilities for bringing the stock to the works not only by railways, but by roads. Although this is an old-settled district, the main road to Auckland via Mokau is still practically impassable for a great part of the year, and that country is one of the finest in the North Island. Settlers who have been there for years have been promised roads and other facilities, but the promises have not been kept. As a result much of the land has gone back. In order to open up that vast country we should have a railway from Te Kuiti to connect with the Waitara line. It is an easy grade, and would open up an immense country. It would open up as much land as a railway in any other part of New Zealand. We have good roads in the settled portion of Taranaki, but we should have roads in other parts as well. A hydro-electric scheme is also required.

To Mr. Hornsby: At the Waingawa Meat-works the Government has erected a number of workers' cottages which are extremely successful. Our company has no money at its disposal or it would build cottages. Our difficulty is to get the skilled labour we require in our works to stay here. Accommodation cannot be found in New Plymouth for the men. About 75 per cent. of our labour troubles would be solved if we could get good housing accommodation for the workers.

To the Chairman: The bulk of our labour troubles is caused by the lack of housing accommodation. I have given a great deal of consideration to this matter. I have no difficulty with the employees. They are a splendid body of men, but they bring forward to me every day the complaint that they cannot get accommodation here.

To Dr. A. K. Newman: I do not think that, at the present cost of building, the company could build houses and let them out as a payable proposition. No business man would take it on. I think the Government will have to give some assistance in the way of contributions in aid.

To the Chairman: In order to retain skilled men it would pay the company to go to considerable expense in the matter of housing accommodation.

J. T. QUIN, Chairman of Directors, Taranaki Farmers' Meat Company (Limited), further examined.

The Chairman: We would be glad to hear anything you may have to say, Mr. Quin, regarding workers' homes.

Witness: I think the subject of houses for workmen brings in a question of divided control among the workers, the Government, and the company, and you would not know where you are. We know which of our employees we desire to reside here—principally our chief engineer and the foremen of the various departments; but you would immediately antagonize some other section of the workmen against those men as being favoured workmen by having cottages. It is not possible for us to build sufficient cottages for 180 men. Thirty cottages would only cover the foremen and other leading men. A slaughterman is there for six or seven months during the year. If he is a good workman we endeavour to keep him in work for the rest of the year, so that we will have him when the season starts again.

To Dr. A. K. Newman: At the present price of timber it is not possible to build decent homes for our working-people without contributions in aid from the Government. I am a timber-merchant and a builder and contractor, and I know it is not possible to do it.

ARTHUR MORTON, Chairman of the National Dairy Association, examined.

I want to bring before your notice a very grave disability which a portion of the dairying community labour under to-day in New Zealand—I refer to that portion which is manufacturing butter—in that they are compelled to sell butter on the local market at a fixed price, which is less than the export price for butter. The price at which they are compelled to sell butter on the local market is 1s. 5d. per pound, and those who have gone into the question freely admit it is not possible for the farmer to-day to produce butter and make a profit on it at that price. It is a losing proposition for him. If the butter sold at 1s. 5d. were sold only for the purpose of benefiting the poorer classes of the community there might not be so much objection, but it is sold to every one at that price, rich and poor, and consequently the dairy-farming community is being penalized to the extent of nearly £300,000 per annum to supply the local market at that price. The contract made with the Imperial Government for butter is 181s. f.o.b., or about 1s. $7\frac{3}{16}$ d. per pound. In order that there shall be no injustice done to those who supply the local market there is an equalization fund established, and out of the 181s. received from the Imperial Government the factories supplying the local market at 1s. 5d. have to receive sufficient to enable

them to get the same net price as the factories supplying the Imperial Government. The tax, as I may call it, is a continuation of the butter-fat levy. The present imposition is applied only to butter-producers, who are a diminishing quantity by reason of the fact that cheese brings a higher price. The cheese has been sold to the Imperial Government at 10¾d. per pound. Consequently there is very grave dissatisfaction among the butter-producers, who consider they are being unjustly taxed. If it is necessary that the people should be supplied with butter at a price not to exceed the maximum the cost should come out of the Consolidated Fund. The butter-producers count among their number the poorest and hardest workers of the dairy-farmers. There are many of them who are making only a bare living, and out of that bare living they have to find cheap butter for the remaining portion of the community.

To Mr. Veitch: I do not think the tax would be fairer if levied on the cheese people as well as the butter people. Speaking as the head of the industry in New Zealand, I do not think that is a fair suggestion to make. I represent the whole of the dairying industry of the Dominion. My association would not complain seriously if the benefit the New Zealand consumer gets were limited to the poorer people. I do not think, however, it is possible to say to the poor man, "You can have your butter for 1s. 8d." and to the rich man, "You will have to pay 2s. 6d." I only point out that we are providing a benefit for the rich as well as the poor.

To Mr. Craigie: I think that land in Taranaki at £120 or £130 per acre is above its value. It may rise to £200 if the industry is going to go ahead and take on the manufacture of dried milk and sugar or milk, and yield, say, 3s. or 3s. 6d. per pound for butter-fat.

To Mr. Sidey: When the equalization dividend is taken into account the 1s. 5d. is increased by about 1¼d. I think that 1s. 6d. is too little. The arrangement with the Imperial Government stands till the end of July, 1920, when the contract expires. I suggest that 1s. 7½d. is a price at which a dairy-farmer could make a fair profit.

To Mr. Poland: If the Consolidated Fund met the amount as I suggest the rich people would be making it up to the revenue in taxation. It would not come from the poorer classes, but from the wealthy classes. The principle now observed is wrong, and that is what I object to.

To Dr. A. K. Newman: If quantities of butter were stored in the summer it would have a tendency to keep down the price in the winter-time. In pre-war times, when exporting butter, the prices were lower than they have been since, and during the winter the butter was always somewhat high in price. After the war I think it will be found that the prices on the London market for butter will be such that it will pay the factories a good price if they receive the same price in the winter as they get from the London market in the summer. I do not think the prices on the London market will ever go down to what they were before the war.

To the Chairman: The price paid by the consumer of butter is 1s. 8d., but I believe most people get it for 1s. 7d. It varies in different parts of the Dominion. In New Plymouth it has never exceeded 1s. 7d. The difference of 2d. is, I consider, too great. It is not necessary that there should be two persons making a profit after the butter leaves the producer. If the grocer could always buy direct from the factory 1d. could be knocked off; but the factory does not care to sell to the grocer, as he does not pay cash. Therefore a middleman comes in. No doubt if the grocer paid cash the factories would sell to him.

Witness: There are two other subjects I wish to refer to. As chairman of the Taranaki Producers' Freezing Works Company I want to say there is constant trouble in getting sufficient railway-trucks. We receive into the works at Moturoa about 120,000 boxes of butter and 150,000 crates of cheese, and we find great difficulty in getting sufficient trucks when shipment is required. Further, the condition of the trucks leaves much to be desired. It would be in the interests of the producers if we had better facilities in this respect. There is also this matter: It is extremely probable that Taranaki will embark on the manufacture of dried milk, sugar of milk, and condensed milk. We therefore require a large supply of fuel for the necessary heating operations, and we are not situated near a coalfield. We have to get coal either sea-borne, say from Westport, or brown coal from the Waikato by the Main Trunk line. But within sixty miles of Stratford there are enormous coal areas. The Stratford–Ongarue line is now close to enormous areas of coal, and if pushed through so that coal-supplies could be brought from the Ohura district it would be an immense relief. It would give us cheaper coal, we would get large supplies, and it would reduce the carriage of coal by the Railway Department from the Waikato round to New Plymouth. The coal area is about twenty miles from the railhead at Tahora.

To Dr. A. K. Newman: A proposition is afoot in Taranaki to establish a co-operative factory to manufacture casein, but in the course of our investigations we have found that there are patent rights involved. A company called the New Zealand Casein Company, with headquarters at Wanganui, holds patent rights over the manufacture of casein. The only ingredient used is lactic acid or sour milk, and as things are we cannot make casein with the lactic acid.

The Chairman: We had the matter under review in Wanganui, where the representative of the company gave evidence, and said clearly that although the company held patent rights the right of the use of the patent was open to any dairy company in New Zealand.

Witness: I received a letter from the company ten days ago offering to sell us the right of manufacture in Taranaki on payment of a royalty of £2 10s. per ton, conditional on our marketing the stuff through Joseph Nathan and Co. If we put it on a free market we would have to pay a royalty of £5. I will let the Committee have a copy of the letter. Joseph Nathan and Co. have the controlling interest in the patent.

Mr. Hornsby: He said the patent rights were taken from a Germany company.

Witness: Yes, a German came to New Zealand and took out patent rights. I have a copy of the patent rights. Messrs. Izard and Weston, of Wellington, searched for them a few weeks ago for me. The rights were granted to a German, who sold them to the New Zealand Casein Company. They have still five years to run. As to casein, if we could manufacture it without having to pay a royalty and receive, say, £80 per ton in London, we could pay out 4½d. extra—

that is, beyond what suppliers receive for their butter-fat they would receive 4½d. for the casein in the skim-milk. They would then come on to a level with the cheese, and that would do away with the soreness they feel.

To Dr. A. K. Newman: There is a royalty on some of the processes of making dried milk. Most of the dried-milk machinery is American. At present we are proposing to send delegates to America, England, and the Continent to make inquiries about dried milk and sugar of milk. I wish to suggest that the Government should set up an Investigation Bureau in connection with the dairying industry. We have no bureau that endeavours to obtain all the information that might be obtained in regard to the latest developments in the industry. Then we have no laboratory in the Dominion in connection with the industry. Such a laboratory was practically promised when the late Mr. Seddon was in office, but it has not been set up. We urgently need a first-class chemical laboratory in connection with the dairying industry, with a properly qualified chemist. The result would be that the producer in New Zealand would get more for his product than he gets to-day.

To Mr. Veitch: When the trucks are loaded at the works they are taken away at once. We have no complaint in that respect.

To Mr. Sidey: If a dried-milk factory is started it will probably be about Hawera. It will be a co-operative company.

To Mr. Poland: The Department of Agriculture is now sending an expert Home. It ought to keep an expert at Home to advise the dairy people of the Dominion about different matters of development. He ought to be a man who is capable of investigation work. There should be an Investigation Bureau not only for the dairying industry, but for all the industries of the Dominion. We would then be kept in touch with the latest developments in connection with production and with trade generally.

HERBERT COCKER examined.

I have been asked by the President of the Chamber of Commerce to appear before you to present several educational matters. One lesson we have learned from the war is the necessity for scrapping. We must now scrap our antiquated methods, especially in the educational world. We conscripted many things for the war—the best brains, best appliances, raw products, manhood, money, means of transit, and so on—and if it is right to conscript for destruction it is surely right to conscript for the arts of peace. If the best business experts—scientists and technologists—were used to educate the masses for the war, we as citizens demand the same for education—primary, secondary, vocational, and university. Experts in art and science must be trained to train and raise the masses to the highest standard of efficiency, and money must be provided to pay adequate salaries to expert teachers and for schools and equipment. We solicit your help in this matter. The money can and must be found. I submit to you that the proficiency standard must be scrapped. It is not education. The proficiency standard means ultimately blind-ally occupations, pleasure-seekers, misfits, discontenteds, "Red Feds," anarchy, and chaos. I ask, Why is it that the grip is lost on the child while in the plastic stage? If our boys are taught discipline and character you will get good men, for the real education only then just begins. A further point is this: The commercial success of the Continental nations was mainly due to a good system of technical education, both in regard to methods of production and mode of training. Our people are not up to date. The history of the dye industry proves it. Also, there was an exhibition at Home recently of German captured goods, including a cloth made of fibre. It takes an expert to distinguish it from the ordinary material. The only difference is that it will not stand the wet, and tears easily. What I wish to impress on the Committee is this: We require a central organization for research and to investigate all these matters. Let me bring these points before the Committee: (1.) The education of the masses is the basis of all national efficiency. Educated men and women are the best capital the State can possess, and any money spent on education is a remunerative investment. (2.) The present system of education reaches only those within easy reach of the towns. There is need for some scheme whereby children away from the railway-lines can attend school after they have passed the Sixth Standard. (3.) Probably the best scheme would be the payment of a boarding-allowance, thus enabling country children to attend secondary or technical schools in the towns. (4.) Nothing can be done unless the education vote is materially increased. There is great unrest as regards the education system. (5.) The efficiency of the nation is being sadly handicapped through want of efficient teachers. Practically none of the best brains of the country is taking up teaching as a profession, and the reason is obvious. Teaching at the present time is regarded as a fifth-rate profession, and is paid accordingly. I wish to refer to a letter received by me from Mr. S. Maunder, a former Taranaki boy, and now an associate of the Manchester School of Technology (Manchester University), with regard to the advantages he has gained from his technical studies there. He also makes a number of valuable suggestions as to extending technical education in New Zealand. I will leave a copy of the letter with the Committee; it may be taken as an example in any constructive policy in respect to technical education in New Zealand. Further, I beg to suggest to the Committee that there be established an annual Dominion Congress or Parliament for commerce, industry, and education, with divisional branches (say, provincial), meeting quarterly. The Congress might be termed, as in Germany, the "Transition Economy Parliament." The Parliament has representatives from all parts of the Empire, and has twenty-two sub-committees, which will probably be increased to thirty as soon as practical work begins. The sub-committees deal with such subjects as finance, transport, materials of all sorts, handicraft, and so on. With my suggestion I have added education, and I lean to the opinion that labour should also be added. The Whitley Commission Report, which was adopted by the British Government as a war measure, leads me to think that this would be advisable.

TUESDAY, 15TH APRIL.

C. SORENSEN examined.

We have a deposit of kaolin clay at Smart Road, near New Plymouth. The following is an analysis of the clay made by Dr. Maclaurin, Dominion Analyst: "Silica, 39·4; alumina, 33·8; iron oxide, 1·5; lime, 0·5; magnesia, 0·4; alkali, 0·6; water and organic matter, 23·8; The price of alum is £40 per ton. That analysis was made in 1907. The following description of the works carried out and of the deposit appeared in the *Budget* of the 30th May, 1908: "No. 3 level is 6 ft. by 6 ft., and is driven 108 ft. There is nothing to be seen on either wall or the roof but pure white kaolin of the highest grade. At the end of the tunnel is a rise of 15 ft. connecting with another tunnel. No. 2: Same dimensions as No. 3; driven 88 ft. Here also walls, roof, and floor are white kaolin. Here a shaft has been sunk 25 ft., and the quality of the kaolin improves with each foot sunk. Another tunnel, No. 4, is in 62 ft., through the finest yellow and blue-white clays. At No. 6 tunnel, instead of clay there is a face of lignite." According to the reports of experts, this clay, if rightly treated, will turn out chinaware. It is a china-clay, and is inferior to no clay in the colonies.

To Mr. Hornsby: It has never been tried for roofing-tiles, but roofing-tiles could be made from it. The analysis shows that the clay is second to none. I desire to suggest to the Committee that the Government should take up the question of the utilization of this clay. I have neither the knowledge nor the capital to take it up myself. My property is near New Plymouth, on Smart Road. The area of the land is about 100 acres. The deposit is in a big hill that runs through the land. A neighbour of mine has a similar deposit on his land. We do not know the extent of the deposit. Mr. Hutcheson, of Wellington, was here some time ago, and he said that bricks, pipes, tiles, and pottery could be manufactured from the clay on my property.

To Mr. Poland: I have not tried to get an expert from the Mines Department to report on the clay. I desired to let the Committee know that the deposit of clay was there; and also to say that if the Government could take it up I think they should do so. All sorts of things made from this kind of clay are imported into New Zealand.

To the Chairman: I would like to get an officer of the Government to inspect the deposit of clay.

F. HENDERSON examined.

I take the opportunity of introducing to your notice a spark-arrester for locomotives which I patented in the year 1915, and brought under the notice of the General Manager of Railways in February, 1916. The Chief Mechanical Engineer being at that time absent from the Dominion, the matter was submitted to Mr. Pearson, who did not approve; but Mr. Jenkinson, Chief Locomotive Draughtsman, thought the idea a good one and worthy of every trial. I claimed that it would arrest sparks more effectively than existing methods, and also that it would effect a considerable economy in coal. The General Manager agreed to give me a series of trials on conditions which I accepted—viz., the engine to be kept in its usual running, and a hire of £4 per day to be paid for every day the engine was laid aside for the fitting and dismantling of my appliance. The trials were carried out at Wanganui in July, 1916, with engine No. 434 WF, and were continued for ten days. I accompanied the engine every night during that period, and all drivers who used the engine admitted that there was an improvement in arresting sparks, an improved steaming of the engine, and a noticeable economy in coal. Messrs. Guthrie and Lee, Locomotive Foremen, also admitted that a good deal less coal was being used, and at the conclusion of the trials this was proved by figures supplied from the Running-shed Office to show a saving of 12 per cent., the coal having been weighed to the engine during the whole period of trial, and for a week previously, with the engine kept to the same running and drawing the same loads. Mr. Evans, District Locomotive Engineer, who witnessed one run at night from Marton to Wanganui, was quite frank in his appreciation, and he sent a wire to Headquarters next morning (which he showed me) as follows: "An excellent spark-arrester. Recommend it to be retained on engine for further observation." On Mr. Evans's recommendation, therefore, I left the spark-arrester on the engine, as I had to return to my work at New Plymouth. Immediately after my departure Mr. Gillon, Locomotive Engineer, was sent up to make official trials, which were carried on for some nights with a special train, the engine in this case having been withdrawn from ordinary traffic. I know nothing of these trials—as to how they were conducted, or of results—beyond a brief intimation from the General Manager some weeks later that "In the opinion of his responsible officer my device was not considered so effective as the Department's arrester." I was and am still disappointed that I was not notified by the Department of its intention to conduct these special trials, and did not invite me to witness them, that I might have been able to understand why the same success was not obtained as in the former trials. I wrote to the General Manager requesting to be supplied with some details of these trials, and was referred to the Chief Mechanical Engineer, who had in the meantime returned to the Dominion; but that gentleman studiously ignored all my inquiries. However, I had been told unofficially that Mr. Gillon had used Taupiri coal, which was not used at the former trials, as it is not used on the Wanganui Section, and as a matter of fact can only be safely used with a large Bell funnel. Therefore it was with the object of satisfying myself as to the cause of the unfavourable report that I entered upon a succeeding trial in February, 1917; but the Chief Mechanical Engineer so palpably put every discouragement in my way that I was compelled to abandon it after one run, which was conducted under the most abnormal and unfavourable conditions it was possible to establish, viz.—(1) Taupiri coal as fine as peas, evidently the scrapings of the yard, while the engine was set to negotiate the Westmere Hill with full standard load; (2) a fireman who according to his own admission had never previously used Taupiri coal, which requires special treatment; (3) no exercise of care or skill in driving so as to conserve

the steam and negotiate the hill as quietly as possible, but, on the contrary, everything opened out to waste steam and set up agitation; (4) Mr. Bowles, who supervised, refused to allow a second trial with any other coal than Taupiri, on the ground that he had strict instructions from the Chief Mechanical Engineer to that effect. The refusal to allow a second or a third run except with Taupiri coal was neither just nor reasonable, because, firstly, I had agreed with Mr. Jackson to pay £4 for every day or part of a day, as engine-hire, while the engine was laid aside for the fitting of my arrester, and in addition £4 for every part day or day while running trials and until the engine was refitted with the Department's arrester; besides, all fitting and dismantling was done at my own expense. Secondly, Taupiri forms only a small percentage of the coal used by the New Zealand railways, and is only used with a special closed funnel requiring a highly forced exhaust, which is wasteful in coal and detracts from the power of the engine. It would almost seem that Mr. Jackson by his restrictions was afraid that I might score some success if allowed a reasonable amount of latitude. In answer to appeals that I have since made to him for a second trial under less restricted conditions he says that no good purpose would be served thereby; but it can be said with more truth and reasoning that no harm could result, and that some enlightenment might be thrown upon the question of how to arrest sparks with the least possible loss of engine-economy, which the Department cannot claim to have yet solved, as instanced by the frequent fires caused by sparks from locomotives, the latest being at Addington, where damage to the extent of £10,000 is reported. To illustrate my reasoning on this matter I beg to submit for inspection a piece of the perforated plate which is used as a spark-arresting screen by the New Zealand railways. Only 30 per cent. of the plate can be punched out without unduly weakening it, while the other 70 per cent. consists of bridges of metal between the holes. This restricted area for the passage of draught requires a highly forced exhaust to generate steam. The sample piece of grille submitted is that used at my second trial in February, 1917, and which in my opinion is an improvement on that used with so much success in July, 1916. It will be noticed that the openings are no wider than those in the plate, while the area for the passage of draught is 28 per cent. greater, with the result that the draught necessary for generating steam can be induced with a much less force of exhaust, with consequent economy in steam and fuel, while owing to the more even distribution of the draught throughout the whole area of the grille, and to the deflecting effect of the metal strips, sparks are not so liable to be drawn through. The experience of locomotive engineers and others who have studied this question has proved that the only sparkless engine is that which burns powdered coal or oil fuel, therefore it was very easy for the Department, while presuming to test my apparatus, to create extraordinary conditions and then report that the engine threw sparks, and to ignore the real question at issue—viz., whether with the aid of my grille fitted to the engine working under everyday and ordinary conditions an improvement in arresting sparks could be effected, or at least equal efficiency shown, combined with economy in coal. My object in entering upon these trials was to see by comparison with existing methods what merits, if any, my idea possessed; and, as I had shouldered the whole of the expense, I fully expected and was entitled to the co-operation of the Locomotive Department towards that end. I hope, therefore, that the matter will not be allowed to rest at the present incomplete stage, and that the Industries Committee will see its way to recommend further and more conclusive trials under less restricted conditions and on more liberal terms. The following are the figures referred to in my statement, supplied from the Wanganui running-shed per favour of the Locomotive Foreman, and bearing on coal economy: Engine with departmental perforated plate—Coal, 344 cwt.; mileage, 620 miles; coal consumed per mile, 0·55 cwt. The same engine with my grille—Coal, 130 cwt.; mileage, 303 miles; coal consumed per mile, 0·42 cwt. Showing a saving of 38 cwt. coal in running 303 miles, or 14½ lb. coal per mile, or a saving of 12·9 cwt. in an average day's run of 100 miles. I am not in a position to know the total number of engines in use or the mileage, but if my claims can be established to the extent of only half the above showing an enormous saving would be effected, with at least an equal efficiency in arresting sparks.

To the Chairman: I am quite satisfied that the locomotive experts should make a further trial provided I am allowed to be present, and also some one on my behalf.

To Mr. Veitch: At the trial referred to the ordinary open funnel was used. Taupiri coal was used. I am aware that Taupiri coal has never been used on New Zealand railways with a straight funnel. At the first trial it was evident that the exhaust was too fierce. I suggested at once that they should open the exhaust, and it was opened from 3⅝ in. to 3⅝ in., and the engine then seemed better than before; the engine not only steamed well, but also pulled well.

Mr. Veitch: I do not think it is necessary to ask any more questions. Those figures prove that the invention is a good one; there is no doubt about it.

W. T. JENNINGS, M.P., examined.

I would like to make a few remarks about backblocks matters in my district. I would not have brought this question before the Committee, but I noticed that the Committee established a precedent at Hawera, where the members discussed this question. I will read an extract from a letter which I received a fortnight ago: "Takere Road School, erected as a temporary hut for road workmen some years ago. The size of the building is 20 ft. by 10 ft.; 7 ft. stud; white-pine timber. There are no out-buildings and no sanitary conveniences of any sort. In summer it is stifling hot, the only ventilation being a window 20 in. by 26 in. The conditions in winter are deplorable; the rain pours in, and the cold winds rush through the open cracks. There are twenty children attending the school. The Board's Inspector has for three years reported on the deplorable condition of the school. Parents are up in arms, and look to you as our M.P. to place the matter before the Minister of Education." I know that some Southern members of

the Committee are not fully acquainted with the conditions of education in the backblocks of Taranaki and Auckland. This is not a singular case. Sir William Fraser, Minister of Public Works, and Mr. Young visited a school at a place south of Kawhia about ten months ago. The conditions, if they could be worse than those in another school in the district, would compare unfavourably with those I have mentioned. I want to say that the result of these conditions is that women with children will not stop in the backblocks districts now. I had two instances given to me in Taumarunui last Saturday. Mrs. Old, of Tokirimu, and Mrs. Bleasel, of Tangitu, said they were not going to stop in those districts in consequence of the lack of education facilities for their children, and also because indifferent teachers are sometimes sent to the backblocks. The ladies I have mentioned are now living at Taumarunui. I ask, is it a right thing that husbands should be compelled to live on backblocks farms, and their wives and children should be compelled to live in the towns, because of the lack of the education facilities I have referred to? It is undesirable from many points of view. It is more than a passing cry that I am putting before you. When I am referred by these settlers to the various Boards of Education I have to deal with three Boards—Wanganui, Auckland, and Taranaki. If I write to the Board of Education drawing attention to the condition of affairs the Board replies that it is a matter for the Minister of Education to deal with; and if I write to the Minister of Education he replies to me, "I cannot do anything until the Board advises." That is the kind of shuffling that is going on. I make a strong appeal in this matter. It is more than a sentiment I am appealing for. What is the use of an Industries Committee if the children are not educated in the backblocks?

To Mr. Hornsby: The lack of the facilities I have mentioned has also this effect: it is creating an aggregation of land. This is one of the burning questions to which you as members of Parliament should give earnest consideration. I suggest that there should be some centralized system of sending children to school where there would be better teachers. I do not wish to reflect on the teachers who go to these backblocks schools; but good teachers will not stop. There is practically no accommodation for them there. Most of the settlers live in poor homes; teachers do not like putting up with indifferent accommodation, and the schools are closed. At Tahia and Rewarewa the schools have been closed for six months. These schools are in the Auckland Education District; in fact, practically the whole of these schools are in the Auckland Education District.

The Chairman: I want to make it clear that these conditions do not occur in the Taranaki Education District.

To Mr. Sidey: In regard to introducing the system of conveying the children to a central school, there is the difficulty of the roads. In the winter-time it is practically impossible to get from the side roads on to the main roads. The present position means this: that those settlers who can afford it are sending their children to private institutions. This is really a very important question. I know this: that in the South Island you would not tolerate the conditions for one moment.

To Mr. Craigie: I have told the Auckland Board of Education that if there is no redress given I intend to agitate for a new education district in the King-country. I am of opinion that the Auckland Education District is too large. I have invited the Minister of Education three times to visit these schools.

To Mr. Poland: Good roads would be a solution of the whole difficulty.

Witness: Mr. Adamson, who is a practical man, has something to say in connection with the treatment of seedy wool. That is a very important question. A large meeting of settlers discussed this matter some time ago. The question of seedy wool is becoming a serious matter so far as this country is concerned. The country, unfortunately, has got into a worse state since labour has not been so plentiful. According to Mr. Adamson's estimate the plant and building to deal with seedy wool would cost about £10,000. The profits from the treatment of seedy wool would be very great. Mr. Adamson has had correspondence with the Government on the matter. I strongly urge the Committee to give the question the fullest consideration.

T. BUCHANAN, representing Waitara Chamber of Commerce, examined.

At a meeting of the Chamber of Commerce at Waitara a fortnight ago I submitted a paper on the utilization of the coal areas extending from Mokau away to Kawhia, Raglan, and Tangarakau, and across to the Main Trunk line, for the purpose of developing electricity. We know that a hydro-electric scheme is in the minds of every one just now, but apparently it is going to be a long time coming. I believe if experts were sent up—electrical and coal experts—it would warrant a proper investigation by the Government—to establish at the mine-mouths or some convenient place an electrical plant to be driven by the coal won from the areas of coal. I do not know how many thousand acres there are, but there is an immense stretch of country from Mokau to Raglan and in to the Main Trunk line to Tangarakau. This area contains lignite coal. Until the Mokau River was blocked the coal was much used both for household and for steam purposes. It is the opinion of the Waitara Chamber of Commerce that steps should be taken to have the feasibility of the project investigated.

To Dr. A. K. Newman: So far as is known the coal area is mainly between the coast and the Stratford–Ongarue line. There is coal all over the country.

To Mr. Craigie: We believe the scheme of working this coal would give the settlers the necessary power until the Government can carry out the very big scheme.

To Mr. Sidey: The first indications of coal are six or seven miles up the river from the sea, and there are several coal-seams coming right out to the river. No deep digging would be necessary. As to the quality, it is not quite good enough to export. It is a brown lignite coal.

Witness: There are two other questions I desire to refer to. The first is the importance of pushing on the Stratford–Okahukura Railway, commonly known as the Stratford–Ongarue line.

We believe that if that line were completed it would have an immediate effect in the way of increasing the industries of the Dominion and the volume of our exports. It would open an extensive area of country, which would mean a greatly increased output of cattle and sheep and of dairy-produce. The following table shows the difference in the railway charges to Waitara via Marton, and what the charges will be to Waitara via Okahukura and Stratford:—

Waitara Stock Rates.

Station.	To Waitara via Marton.		To Waitara via Okahukura and Stratford.	
	Miles.	Rate per Truck.	Miles.	Rate per Truck.
		£ s. d.		£ s. d.
Frankton Junction	356	6 19 2	209	4 13 9
Rotorua	442	8 4 11	296	6 1 0
Waihi	412	7 15 10	265	5 10 6
Auckland	440	8 3 4	294	5 19 7
Ranganui (Kaipara line) ..	522	9 9 2	378	7 5 2

The distance Stratford to Okahukura is given on present survey of 100 miles. This is known as the Stratford–Ongarue line.

Witness: In regard to shipping: We feel for some reason that we cannot quite explain certain fears in regard to the shipping from Auckland to Waitara and from Wellington to Waitara. Until very recently we had pretty fair services both ways, but since we have seen so much monopoly by one company we find that our shipping from Wellington is absolutely cut off. We are within ten miles of New Plymouth. Special efforts have been made and inducements offered to get a boat to come to Waitara to load for Wellington, but without success. We feel that we are suffering a very great injustice in connection with shipping owing to a monopoly getting the upper hand. Other companies are apparently under their dictation, and can only trade where it suits the particular company I have referred to. We would like the Committee to investigate this matter—as to whether this monopoly should be allowed to exist and retard the trade and industries of a port which it does not suit them to trade to.

To the Chairman: At ordinary tides there is not quite 12 ft. of water on the bar. In view of the special inducements which have been offered to get a boat to come to Waitara it cannot be said that an effort has not been made to get what we desire in respect to shipping.

W. Nosworthy, representing Waitara Chamber of Commerce, examined.

What is wanted in our district is cheaper lime for our farming land. The farmers in the district now obtain their lime requirements from Hastings, but that involves pretty considerable cost. If cheaper lime were available it would be more largely used. We also think that the lime might be combined with the ironsand so plentiful on these beaches to make a sort of basic slag. We believe that the constituent parts of basic slag could be thus made and could be turned out cheaply, and that it would be extremely valuable to the farming industry. As you know, since the war basic slag has been almost unobtainable. You also know, no doubt, the great difference basic slag has made to the farming industry in North Taranaki. Our Chamber of Commerce thought this Committee might represent to the powers that be the desirableness of means being provided of obtaining lime for the purposes I have indicated. We had an idea that perhaps State enterprise might do it, or else the shipping companies might be subsidized in respect to the carriage of the material. We think the lime should be carried free on the railway from the port of delivery—say, from Waitara inland. The concession is made to farmers along the line from Hastings, for instance, and we think it should also be from a port like Waitara, for instance. I submit to the Committee an analysis of basic slag. The percentage of phosphoric acid in slag depends upon the iron employed.

To Mr. Craigie: There is lime at Toko, but I understand that it has not yet been developed. It is a long way to bring lime from Hastings. Only 200 tons comes from Hastings to North Taranaki. If it were cheaper, perhaps ten times that quantity would be used—probably more than that. It is recognized by analysts as being good for our land. I believe that the lands in Taranaki generally would benefit by its application.

To Mr. Hudson: If we could get it by sea it could come from Mokau. We believe that the lime could be landed cheaper from Mokau provided some concessions were given to the industry. It would certainly be an advantage if we were given railage free for 100 miles.

To Dr. A. K. Newman: I am told that one farmer used ironsand in his oat crops and with very good results. It was that experiment that gave us the first idea about it. We think that the Department of Agriculture should make experiments in connection with this matter.

Witness: I wish also to refer to the question of Native land. I am not quite sure whether it comes within the scope of the inquiry of the Committee. Our Chamber of Commerce is very disappointed with the progress which has been made in connection with the opening-up of Native land, particularly in the Wahi district. There is still a considerable area of Native land in that district unsettled. It is a great injustice to the settlers in the district. It means that the local body does not receive the rates which it should do to carry on its roading and other public works. We think this Committee might assist us in hurrying things along.

E. A. ADAMSON, representing Waitara Chamber of Commerce, examined.

I submit to the Committee for examination a sample of seedy wool. That is no use to the majority of manufacturers at Home. Most of the manufacturers are in this position, that it would not pay them to put in a plant to deal with this wool; consequently they demand clean wool. That means that some of the large manufacturers get all this wool into their hands, and they buy it at their own price, to the detriment of the small manufacturers. We have heard it said that this wool could not be treated to pay. I do not know whether they argue that from the wool-growers' point of view or from the point of view of the process. If they argue it from the point of view of the process I do not see how they are in a position to judge, not possessing any technical or practical knowledge. From the wool-growers' point of view a letter appeared in the *Dominion* some time ago—a letter written by a Bradford expert, under the heading "Our Bradford Wool Letter." He gave the following illustration: 100 lb., 10d., £4 3s. 4d.; less 4½d., freight, &c., £1 17s. 6d. = £2 5s. 10d. 65 lb., 1s. 6d., £4 17s. 6d.; less freight, £1 4s. 4½d. = £3 13s. 2½d.; less cleaning, 3d., 16s. 3d. Total, £2 16s. 11½d. cleaned, £2 5s. 10d. greasy; difference, 11s. 1½d.; I estimate that a plant that would turn out 4,000 lb. per week would cost about £5,000 or £6,000. I submit to the Committee particulars of a plant for carbonizing wool—600 lb. per day.

To Mr. Sidey: Most certainly I suggest that the Government should prohibit the export of wool in this condition.

To Dr. A. K. Newman: It is proposed to take the seed out of the wool by a chemical process—sulphuric-acid carbonization.

To Mr. Sidey: The process is one which would accompany the scouring of wool. I would also like to suggest that something ought to be done in respect to the lower qualities of wool, such as slipes and pieces, which are exported. The following plant would be necessary for carbonizing wool, 600 lb. per day: One steam boiler, say, 10 or 12 horse-power; one steam-engine, 6 horse-power; one hydro-extractor, 30 in. diameter; one wool-scouring machine; two wood cisterns, 5 ft. 6 in. square, lead-lined; two wooden cages for same; one small hand-winch; one carbonizing-chamber, heated by steam pipes, with cast-iron perforated floor; one wool-drying machine; one pair heavy iron rollers; wool-press and small platform weighing-machine; also two or three wool-coaches. By adding one more lead-lined cistern for every 300 lb. wool per day the above plant is capable of doing up to 1,000 lb. per day. If not sufficient carbonizing the plant may be used for wool-scouring in addition. Two unskilled men or youths along with manager would be ample if an engineer's ticket was not required. All plant, acid, &c., can be made or obtained in the Dominion. I estimate the cost of labour and chemicals required at 2d. per pound at the very outside, leaving 1d. per pound on clean weight of wool for interest and profit, reckoning on 3d. per pound charged on clean weight. Of course, it is very evident that the greater the amount treated the less will be the cost of interest on plant, labour, &c. There is also a mechanical way of cleaning wool, but it is not suitable for combing, and in the fine-woollen trade is only used for low-grade cloth, as all shives, thistle, and fine vegetable matter are not removed. With regard to these low-priced wools, I desire to point out that if London wool-sale price were paid to the grower here, cash, less 4½d. landing-costs, those costs would pay 5 per cent. interest on £58,000 capital for a small concern that only required 3,000 lb. of raw material per week.

L. OLDHAM, representing the Waitara Chamber of Commerce, examined.

I wish to refer to the possibility of securing hydro-electric power in the North Taranaki district. A few miles from Waitara the river is joined by another river, and a mile below the junction it would be possible to develop 2,000 horse-power by putting in a plant at about £40 per horse-power. This is the estimate formed by Mr. Parry on pre-war rates. The plant would supply power at a cheap rate to the Waitara Borough, to Borthwick's Freezing-works, and to the district extending from Lepperton to Uruti to meet the needs of the dairy factories and the farmers for their milking-machines. The Government might take over the scheme and work it as a substitute in connection with the larger scheme of the future. At any rate, it would be an alternative scheme to serve the wants of the district.

To the Chairman: It was mooted that the local bodies might form an electric-power district under the Act of last year, but what we really wanted was to see if the scheme recommended by Mr. Buchanan is a better one. The matter wants looking into by a Commission to see if the scheme is a possibility.

To Dr. A. K. Newman: In the New Plymouth scheme there is enough power for the town and for Inglewood, but we are a good way off. We have power within three miles of our own door. Borthwick's would take 600 horse-power and the borough 700, which would leave 700 for the factories and the community, and it would be sufficient for their needs.

R. H. PIGOTT, Chairman of the Clifton County Council, examined.

As an aid to the further development of the country it is necessary that we should have roads provided. The greater portion of the northern Taranaki has no railway facilities, and if it is within the jurisdiction of the Committee we wish you to bring the matter of railway and roading before the Government. It would tend to develop the whole of the back district, which at the present time is being neglected and thrown back.

To the Chairman: The Mokau River wants developing again. At one time good coal and lime were produced there for the district. The river requires bridging. Through having bad roads wool-growers are handicapped to the extent of £2 or £3 per bale in getting their wool to the railway. We formed a league at one time to advocate light railways in order to take the traffic off the main roads, but it did not get much support. I am aware that the settlers are given facilities by the Government to build railways. It is an excellent provision, but the cost seems to be looked on as too high. It is too big a burden for the settlers. The Maoris do not pay rates, and there are 14,000 acres of Native land in the Clifton County. In some cases the

Maoris use their land for dairying. There are one or two of them who pay rates, but the bulk of the land is under the Public Trustee, who refuses to pay the rates. The Maoris are residing on the land, and he leaves it to them to pay. If you summons them you get nothing, and you cannot sell the land.

To Mr. Veitch: We want the rates chargeable on the land, as in the case of Europeans. The Maoris ought to be brought under the law which applies to Europeans, and then we could collect the rates. We have a toll-gate in the district. The Maoris are liable for the rates, but we cannot recover them. In the Clifton County there are many acres of undeveloped country which have only a 6 ft. track to them, and settlers have been living there for twenty years. The consequence is that it costs them three times as much to bring their produce to market as it does a man who has a metalled road.

To Mr. Sidey: My county has been receiving Government assistance for roads. We get a subsidy on the road, and the Government have subsidized the settlers where they have rated themselves by a special rate for metalling. Where settlers provide metal for the unmetalled roads they look to the Government in some cases to give a subsidy. The chief difficulty in our way is that the Government have opened up blocks of land and formed a track to them, and when settlers have been established there a number of years a road is formed by the Government and thrown on the local body without metal on it. In many cases the bridges were built when the track was formed, and when the road is formed the time has come for a new bridge. There is necessity now for a number of new bridges.

CHARLES MUSKER, Farmer, examined.

As a member of the Clifton County Council, representing a backblocks riding, I wish to stress the fact that the produce of the land is the source of nearly all our national wealth and the mainspring of nearly all industry. A statesmanlike and generous land policy, together with roading on progressive and business lines, is the natural and most fruitful means of increasing production, with the least friction in labour matters. As a backblocks settler of twenty-five stressful years, knowing the conditions from A to Z, I am but voicing the opinion of settlers generally in stating that the cast-iron land laws and makeshift roading policy obtaining in the past have hampered the settler and wasted his time and money that should have gone into productive work. To bring new lands into use and increase the capacity of the older-settled lands is to make our townships and cities, with their allied industries, also grow and increase. Consider Stratford, Eltham, and Inglewood twenty-five years ago—mere hamlets—and our back country just being touched. New Plymouth, then meagre and badly built, has grown into a city beautiful, with dozens of small industries, with splendid banking and commercial facilities, progressive and comprehensive harbour-works, tramways, cool stores, and freezing-works. In fact, every new farm seems to mean a new town in the making, together with town industries and business, which bring increased employment of labour and the circulation of wealth—all happily accomplished with the minimum of labour troubles. And these results have been attained in spite of the fact that roading neglect has caused hundreds of good settlers to abandon their holdings after years of toil, sadder and poorer men, and caused hundreds of men—real home-builders in the best sense of the word—to remain bachelors through a dislike to ask any woman to share the discomforts and isolation. And here is one of New Zealand's greatest losses—women, the civilizers, and children, the future holders of our country for white men's ideals. To increase production through increased land-settlement I would like to point to several improvements in land-tenure, making it easier for the settler. As is well known, thousands of acres of our back country are suitable only to cut up into large holdings on account of the natural features making fencing and working difficult. This means that the settler is paying rent on a lot of land which he has not capital or labour to bring into cultivation, and as all new land is largely taken up by working-men and the small capitalist class they find this a great drain on their resources. To overcome this the ideal tenure would be occupation free, with residential and improvement clauses for a period of years, and then deferred payments in lieu of rent. This would allow the settler the full use of his capital for development and production, and by the deferred-payment system making towards the freehold financing would consequently be easier, giving increased means of improvement and production. I believe that if the Crown lands had been given away to whoever would settle and develop them during the past twenty-five years, together with vigorous roading, we should have had such a boom in production that there would have been no need for your Committee to-day, for instead of the few thousands of pounds in rents we would have had millions in production. To particularize a little on roading let me say that it is not sufficient that a formed road should be put into new lands, but a policy to suffice for the metalling of all roads should be formulated. This would tend to increase production immensely, and the saving in freights would be incalculable. To help to bring about such a desideratum all counties should be classified according to the nature of the land, the transport facilities by land and water, the supply and distribution of road-metal, and the capacity of the land for rating purposes. Then a business system of subsidies should be initiated to take the place of the present cap-in-hand, poor-mouth deputations to Ministers. The land would then be in a position to pay heavier rates to maintain better roads. To my mind the system of collecting revenue by direct rate is the fairest and cheapest. I hope the Government will not allow the nuisance of toll-gates to grow, for the logical conclusion is that if toll-gates are a good means of obtaining revenue they should be erected wherever they will catch it. My personal opinion is that as a means of collecting county revenue they are unfair, expensive, and unbusinesslike, and altogether a nuisance.

ALEX. H. JOHNSTONE, Solicitor, examined.

I cannot claim, as the two previous witnesses can, that I have any practical experience of the roading difficulty in northern Taranaki, but I would like to place on record certain facts in connection with the same question which perhaps have not been stressed as they might have

been. The Committee has travelled through the southern part of Taranaki, and no doubt has been impressed by its wonderful fertility. There is, however, a very large area of land lying north of Mount Messenger and right up to Kawhia and inland towards the Wanganui River which is yet to a great extent undeveloped. When you travel from New Plymouth, at thirty-two miles north you come to Mount Messenger and mud, and from there on for forty-five miles on the main road between New Plymouth and Auckland there is not a scrap of metal. There is none until you come well into the Waitomo County. Much of the country is of very good quality indeed, but the whole of its production is more or less hampered by inefficient means of communication. That is going to be the more felt as the port of New Plymouth develops, because this port is the natural outlet for all the wool and other produce of that huge area. One of the difficulties in the way of metalling the road north of Mount Messenger is the absence of good metal. I understand, however, that that has been got over, and now considerable deposits of suitable road-metal are to be found at Uruti, and the work which has been authorized for Mount Messenger could well be continued for the rest of the journey. The second barrier to progress is the Mokau River, which is not bridged, consequently there are serious delays in getting over by a primitive punt, and there is also loss of stock occasioned by crossing the river by swimming. There are over 100,000 sheep in the Awakino County, and undoubtedly the county has its natural outlet at New Plymouth. All the sheep and cattle for Awakino have to pass over the river. In the next place, after passing Awakino a few miles there is a huge hill, which is exceedingly rough. It can be avoided, of course, by travelling along the Awakino Valley road. That road has been formed for all but six miles, which distance is not yet completed, presumably owing to the difficulty the Government have in doing such work. If Mount Messenger were metalled, the intervening distance metalled to the Mokau Bridge, and the Awakino Valley road completed, there would be a level road from New Plymouth almost to Te Kuiti, and that road would become the main road from New Plymouth to Auckland. Whilst I was in Awakino and other parts of the district the wool-stores were crammed with wool, and the only chance to get it away is by motor-launch. Further, I wish to say that there are huge deposits of coal in the Mokau River district that were worked for years, but had to cease on account of the snagging up of the Mokau River. It is possible to put roads to the coal-mines. In Taranaki we pay huge prices for coal, and more coal will be required to run the dairy factories and other industries. Then it is probable that no fertilizer is more required here than lime, and there are millions of tons of it in the Kawhia district, but we cannot get it here because there are no roads. A huge saving could be effected by bringing the lime from our own district, because it is only fifty miles from New Plymouth. From the point of view of the productiveness of the Dominion, there is a huge area of land held back from serving the country merely by reason of the fact that there is no proper means of communication. Subject to what engineers may say, I think it would pay the country to road it and rail it, and to make a line from Waitara to Te Kuiti, or somewhere farther north. I believe a route was actually surveyed for part of the distance, but why it was not gone on with I do not know. This line opens up different country from the Stratford line. There is a belt of thirty miles between the two.

To the Chairman: It would be possible for the settlers of north Taranaki to combine and put down a light railway to take the heavy traffic off the roads. The difficulty, however, is that at the present time the district is too sparsely settled. The idea is an excellent one for the district between New Plymouth and Opunake, and if a railway were placed there the productive power of the land would be greatly increased. The rateable value of the land in north Taranaki is too low to enable the money to be borrowed. A light railway up the coast would stimulate production to a great extent. It would give an immediate outlet for the whole of that country. I submit it is eminently a fair proposition for the Government, and it would pay them handsomely to do it.

E. MAXWELL examined.

I am an enthusiastic tree-planter. Without adequate timber-supplies no country can be fully progressive. Timber enters largely into every industry, directly or indirectly. It is of the utmost importance, too, that the timber should be cheap. This country, however, is now approaching a timber famine rapidly, and it has to realize that there are not the supplies available outside. It would not be so serious if there was a reasonable hope of foreign supplies. The world generally, however, is rapidly approaching a timber famine. Take Germany, for instance, which is ahead of the world in producing her own timber. She was the pioneer practically in scientific forestry, and yet she is enormously short of her needs of timber, and has to import vast quantities. It is essential to the general industries of this country to have adequate timber-supplies and to have our own. I contend that the State forests will not properly meet our needs. Every locality in the country should as far as possible provide its own requirements. If you have to carry a low-class timber a long distance you will have a very costly material, and to avoid that you must provide your supplies within your own locality. It is essential, too, for the welfare of the country that every district should have its plantations distributed throughout the whole district. The three main requirements in timber are round, split, and hewn timber; good building-timber; and good case-timber. The whole of our requirements are to be obtained from a selection of gums, and for every district in New Zealand a good selection could be made of gums that would grow rapidly. Of course, what would be useful in North Auckland would not be suitable in Taranaki, and so in other parts. These trees would provide the needs of fuel, fencing, round timbers, electric poles, bridge-material, and so on, as well as the stronger class of timber required in construction. As to building-timber, for a long time I have been collecting a great deal of data in connection with the rate of growth of trees in this country and in other countries. I have tabulated the information, and will supply a copy of it to the Committee.

The Committee will see from the summary what are the rapid-growing trees. I would like to say on the question of labour that in many of the main industries there is an excess of work in summer and much less work in winter. Take the dairying industry. For nine months, in the factory, on the farm, and elsewhere, every hand who can be got is needed, whilst in the winter in normal times, in that industry and in others, there is a shortage of employment. I can think of nothing that will so equalize the employment of labour as the growing of timber throughout every district. Winter is the time to thin out plantations, to save fuel, to fell timber for milling, and so on, and the available labour could be very usefully employed. With regard to native trees as against exotic trees, I can say at once that the native tree is right out of it. I have made a careful measurement of trees in the Auckland Domain, and in addition I have got from felled timber, through the annual rings, a great deal of additional information. This information shows, among other things, that the kauri as a timber-producer is ahead. It is ahead of everything else in New Zealand of the native trees. It takes fifty-eight years to grow 12 in. of the kauri. That is the average. For the same growth the *Pinus insignis* takes 11½ years, and a macrocarpa fourteen years. I also measured a number of trees in Taranaki last month. I consider that the American redwood is the only tree that has any hope of taking the place of our easily worked building-timbers. It is an ideal timber to take the place of our better-class building-timbers. It will produce 12 in. of building-timber in 12½ years. People are only beginning to realize the value of the redwood and how rapidly it grows, but up to now no one has made known the fact that it will grow at that wonderful rate. Reverting to the gums, I say that an excellent selection can be obtained for each district. The average growth of thirty-two species is 1 ft. in 15½ years. For the building-timbers there are the redwood and the insignis. For case-timber insignis stands right out, as it is the most rapid-growing tree in the world. It will grow from the North Cape to the Bluff, and in rich land or in poor land. Some of the trees were cut down recently. One was 123 ft. in length, and mill logs had been cut for 95 ft. The miller said the trees averaged 900 ft. per tree. It is a first-class all-round tree. In a very few years the thinnings can be used for fruit-cases. It is a poor timber for any other purpose, but for fruit-cases or other cases it is all right. When older it will do for cheese-crates, and later on it makes the best butter-boxes. It is superior to white timber in its nailing-qualities. As a building-timber it is excellent and durable after twenty-five years, preferably after thirty. I would like to add that stringy-bark is an excellent gum to plant. It can be planted five thousand to the acre.

To Mr. Sidey: The general conclusion I have come to is that we should not attempt to regenerate and carry on the native trees. There are certain classes of native forest that it might be advisable to replant with a better class of tree, if desired, but from a practical point of view the native timber is right out. At the same time I do not want any one to think that I advocate the destruction of the native trees. It is possible that imported timbers are more susceptible to disease than native trees. Unfortunately, some of our native trees are subject to disease. I do not think that native timbers are immune from pests.

S. G. SMITH, M.P., examined.

I wish to say a few words about the schools in the backblocks. The people living there have little chance of giving their children a good education. In the Taranaki Education District we have 151 schools, seven of which are in Grade 0 (attendance of 1 to 8). In many cases the settlers in these localities have had to provide the land, build the school, and make up the difference between £9 per head of the pupils and the minimum salary of £120 per annum allowed by law. I submit that that is a grave injustice to the settlers. The greatest number of schools in the backblocks are under Grade I (attendance of 9 to 20) or Grade II (attendance of 21 to 35). Teachers in Grade I receive from £121 to £160, and in Grade II from £160 to £220. In the first case they get house allowance if there is no residence; in the second case they get £30. In many places no residence is provided, and that is a bar to a teacher going to the district. That is one reason why you find so many inexperienced and uncertificated teachers in the backblocks. In other words, in the districts where the children are entitled to the best facilities they are actually getting the worst. The question of conveyance of children to central schools was raised this morning, and as a member of the Taranaki Board I desire to say that we went fully into the position, and in many parts of Taranaki the possibility of conveyance is out of the question, because in many districts there are no roads. Even if roads were provided the allowance made by the Department is altogether inadequate. The provision is as follows: "Sixpence per return trip for each child over five years of age conveyed to the nearest public school, provided that the home is over three miles from the school by the nearest road in the case of a child ten years of age or over, and not less than two miles in the case of a child under ten years." I repeat that if it were possible to have a proper system of conveyance the allowance made by the Department is totally inadequate. The question of boarding children from the back portions of Taranaki is also out of the question. In the districts where the Department has suggested that children could be boarded there is an utter lack of accommodation. In the opinion of the Taranaki Education Board the salary of teachers in the backblocks schools should be not less than £120 per annum in Grade 0. In this district we have 334 teachers; of that number 172 are uncertificated. The salaries I have quoted have only recently been raised to that standard. I hope that if the Committee can make any recommendation in regard to the education question it will recommend that teachers should be encouraged to go to the far-out places, and that proper accommodation be made for them instead of the inadequate provision in that respect which they now get in many parts. I also desire to mention the question of fertilizers. From close acquaintance with the district I know that one of its greatest needs is that of fertilizing. If the Committee can look

into that question I hope something will be done to assist us, and if anything is done I trust that fertilizers will be supplied cheaply enough for the average farmer to obtain them.

To the Chairman: The teaching profession does not offer inducements to young men to join it. In this district, out of forty-nine junior teachers and probationers only two are males. That is due entirely to the lack of adequate salaries.

F. T. BELLRINGER, Town Clerk, examined.

I wish to place before the Committee the necessity of temporary State aid to the housing schemes of municipalities and large companies. A large amount of the present industrial unrest is caused by the inadequate housing of the working classes. Public opinion is forcing local authorities to consider the question, and public sentiment is forcing Borough Councils and City Councils to go in for housing schemes. At the present time the cost of materials is so high that it is impossible to adopt a housing scheme under which to build houses and let them at economical rents. Whenever a Council goes into a scheme of the kind it is immediately faced with the fact that it has a large annual loss to meet. It has therefore been suggested that a scheme should be adopted of temporary State aid, somewhat on the lines adopted by the British Government. The proposals made in England and since adopted are set out in the *Municipal, Engineering, and Sanitary Record*, as follows:—

"General agreement had been reached two years ago as to the urgent necessity for the immediate erection of a large number of working-class houses, both in England and in Scotland. Unanimity of opinion also existed that owing to the greatly augmented cost of building-materials and labour such houses could not be erected for several years after the war to let at economic rentals without loss to the owners. Local authorities refused, under the circumstances, to embark upon housing schemes unless the Government agreed to contribute some financial aid, the housing deficiency being, they contended, a national and not merely a local question, and the nation should therefore bear some of the financial burdens which would be incurred in the carrying-out of such schemes. So long ago as July last the Government, through Mr. Hayes Fisher, the President of the Local Government Board, indicated that State assistance would, under the circumstances, be furnished. Details as to the shape in which it would be afforded have only just been published in circular letters, dated the 18th March, to local authorities in England and Wales and in Scotland, from the Secretaries of the Local Government Boards of each country. Shortly, the proposals are that the State will contribute 75 per cent. of the loss which local authorities estimate will be incurred on houses erected by them through inability to charge economical rentals. The remaining 25 per cent. loss is to be borne by the local authority. But to meet special cases in agricultural or other districts of low rateable value, where a 25-per-cent. deficiency might prove a heavy burden, the State may, on the recommendation of the Local Government Board, increase the grant beyond 75 per cent., but so that the local housing rate must not be less than 1d. in pound. The State assistance is to extend for not less than seven years, and at the end of this period the property is to be valued, and if it is found that the value is less than the outstanding amount of the loan the State will then provide 75 per cent. of the deficiency, either by wiping off a portion of that loan, if the money was secured from the State, or by accepting responsibility for a part of the capital charges if the loan was raised in the open market. The schemes and plans of houses must be approved by the Local Government Board, and it is a condition that the erection of the houses shall be commenced within two months and completed within twelve months of the sanction of the loan. In ordinary circumstances not more than twelve houses, or in agricultural areas eight houses, should be placed on an acre of land. The land may be acquired at once, but only in very exceptional circumstances can the Board sanction loans during the war, and then only for a small amount or for the proportion of the purchase-money."

I agree with those who say that private enterprise should largely provide for the housing of the people, but at the present time, although many companies have numerous hands working for them, and for whom in my opinion they should provide houses, they will not do it because the price of materials is so high. I think the best way in which Government aid could be given is to provide cheap money for a short period of years. If the Government provide the money and lend it to Borough Councils and City Councils, and also to large companies who would take up housing schemes, it might induce them to go in for the necessary building. The State should not take the whole burden on itself, but there is a need at the present time for some temporary assistance to get these schemes under way. There is a large amount of industrial unrest, and unless something is done it will continue and largely increase. The housing problem is an urgent one and not one that can be put off. It has to be taken in hand now. The companies should be encouraged to undertake housing schemes by providing them with money at, say, 3 per cent. or 4 per cent. for seven years, afterwards increasing the rate of interest to the market rate. It is now we ought to give the assistance, when materials are so high in price.

To the Chairman: A municipality could set out a scheme and employ a qualified architect—not its own engineer. It should get the best advice.

To Mr. Sidey: I think the material used in building should be permanent—perhaps concrete. I do not believe in building in wood.

JAMES MCCLUGGAGE examined.

I should like to mention how the Lands Department discourages industry. Some three years ago I applied for 400 acres of Crown land to cut the milling-timber. It was granted on a royalty basis. When the lease was drawn up it was for two years. I told the Commissioner of Crown Lands at New Plymouth that a two-years lease would be very little good, because there were two miles of tram to put in and the position with regard to labour was very unsatisfactory. I said

that if the war lasted two years from then it could not be done in the time. He told me that an extension could be granted if the war lasted. The war lasted, and I got the extension, but an addition of £20 was made to the rent. Another thing I want to mention is the way the Railway Department runs trains. I think the Department frame the regulations to suit the Department, and not the users of the railway. There has been a very great shortage of trucks all over New Zealand, I believe, especially down our way. Sometimes we apply for trucks and we load them, and they stay there perhaps for days. Sometimes it is on account of the train not having a runner, while the ballast-train will run out with twenty runners, but it cannot leave a runner because that would be against the regulations. A further point: I had a small piece of shafting coming from the New Plymouth Breakwater. It took a week to go from the Breakwater to Stratford. It took ten days to go to Pohokura, a distance of fifty-nine miles. It would have paid me to get a buggy and a pair of horses and send it through in that way to the mill. Again: We had a casting break at the mill. It cost 3s. 9d. to send it by train, and 7s. 11d. for the return trip. I asked the reason for the difference. They told me there was a small parcel tied on to it the second time, and it went back under a different rate. Because four bolts that were with it were tied in paper the rate was doubled. That is not helping industries at all. I think an improvement could be made if the regulations were remodelled and they allowed passengers to take other than personal luggage in the van, up to 1 cwt. or 2 cwt.; or if they put a van on behind the guard's van and put parcels in they could drop these parcels along the line every night. That would be a very great saving to the Department in trucks and would be of great use to the settlers. There is only one train a day to Whangamomona, and these little things are very vexatious.

To Mr. Hudson: I did not report to the Department the delay that took place in the shafting coming out. You might as well put a letter in the waste-paper basket as write to the Department. You have to get a solicitor to understand their tariff; I cannot understand it.

To the Chairman: I saw the Hon. Mr. Herries with regard to a wagon being put on behind the guard's van, and he said he would let me know the result; but I have heard nothing further about it. The ordinary van is not too small to carry the small parcels I refer to, but the regulations will not allow them to go into the van.

AUCKLAND.

WEDNESDAY, 16TH APRIL, 1919.

A. J. KEMP, representing the Auto Machine Manufacturing Company (Limited), examined.

Whilst I am one of the founders of the Auto Machine Manufacturing Company nail-making business, and am now managing director, I feel that after giving you information which is taken from the office, our case can be much better presented by our expert we have engaged in Australia, and who has represented this industry before a Royal Commission there. Mr. Furman has had thirty years' American and Canadian experience, and joins us in New Zealand to do for this country what he has done in Australia—revolutionized the nail-making and wire-drawing trades. The following are the quantities and values of nails imported during the year 1917: United Kingdom, 2,712 cwt.; value, £4,077. Canada, 22,940 cwt., £30,150. Australia, 1,097 cwt., £1,878. United States—east coast, 12,768 cwt., £14,927; west coast, 16 cwt. Government (free), 1,407 cwt., £2,414. Total, 39,609 cwt., or 2,000 tons; total value, £51,406. Auckland imported 15,457 cwt., value £19,448; Wellington 11,298 cwt., value £14,240; Christchurch 4,078 cwt., value £5,712; Dunedin 4,538 cwt., value £6,230. Of the Government importation of 1,407 cwt., 1,360 cwt. came through the Auckland port. These figures of the importation were taken for a year when very little was coming into the country. During the same year £619 18s. 6d. was paid in wages, and the expenditure of £7,472 for purchases for the nail-making industry. We are desirous of getting £2 increase of duty, but would be content with £1 additional duty if all nails were dutiable, and not as now, where all nails 1 in. and under are free. To convey to you how little the public would feel the increase I may state that a villa residence of seven rooms, costing £750 to build, would consume 3½ cwt. of nails. An increase of £2 per ton duty would cost that person building the sum of 7s. 6d. Does that not seem trifling? The Australian duty on nails is £5 10s. per ton. We are not asking for so much. At present we have £3 protection against American and £2 Canadian. As our best boxes cost £2 5s. per twenty, all the benefit of duty is taken up in the locally made box, and we start to make nails 5s. to the bad so far as Canadian competition is concerned. We have grown from four machines to ten, and have installed a wire-drawing plant, and spent nearly £3,000 in additions to extend this industry. As we are installing a wire-drawing plant to deal with rods from which we will draw the wire, we hope and intend to put ourselves in the position of supplying the whole of New Zealand's wants if we have the desired support of the Government. We have here with us an expert from Canada and America who has come over to join the Auto Machine Company, and do in this country what he has recently done in Australia—revolutionize the nail-making industry and the wire-drawing trade. Having had thirty years' experience he is in a position to do this.

To Mr. Sidey: Our industry was established in 1911. Taken all round the war has assisted our industry. The competition will be more severe after the war; only time will tell whether we can hold against it. There is no intention to exploit the public in the event of an additional protective duty being put on. We are agreeable to anything that is fair and reasonable in the way of preventing the exploiting of the consumer.

H. FURMAN, representing the Auto Machine Manufacturing Company (Limited), examined.

I am here to speak of some of the benefits of protection as I have found it in the different countries I have been in. I was born in England, and at the age of fourteen went to America, and from there I went to Canada. In Canada in 1879 the duty on goods was for revenue only. It was very hard for a man to get a day's work at that time. I went from there to the United States as a workman. In the United States they had a protective policy. I found that I had no difficulty in getting a job in the United States, because there was a protective duty on all articles, especially in the iron and steel business. After staying in the United States for a number of years I went back to Canada, and found Canada booming, for the simple reason that in the meantime they had put on a protective duty on all manufactured goods; and I found no difficulty in getting a job. I was in Canada, I suppose, for about eleven years. I then got a position offered to me in England, and I went over there. During my seven years in England I could see hundreds of men walking about the streets doing nothing. I then had an offer to go to Australia. The Australian Nail Company decided to go in for the wire-drawing business. They had been making nails for a number of years, but they thought that by adopting the wire-drawing business it would be beneficial to the nail industry, as it is a sort of adjunct to it. There had been no duty, and consequently wire was never made to any extent, except for their own use for nails. I put in a plant for a firm in Sydney, and when I left they were making 70 tons of wire a week. They have increased their plant, and will be able to make from 250 to 300 tons a week. They are agitating there for a protective duty on wire. With regard to the duty on nails, I found on going to Australia that they had a duty of 5s. 6d. Even with that duty American and German nails were being imported into the country. In the United States during dull times they kept their staffs going and manufactured at actual cost. They do not let their men get away from them. They certainly got a profit in their own country; and they export these goods at times by a method which is commonly called "dumping." I came from Australia to New Zealand, and I am willing to introduce money into the business here. The only protection I require is against this dumping. That was the great trouble I found that they had in Australia. In regard to the benefits of protection, I speak from actual experience. In giving evidence before the Tariff Commission in Australia I stated my American experience. As to the Auto Machine Manufacturing Company's business, the trouble is that their output is small. In order to justify the building of a factory and in order to encourage the business in this country there must be no dumping. There are many indirect benefits from the business; it involves the employment of much indirect labour.

To the Chairman: At present the raw material comes in free of duty. At present we are not asking for a duty on wire.

To Dr. A. K. Newman: It is protection against German and other dumping that we want. Japan is also coming into the market, and there will be big competition from that country.

To Mr. Sidey: The introduction of hydro-electric power would be an assistance in the industry.

GEORGE WINSTONE, Jun., Roofing-tile and Brick Works (Limited), Taumarunui, examined.

I am chairman of directors of the company. Our works have been going about eight years, though not successfully. The company is the first in New Zealand to succeed in manufacturing first-class roofing-tiles in large quantities, and this last twelve months has greatly assisted the Dominion in providing a first-class roofing-material when importation was impossible. During this period the company roofed eleven churches, eleven factories, Maori Parliament House, the Whangarei Hospital, and about a hundred houses. In addition there are large contracts on order, including the roofing of three hospitals. Some of the buildings already completed were very large ones, particularly the Glaxo Factory at Matangi. This building took no fewer than 250,000 tiles, the whole of which were made at the company's works. To show that the tiles were entirely satisfactory I mention that the owners of this building, the New Zealand Dairy Association (Limited), shortly afterwards placed with us orders to roof six other factories, a church, and nine houses, all of which are completed and the company is very pleased with them. The Roofing-tile and Brick Company (Limited) have just completed additional buildings and plant, which went into operation on the 1st of this month. These additions will greatly increase our output, raising it to about 250,000 tiles per month. The class of tile manufactured is the English make of tile, known as a shingle tile. The quality of the tile is equal to the imported, absolutely waterproof, and looks most artistic on the roof. It has taken years of experimental work to produce the tile now being made. The work was started by Messrs. O'Reilly Bros., who after three years and a half lost all their capital and had to sell the works, which the company purchased in April, 1915. Until the present year the company spent practically the whole of the intervening time in experimenting. The loss on manufacture in the first sixteen months of operation was £1,460 13s. 2d.; in the following year, 30th June, 1916, to 30th June, 1917, £1,985 7s. 4d.; on the last year, 30th June, 1917, to 30th June, 1918, £491 2s. 2d.; making a total loss in three years and a quarter of £3,937 2s. 8d. In the first six months since June, 1918, the loss has been approximately the same as last year, but I am pleased to say that from the seventh month onward the output and percentage of first-class tiles have greatly increased, and the company expects to complete this year without a loss, and is looking forward to being able to show a profit on next year's operations. The fostering of the tile industry is one of great value to the Dominion, as the whole of the raw material is procured locally. Every £1 of value created is a gain of wealth to the community. The present capital invested, including borrowed money, is £17,250. From the 31st March, 1919, the wages will be considerably over £10,000 per annum. On the present basis the wages average £10,133 14s. 4d. per annum.

The railway will receive by way of freight over £3,000 per annum. In the last six months the railway freight paid totalled £958 16s. 10d. The consumption of coal will be over £5,000 per annum. The value of last six months' consumption averaged £70 a week. In addition the company pays out annually fairly large sums for engineering supplies and sundry requisites. At present there are two other companies operating in New Zealand, and if adequately protected I believe others would quickly follow. Under adequate protection the Roofing-tile and Brick Company would add further plant, which would enable it to double its output. It is quantity the company has to look to to obtain success. To the best of my belief there is not a single company operating but which so far has made an annual loss on its manufacture. I have just returned from visiting the Sydney tile-works. Five years ago there were only a couple of small yards operating, but to-day under Customs protection tariff there are over thirty successfully operating, and I am informed there will never be another French tile imported. The quality of the Sydney manufacture is excellent, and quite up to the Marseilles. To successfully establish a large industry in this manufacture it is absolutely essential that the protection be sufficient to prevent the crushing-out of the local companies. The protection in Australia is 30 per cent., but I would suggest that, seeing the Customs have already ruled the duty on corrugated asbestos slates as 2s. per hundredweight, the duty on slates and all kinds of roofing-tiles be the same. Why should the corrugated asbestos slates be subject to duty and the plain slates come in free? They are the same material and used for the same purposes. This the present tariff allows. If a sufficient duty is placed on slates and tiles you materially assist in fostering another industry—viz., the manufacture of asbestos tiles and asbestos sheeting. Already I know of one Australian company which is contemplating erecting such works in Auckland. Our present price for roofing is £4 15s. per square net, which is lower than slates or imported tiles, but should freights drop and the French or the Australians commence to dump their surplus stocks into New Zealand, with no protection, they could swamp the industry. Believing this industry is of great importance to the Dominion I have taken the liberty of bringing this matter before you, knowing that the Committee is interested in fostering New Zealand industries.

To the Chairman: The Australian factories have overproduced and will be dumping their goods here if we are not protected.

To Dr. A. K. Newman: It is a sort of papa rock that is used in the manufacture. It is used principally because of its non-shrinking qualities.

To Mr. Sidey: Only clay and coal are used in the manufacture, but the bulk of our money goes in wages. If protection were given as we ask other factories would immediately start. I undertake to say that we would not raise our price. I am willing to submit to State regulation of prices. We confine our operations solely to roofing-tiles.

To Mr. Craigie: When normal times return Marseilles tile will come into the market again, though not in the first year. Our tile absorbs water, as all tiles do. Ours absord less than the Marseilles. About nine months before the war the Japanese sent me samples of tiles and quotations for roof-tiles, floor-tiles, and all sorts of tiles. That is a possible avenue of importation which might seriously affect us.

To Dr. A. K. Newman: I did not compare the Japanese quotations with ours. They also sent samples of cement with the idea of putting it on the Auckland market.

To the Chairman: We have overrun the Auckland market and are opening a branch in Wellington. We can supply other markets. We would not open a branch in Wellington if we had not the tiles to send.

THURSDAY, 17TH APRIL, 1919.

M. H. WYNYARD, President of the Good Roads Association of New Zealand, examined.

The object of the association is to bring into force in New Zealand a scheme for instituting good roads throughout the country. So far as our inquiries go the scheme which seems to be most applicable to the Dominion is the Victorian scheme, which has been in force there since 1914. I will read to the Committee a synopsis of the scheme. [Article read from the *Journal of Agriculture*, 21st October, 1918, page 216.] The advantage of the Victorian system as compared with the system at present in force in New Zealand is that it brings about co-ordination of work, making for consistent lines of highways. The system, or want of system, in New Zealand, does not provide for that co-ordination. We see roads made here and there without any interlocking or co-operation. In Victoria the Government set aside £400,000 for the work, half of which is charged against the local bodies. It appears to the Good Roads Association and those who support it that the Victorian scheme is particularly applicable to New Zealand. The matter has been brought before a number of representative bodies in New Zealand, and has their cordial support. We know that the tractor is coming with giant strides into the community, and that the roads of the future for transportation purposes will have to be built sufficiently strong to carry that traffic. Even the best roads in existence to-day will not be able to carry the traffic of the future unless they are strengthened and probably reconstructed. We feel that it is in the interests distinctly of the industries of the Dominion that some comprehensive scheme of road-formation is necessary, and the one that is most suitable to the country is, as already stated, the Victorian system. Of course it will cost money, but the expenditure will have to be faced in order to put our industries on a footing which will enable us to compete in the world's market with as much favour as we can possibly obtain.

To Mr. Forbes: Last session of Parliament we were arranging for a conference of local bodies at Wellington, and had everything in readiness when we were stopped by the influenza

epidemic. We are arranging to have a conference in Wellington during next session, if possible, with the Counties Association, at which will also be present representatives of the New Zealand Farmers' Union, the New Zealand Automobile Association, and the Associated Chambers of Commerce. Our association comprises country members as well as town members, and we have offers of branches in Wellington, Wanganui, and other places. We intend to make it a Dominion body. Our object is the introduction of a system of road administration in connection with main roads generally on the lines of the Victorian Act. We have communications from different districts to the effect that they desire this reform to be carried out. We recognize that we must have the bulk of public opinion behind us, and we confine ourselves to the Victorian scheme, with such alterations as Parliament may consider necessary. In the Victorian scheme the appointment of members is by the Governor direct. Personally I think that if the Councils have to contribute one-half of the capital and maintenance charges it is only a fair thing that they should have representation on the Country Roads Board, and probably they would ask to be allowed at least one member on the Board. With regard to the revenue that may be used for the purpose of the maintenance charges, I think possibly in New Zealand that might be extended to include a share of the gold revenue and of the royalty on timber and flax, seeing that those industries are heavy users of the roads.

To Mr. Craigie: In Victoria in two years and a half they constructed 750 miles of road—practically the distance from Auckland to the Bluff—and in addition maintained 6,000 miles of road. The cost in New Zealand might be slightly higher in construction than in Victoria, but not higher in maintenance. Only the eastern portion of Victoria is hilly, whereas in New Zealand we have a good deal of hilly country.

To Mr. Sidey: The New Zealand Automobile Union has passed a resolution to the effect that it has no objection to the licensing of motor-cars, provided there is a proper system under which the license fees will be utilized in connection with the construction and maintenance of roads. In Victoria the license fee is fixed on a basis of about £2 10s. per car per annum. In England and America it is much higher.

To the Chairman: We are not supporting any special class of road. I think the concrete road is the road of the future. The cost in Victoria of a macadam road is £2,600 per mile. I am not aware that the New Zealand Government gives £400,000 a year, principally for roads in the backblocks. The road south of Auckland has metal for forty miles. We could not consider that road as being a good road, as compared with the Victorian roads. There is very little good roading in the Auckland District. The association has support from the north to the south in connection with the movement—from road-users and from County Councils. The matter has not been brought up in the County Councils' Conference. Our association was only formed last year. We are not wedded to the Victorian system: if a better scheme can be brought forward we shall be only too glad. The movement is not a city movement only. The members of the association in the first place were the Auckland farmers, then the Auckland Chamber of Commerce and the automobilists. It is not and must not be considered an automobile movement. General taxation means a tax on a man without a road, but even that man may benefit, because if the scheme is brought into force he may find he is much nearer a road than before.

To Mr. Pearce: Our scheme is not that the Government should take charge, but that a Board, known as the Country Roads Board, should take charge. There are counties in the Auckland District that have not kept the roads in proper order. The counties in the Auckland District are not big enough to each maintain an engineer. If the counties were enlarged it is possible that each of them could maintain an engineer. The counties in this province have nearly all raised loans, but I cannot say what their rates are. Raglan County has borrowed about £100,000 for road-construction, and is heavily rated. It is not fair to say that we are asking the Government to make good roads to compete against the railways. In Canada the Minister of Railways is asking in his Budget for £400,000 for road-construction this year. That gentleman does not look on the matter in any parochial spirit. I believe a Country Roads Board would control the expenditure on roads better than the Government do.

G. W. Hutchison, Secretary of the Good Roads Association of New Zealand, examined.

I wish to speak of the support given to our association throughout New Zealand, and to read resolutions passed by different bodies expressing co-operation with the objects of the association. [Resolutions read.] Further, I have letters from two members of the Auckland City Council strongly supporting the movement, and from others. The executive of the association, before adopting the Victorian system as a basis, investigated a number of systems, and it was considered that the Victoria system was the most suitable for our requirements.

The Chairman: You have no resolutions of approval from local bodies?—It is to a certain extent the administration under the County Council system that is being criticized, and consequently we do not expect a flow of letters from those Councils in support of the movement. We hope, however, that when they meet in conference they will see it is a good proposition.

To Dr. A. K. Newman: Under the Victorian scheme the people who benefit are taxed in proportion to the benefit they receive.

To Mr. Pearce: We are not advocating the scheme solely in the interests of motor-users, because all users of the roads will be benefited. I admit that if a Board is set up to take over the main roads it will be, in a way, wiping out the local bodies as far as their control over portion of the road is concerned.

To Mr. Hudson: The allocation upon the counties is based on two considerations—benefit received and ability to pay. If a county is unable to contribute its proper allocation under the benefit clause it is let down lightly, and the amount for which it is let off is distributed *pro rata* over the other counties.

N. McRobie, Representative of the New Zealand Master Printers' Association, examined.

On behalf of the master printers of New Zealand I desire to make a recommendation to the Committee. When the Hon. Mr. Millar was Minister of Customs the trade approached him to get a tariff on printed stationery of 3d. per pound, or 25 per cent., whichever was the greater. Parliament inserted 3d., and the 25 per cent. was omitted. Under the tariff as it now stands a firm may send Home to have a catalogue printed, such as the one I produce. The paper used in it might be made in Scandinavia. The catalogue would bear only 3d. per pound duty. If the work was published in this country we would have to pay 20 per cent. preferential duty on that class of paper. In Australia on foreign printing there is a duty of 10d. per pound, or 40 per cent. *ad valorem*, whichever is the greater, with a preference given to the United Kingdom of 8d. per pound or 35 per cent.; and I suggest a tariff in New Zealand on the lines of that in Australia. To show the Committee that there is no need to go out of the country for catalogue and other work I produce samples of work done during war-time in New Zealand. It is work that is equal to anything produced either in America or the United Kingdom. [Samples produced.]

To the Chairman: While there is not much danger in the way of competition from the Homeland, there is danger from America and Japan. Some of the finest coloured work brought into the country has come from Japan.

To Mr. Sidey: If additional protection is given we would agree to State regulation of prices.

F. W. Jones, representing New Zealand Master Printers' Association, examined.

So long as wages in England remain as they are to-day I do not think there is fear of great competition, but there is fear that wages may be reduced at Home, because they have advanced very much more in proportion than the wages have advanced here. Wages in the Homeland to-day are, speaking generally, the same as they are here in New Zealand. I want to refer briefly to a special class of printing—the offset process—the machinery of which is very expensive. During the last six years I believe we have had some ten machines installed in New Zealand for turning out this class of work—work which had hitherto come from America and England. Unless some protection is given to us it is just possible that this machinery may be thrown upon our hands. The present protection is quite inadequate in comparison with the wages we have to pay and the large amount of money invested, which means £20,000 on the actual machinery without any of the subsidiary machines which are necessary for this class of work. There may be danger of Japan cutting into the market. Japan has in certain respects entered the field; and judging from her ability to imitate it is more than likely that there will be competition in this branch of lithography. For instance, many of the steamship companies' posters and plans have been produced in Japan, and numbers of these have been freely circulated in New Zealand. Some of the specimens produced are part of our process.

To Mr. Hudson: I suggest that this class of work should come under the general printing tariff. I agree with what Mr. McRobie has said in that respect.

R. L. Stewart, representing New Zealand Master Printers' Association, examined.

Our interests lie in an allied trade—namely, manufactured stationery. Other witnesses have spoken from the printers' side; I am speaking from the side of the manufacturers of stationery from the paper. For many years past the duty on manufactured stationery, account-books, &c., has been 25 per cent., with preference against foreign countries, making the duty 37½ per cent. That is the present duty. That was the duty when the wages of journeymen were £2 10s., whereas to-day they are £3 17s. 6d. per week, and the tariff is just the same. Japan is coming more and more into this market, and we cannot with the protection afforded us of 37½ per cent. compete with the Japanese. America is manufacturing these articles in large quantities. We suggest that an increase in the tariff against other than the United Kingdom would be beneficial to the trade here. With regard to manufactured envelopes, this is a growing industry in this country; and yet within the last four years there have been imported from America no less than from 100 to 150 million envelopes, which could very well be manufactured in this country. On one line of envelopes the Customs impose a duty of 7s. 6d. on the raw paper, or 33 per cent. on the manufactured article. We hold that this is a line of business which should be manufactured in the Dominion, and which can be manufactured here if we are given protection, and that can be done without an unduly advanced price to the public. We think the paper to be manufactured into envelopes should come in duty-free and not be subject to a duty of 5s. or 7s. 6d. per cwt., or £7 10s. per ton.

To Mr. Hornsby: At one period during the war there was a great shortage of envelopes. There is not a great quantity of our raw material comes from the Continent; we prefer the Scotch paper.

To Mr. Hudson: I suggest a duty of 40 per cent., and I would increase the duty on the foreign article beyond that. I think a duty of 50 per cent. would do no harm, because the manufactured article that would come in from England would keep the price stable in New Zealand, and it would keep out the foreign article of which we are afraid at the present time.

To the Chairman: I suggest that the foreign duty should be 50 per cent. and British should remain as it is—25 per cent. *ad valorem.*

To Mr. Hornsby: The duty in Australia in 1916 was 35 per cent.

To Mr. Craigie: What we are most afraid of is Japan, with its cheap labour.

To Dr. A. K. Newman: Before the war we had not competition with Germany in manufactured stationery to any great extent. England was competing more and more with us; but England is in such a position to-day that I do not think we need fear much competition from her for some considerable time to come. America is more likely to interfere with us than England, but Japan most of all.

T. A. JENKINS, representing Rodney Chamber of Commerce, examined.

Mr. Blair and I represent the Rodney Chamber of Commerce. The members of that Chamber of Commerce are largely agricultural; and we have been particularly asked to bring three propositions before you. There are two others which we have considered which affect very vitally the prosperity of this Dominion—immigration and a roads policy, which I leave Mr. Blair to refer to. I desire first to refer to the question of basic-slag importation. For a long time past basic slag as a fertilizer for top-dressing and also as manure for cropping has been unobtainable. In the northern territory of the Dominion basic slag is suitable as a fertilizer. It is very adaptable, and our soil responds most readily to its application. Soon after the war started the British Government prohibited the exportation of that product. The consequence has been that large areas of productive land in this country are now going back for want of some suitable top-dressing. We have asked the Prime Minister to try and get the British Government to remove the restrictions. Large quantities of the material have been accumulating in the various manufacturing centres in Great Britain. We would like the Committee to urge on the Prime Minister the necessity of at once approaching the British Government with the view of our being allowed to get a supply of basic slag for the forthcoming spring. It should be here, if possible, by September. Such a supply is essential to our prosperity, for it means greater production of wool, frozen mutton, and dairy-produce. I also desire to draw attention to the important question of the supply of hydro-electric power for the development of our agricultural industries. It seems to us that in regard to this matter the great northern peninsula has been left out in the cold. Mr. Parry has emphasized its importance to the rural community. In the northern territory we have been waiting to see whether under the Government scheme we are likely to be supplied with this power within a short period of time, because we cannot go on for another period of years as we are going on now. In the North Auckland territory our people and industries will respond as readily as Christchurch and North Canterbury have responded to the Lake Coleridge scheme. If we are not to be included in the national scheme within a reasonable time, then the question arises whether we will be allowed to carry out a scheme provincially. We want to see the work carried out as economically as possible, and that in the future anything that may be done locally will link up with the larger scheme of the North Island; otherwise there will be a waste of energy, &c. The early prosecution of this work is necessary for the progress of our industries. There is another subject which I should like to bring before the Committee, and that is the manufacture of nitrogen from the air by means of electric energy. It has been found that the introduction of various forms of nitrates is very beneficial to the soil. With the introduction of hydro-electric power it is quite possible to carry out this manufacture of nitrates, and I think this would be a fitting fertilizer for the refractory northern lands. I also urge that a Chair of Agriculture should be established in connection with the agricultural industries of the Dominion. Hitherto there has been no proper recognition of the important place which our primary industries occupy in our national welfare. Lincoln College and the Ruakura Farm are doing good work; still, Lincoln College does not fulfil all that is required. Ruakura Farm, I think, goes in the right direction; still, we think more is required. We think that the establishment of a Chair of Agriculture would assist in lifting the agricultural industry to the position which it should occupy, and would promote the prosperity of the Dominion. I see that Mr. Lloyd George is advocating that large sums be expended in connection with agricultural education in Great Britain; and a great deal has been done in this connection in the United States, Canada, and Australia. I approve of the suggestion which has been made that the Government should devote a sum of money to promote research work being carried on here.

To Mr. Sidey: We do not think Lincoln Agricultural College fills the needs of the Dominion —that is, as we look upon it as farmers. It is rather too academic, possibly. We suggest that a Chair of Agriculture should be established at one of the University colleges. The work done would not necessarily be purely scientific or theoretical. I suggest that there should be a leaning towards scientific research as applied to the farming industries.

To Mr. Forbes: I have not visited Lincoln Agricultural College, but have heard farmers say what they thought about it, and I have met some of the students who have been at the college. Research work done by the Department of Agriculture in connection with pests is very limited; the Department is understaffed in that connection, and there is a want of means. I think much more could be done to lift agricultural education here to a higher plane.

J. BLAIR, representing Rodney Chamber of Commerce, examined.

I wish to draw your attention to our main roads. The arterial roads in the North are only a name; and until something is done with those roads the farmers will be at a great disadvantage to get their produce out to market. It just means this: that the local bodies have here and there expended some money on these roads—have metalled the roads in places, whereas there may be mud at both ends of the metalled portion. Farmers have great difficulty in getting along these roads. Farmers have now to use two or three horses to convey produce, whereas if the roads were in fair order they would only need to use one horse. It is quite apparent that the local bodies cannot manage the main roads; their funds are not sufficient. Unless the Government take over the main arterial roads and put them in order it is impossible that the North Auckland

district can progress. Numbers of the settlers in that district are engaged in pastoral pursuits, and the result of the bad condition of the roads is that they are put to great inconvenience and expense in connection with the transport of their wool and other produce. The carrying-out of the work of putting the roads in order will involve a large expenditure, but I am sure that the population in that district would not object to pay a fair proportion of the necessary expenditure. With regard to Rodney County, we are about as badly off as any other district in this respect. The soil is of a clayey nature, and in the winter months the roads are very bad. That means that the settlers have to bring in their supplies several months before they are actually required. If these roads were put in order the North of Auckland would advance much more rapidly.

To the Chairman: I think the Counties Act has failed as far as our district is concerned, and for this reason: that in particular ridings the rates coming in are not sufficient to cover the necessary expenditure on the main roads, or even the by-roads.

Witness: We think that a survey of the soils of the Dominion would be very advantageous to the farmer, so that he might know what particular fertilizer to use. If such a survey were made and tabulated a farmer could at once apply proper methods to his land without any trouble. Hydro-electric power in the North of Auckland district would be a boon to the people. As labour is so dear at present a man who could milk fifty cows will milk not more than twenty. If the hydro-electric power were established each farmer could get an installation into his place and work not only milking-machines, but shearing-machines, sawing-machines, and so on. In the North there are large areas of Native and waste lands which ought to be opened up and settled, thus greatly increasing the production of the district. The Government ought to bring in a comprehensive irrigation scheme for many of these lands and provide roads to them. Many of the lands now being opened for soldiers are too highly valued. In some instances the land is valued so high that it is a burden on the settlers. The Streamlands Settlement, which has been taken up by soldiers, is valued at £15 an acre in parts, and it is impossible for the holders to make a bare living on it. There were 1,400 acres in the estate, for which the Government paid £7 10s. per acre. Then the Government valuer came along and put a value on some of the land at £15 per acre. Some of the values are as low as £4 on it. There is no roading.

To Mr. Forbes: The soldiers are complaining about their position. I have heard of one of them who is getting out of it.

To the Chairman: I estimate the value of the estate at £6 10s. per acre for settlement purposes. None of it is first class.

J. S. DAWES, Twigg Engineering Company (Limited), examined.

On behalf of the engineering industry I wish to bring a matter before the Committee. Though the primary industries of New Zealand are agricultural, pastoral, and mining, if the population of the country is to be in proportion to its natural wealth and facilities I would respectfully submit that the secondary industries must be developed, more particularly in the interests of the rising generation. In certain parts of New Zealand the population has drifted away solely through the inability of parents to find opportunities for their children to learn trades or to enter occupations for which they are fitted. Only a percentage of the youth of the country can be absorbed in the primary industries, and many are utterly unfitted for work on the land. We are at present inundated with applications from boys wishing to learn the engineering trades. The engineering industry is at present severely handicapped by—(1) Labour unrest and consequent difficulty in raising capital; (2) limited markets for manufactured products, and inadequate protection against outside competition; (3) lack of co-operation and efficient organization in the trade itself. I submit that the Government might assist by arranging a conference or conferences at which the Government, the workers, and the employers are adequately represented to consider—(*a*) The conditions existing in the various branches of the trade in various parts of New Zealand; (*b*) the possibility of some finality being reached as regards labour and wages conditions; (*c*) the practicability or otherwise of instituting profit-sharing or bonus systems in the manufacturing engineering industry; (*d*) the advisability of separating the manufacturing from other branches of the engineering trades; (*e*) the consideration of what financial assistance the Government might reasonably give towards establishing existing industries on a secure basis, establishing new industries, and encouraging technical research from a practical standpoint; (*f*) the establishment of a permanent Department of Industries, representative of the workers, the employers, and the Government, to watch the future prospects and progress of both primary and secondary industries. Regarding clause 2, assistance might be given by the Government arranging a tariff on lines which will give adequate protection to industries, if efficiently carried on, by allowing *bona fide* manufacturers to import duty-free all raw materials, accessories, and tools required, by allowing a fair margin for depreciation on tools, machinery, and factory buildings when assessing for taxation purposes, and encouraging by transport facilities, cheap power, and light, and by co-operation in promoting sales of locally manufactured articles. Regarding clause 3, the difficulty might possibly be overcome by the Government, through the Department of Industries, if constituted as suggested—(*a*) Providing full particulars of local conditions and requirements, and data as to the practicability of extending existing or establishing new industries; (*b*) arranging such financial assistance as may be required by any industry which it may be considered advisable to establish or extend; (*c*) insisting on a certain standard of efficiency in organization, in the class of work turned out, and in condition of employment in all industries receiving direct or indirect assistance from the State; (*d*) by providing there shall be co-ordination in the work of such State-assisted factories, so as to prevent a number of small factories manufacturing the same class of article and overstocking the local market. I would beg to submit that the present disabilities that secondary industries are labouring under have been brought about in large measure—(1) By the

employees' want of knowledge of the conditions governing industry, and consequent exaggerated idea of profits made by the employers; (2) by lack of confidence on the part of the banks and capitalists in the future of industries, and refusal to invest or advance necessary capital to establish up-to-date and efficient factories; (3) by the knowledge that hitherto the Government has regarded secondary industries as purely business ventures in which the State has no direct interest. For this reason it is necessary in finding any solution that the State, the worker, and the employer should be in mutual agreement, so that it may be decided what is practicable from the standpoint of each. It is impossible to say just now, owing to the enormous economic and industrial changes taking place throughout the world, what exact measure of protection and assistance may be required if secondary industries in New Zealand are to survive. But if a basis of agreement can be arrived at, and an assurance given that the Government will provide such protection and encouragement as may be necessary, provided industries are efficiently conducted, confidence may be restored and the necessary capital for development may be rendered available. We feel that the whole matter is very serious, and will probably require a little more than a mere measure of protection. We want to get the industries established and on a good basis, and for that reason we ask for your consideration of the position.

To Mr. Sidey: The Ironmasters' Association has considered the matter in conference and carried a resolution much on the lines of what I have already stated to the Committee. It is absolutely impossible to raise capital. The introduction of hydro-electric power would not assist us materially. The Christchurch engineers asked for a tariff, which I think would be sufficient as far as I can see at present. We will guarantee that we will not increase the prices now charged in our catalogue, which I produce, no matter what tariff may be put on. With regard to the education of apprentices, they are taught by the foreman, and if they are allowed out to technical schools in the daytime it will mean a considerable disorganization of work. A competent foreman is quite able to give all the instruction a boy requires from all practical standpoints, and the boy who wishes to learn will take advantage of evening classes to post himself up. I consider that every boy should know the scientific principles underlying his trade.

To Mr. Forbes: There is practically no protection on oil-engines. I think it is only 10 per cent., which is not sufficient. In the lines we manufacture we can give public satisfaction and compete against the imported article. There was considerable pressure brought to bear on me some time ago to manufacture larger engines than 40 horse-power—engines of from 100 to 200 horse-power—and quite £10,000 worth of orders would have been given to us. The conditions were such, however, that the directors decided we would have to wait. We want protection for our industry, but above all we want the labour conditions fixed up. About a third of the workers in our factory are small shareholders in the company. This is a system that works very well indeed, and I think such a system will have good results in any part of the Dominion.

To Dr. A. K. Newman: The men want to be in the confidence of the management, not on the directorate, and to know from the balance-sheet what has been done. A scheme of the kind would go a long way to bring about industrial peace. I fear dumping from Japan and from America.

To the Chairman: I believe that up to date the Government has taken little interest in the secondary industries of the country. We are now waiting to see what assistance they will give and to see how the labour conditions are likely to turn out. As soon as finality is arrived at there is plenty of capital for investment.

Subsequently witness stated: May I be permitted to refer to a question put to me when giving evidence as to whether an apprentice would not be more valuable to his employer through receiving technical-school training. The engineering trade comprises, according to the claims of the unions, some nineteen different branches—this is exclusive of the drawing-office, where the theoretical part of the work is dealt with. The award provides that "boys shall be apprenticed to one or (at the most) two branches of the trade." Were an employer to take one of his apprentices and for the purpose of instruction put him into the drawing-office, or into any department except that where the particular branch of the trade to which the boy is apprenticed is carried on, he would be liable to penalty for breach of award. The proposal now is to force an employer to send an apprentice to a technical school during work-hours and pay fees for instruction which he, the employer, is not permitted to give. An apprentice can only be of value to his employer through the skill and knowledge he may acquire in that branch of the trade to which he is apprenticed, and in which only he can be employed. This he is more likely to acquire under his foreman, working under conditions practicable in the shop where he is employed, and with the tools and machines there used. The actual standard of efficiency of apprentices depends on the standard of efficiency in the shops. A modification of the restrictions which at present prevent employers from giving apprentices a knowledge of the trade generally would probably be found beneficial so far as the boys were concerned. Compulsory technical-school training during work-hours is unfair to the employer, and in most cases would, I submit, be of no value to the boys.

J. EDWARDS, of J. Edwards and Sons, Saddletree-makers, examined.

I wrote to the Government in February, 1913, bringing under their notice that saddletree-making, or shapes for all kinds of saddles, required a measure of protection. The Hon. Mr. Fisher, when Minister of Customs, came into my place and inspected what I was doing, and was very interested in the industry. I have found timber in the Dominion which is very suitable for my requirements, and it has been accepted all through the country by the trade as very good. It is a birch timber, grown in Otago. It is a splendid timber, and is suitable for anything in my line. When the Hon. Mr. Miller was Minister of Customs he told me he would not protect me, as I was making raw material for the next man. I submit that saddletrees should come

under the same percentage as leather goods. Since the war all supplies from Europe have been cut off, and I have had to keep the whole of the trade going from the North Cape to the Bluff. It has been a hard task. Still, we have held our heads up. We had a fine chance to exploit New Zealand, but we did not do so. We have also introduced a steel stirrup-bar, locally made. It is superior to the one that used to be imported from England. We are introducing this bar all through New Zealand. Since the war the Japanese have sent in a number of saddle-shapes and other things. I have no protection in my favour. The Jap will get in wherever he can, and I am afraid that if gets into this line we will have to close down unless we get protection. Under protection we can put more machinery down and increase our hands, which means more wages and more money spent in the Dominion for material. We claim that if Australia can give 30 per cent. we ought to be put on a level with the leather-merchant. The duty is either 22 per cent. or 25 per cent.

To the Chairman: We have six hands outside the three members of the firm—myself and my two sons. If we had the protection we ask for the trade would increase considerably. English saddletrees are coming in, and I suppose it will mean that we will have to fizzle out. I have been established here for seventeen years, and it has been a dogged fight all through.

To Mr. Forbes: The demand for saddles is increasing, despite the motor trafic. I do not know where all the saddletrees go to, but there is always a demand for them. As importations begin I shall feel the competition very severely. Before the war there was little difference between the price of the English article and the local article. The English article looked better, but was not superior.

To Mr. Hudson: There are no other firms engaged in the manufacture. The Australian tariff is 30 per cent. If I took my machinery to Australia to-morrow I would have that tariff in my favour. Some of the big Sydney firms would be pleased if I went there.

DAWSON SMITH, representing New Zealand Viticultural Association, examined.

We are here to-day to represent the interests of the New Zealand wine industry. It was originally started about fifty years ago by the late Mr. Wendell, and also by the Marist Brothers who landed here from France about that period. Mr. Wendell started his industry in Auckland, and the Marist Brothers started theirs in Hawke's Bay. The vines that they used were some which had been brought over from France and some imported from America. They had a very uphill fight for a number of years, owing undoubtedly to some extent to the prejudice which you would naturally expect in respect to an article of that description made in the colony. It was not until twenty years ago that the Government began to recognize that there would possibly be something in the New Zealand wine industry if it were fostered. At that time they started several experimental stations, notably one at Waerenga, and also in other parts of New Zealand, to start this wine industry in conjunction with other agricultural pursuits. They engaged an expert, Signor Bragato, an Italian; and these experimental stations, I believe, were placed under his supervision. He imported stocks specially on which to work the different classes of vines suitable to this climate. For your information I may state that the colder the climate the less the amount of alcohol in the wine, and *vice versa*. At these experimental stations they planted the vines they had imported from France and America, and in the course of a few years grapes were produced from which wine was made. The expert toured the Dominion exhibiting the grapes and exhibiting the wine that had been made, and giving information to the settlers to encourage them to take up the planting of poor lands in the Dominion, more especially the gum lands and lands suitable for nothing but fruitgrowing. For the information of the Committee I may state that in regard to vine-growing for wine the poorer the soil the better; but in the case of grapes for dessert, that is another thing altogether. To push this matter forward the Government issued a book of something like sixty pages, of which I have a copy, entitled "Viticulture in New Zealand." That book was issued by the Viticultural Division of the Department of Agriculture, the Department then being under the control of the Hon. T. Y. Duncan, Minister of Agriculture. When the Government invested something like £50,000 in this industry by way of experimenting, and when the expert encouraged settlers and intending settlers to take up this branch of industry, you would naturally think that they intended to make it a national industry. I may state that Auckland light wines are being extensively used throughout New Zealand, especially for invalids, for they are pure and very suitable for those unaccustomed to strong drink. Waerenga is the only experimental farm of the Government that has shown a profit, though many of the things that it does are unprofitable. Its profit comes solely from the grapes and the light wines it produces, the demand for which is very great. Land that was originally despised and which was worth only a few shillings an acre is now under grapes, probably the most highly productive in the Auckland Province. With cheap land in the Auckland District returned soldiers would have a most profitable undertaking—a light, congenial business, demanding less capital than many other occupations. The vine can be brought to profit quicker than any fruit-tree, except, of course, the berry fruits. Soldiers will have seen in France how grapes can be grown to perfection on the poorest of soils, and how the general use of light wines takes away the drawbacks to the use of alcohol. At the present time many people are discouraged from using the light wholesome wines made in several places in the Auckland Province owing to the restriction on the wine trade. People are generally compelled to pay high prices in hotels and from merchants for inferior imported wines. Greater facilities for the purchase of local wines are urgently needed—such, for instance, as an extension of a bottle license. The wine-drinking country is never a drunken one. Wine over a certain alcoholic strength need only be sold in hotels; but the light wine, under a stipulated strength, should be allowed to be sold freely by shopkeepers and others, very much the same as is done in France. Such a policy

would be an important means of reducing drunkenness, and certainly be beneficial to the health of the community.

To the Chairman: The Government contemplates settling some returned soldiers on land near Henderson—on land suitable to be taken up by returned soldiers. Our idea is that the Government intended originally to recognize this as a national industry, and it should stand apart from prohibition. Our idea is that locally made wine should not be subject to prohibition. There is a great difference between New-Zealand-made wine and the imported article. New-Zealand-made wine is restricted to 18 per cent. alcohol. That is one of our strong points. Imported wine is not restricted in regard to the amount of alcohol it contains; furthermore, it does not only contain its own natural alcohol, but has added to it a great deal of additional alcohol in the shape of spirits. There is a ready sale for the locally made wine. The firm I represent would be quite prepared to take another 10,000 gallons if they could get it. Wine should be kept for at least three years before it is sold; and we would ask that the Government should pass legislation in that direction, because we wish to bring the wine up to as high a standard as possible. Under a wine license—there are only four in existence in the Dominion—you can sell a bottle or a glass. There is one license issued at Auckland, one at Hawera, and two at Wanganui.

To Mr. Sidey: We want separate legislation; and we think that greater facilities should be provided for the sale of New Zealand wine.

To Mr. Hudson: I certainly think it would be an advantage for us to have home-made wines from other fruits as well.

F. BRAY, representing New Zealand Viticultural Association, examined.

I am chairman of the association, and I live at Swanson, near Auckland. I have 6 acres of grapes there. Part of the soil in the vineyard is ordinary pipeclay soil. There is an area of land in that district that would be suitable, if cut up into say 25-acre blocks, to settle returned soldiers upon. Grape-growing would be a suitable occupation for them.

To the Chairman: It is suggested that the men should be settled on the land to grow grapes for winemaking, and that the New Zealand Government should take action similar to the Australian Government, and exempt wine from prohibition.

To Dr. A. K. Newman: The men would be able to make a living on small areas in the same way as is done in the case of orchards. I am referring to partially disabled men. They have their soldiers' pensions, and they might be assisted to some extent until the vines came into bearing.

To Mr. Forbes: I have been engaged in vine-growing for about five years. The season before last I turned out 4,800 gallons of wine off 6 acres. I can sell as much as I can supply. I make port wine only. I do not fortify it at all. I send wine all over the North Island, and as far away as Dunedin and Christchurch. The lowest price we sell at is 25s. a case.

K. A. CORBAN, representing New Zealand Viticultural Association, examined.

The point I want to lay stress on is this: there has been a very serious handicap placed on the vine-growing industry owing to one effect. What we want is that in cases where the electoral boundaries are altered the no-license restrictions shall not apply so far as depots for the sale of New Zealand wine are concerned. In our case at Henderson the recent alteration of the electoral boundaries has inflicted a great hardship on those interested in the viticultural industry in that district; it depreciates the value of the properties affected.

TUESDAY, 22ND APRIL, 1919.

C. H. SOLOMON, of Riverley Canning Factory, examined.

I have been connected with the fruit-canning industry for about ten years. Naturally growers wish to do the best they can for themselves, and to this end they send their best fruit to the local auctions and their second-quality fruit to the canning-factory. From the canning point of view first-grade fruit pays well, but the second-grade does not pay, as there is too much waste connected with it. Much of the stuff sent to the factories ought to be condemned, and we do condemn much of it. I refer principally to apples that are affected with the codlin-moth. There ought to be a more rigid orchard inspection by the Inspectors. Representations in that direction were made to the present Inspectors some time ago, and as a result the quality of the fruit has been improved considerably. The Government ought to encourage the industry by sending an Inspector to California. I am glad to hear from Mr. Hudson that a man is to be sent there. Ripe-rot is a disease that is very troublesome. I would also like to say that there are large importations from America that ought to be restricted in the interests of the local canneries.

To Mr. Hudson: Up to this year there has not been a great deal of codlin-moth. I made representations to the Department of Agriculture, and the trouble is largely under control now. This year we have been troubled with codlin-moth only slightly. I understand that growers are trying to get the regulations as to black-spot, also the codlin-moth, relaxed. I think the Department ought to get chemicals to combat the ripe-rot. We pay ¾d. per pound for blemished apples, or £7 per ton. We have even paid £9 when they were scarce. For fruit of poorer quality we give ⅝d. per pound. For good fruit we give 1¼d. per pound. I contend that inspection has been relaxed in the orchards.

To Mr. Sidey: We buy apples, peaches, apricots, plums, and pears. It is only the apple we complain about. We have a difficulty in regard to labour. It would help us if the workers'

tickets were issued on the railways, but at present these are not issued. We have made representations to the Department, but have got no satisfaction. We pay from 1d. to 1½d. for good apples at the cannery.

To Dr. A. K. Newman: I consider that the small canning-factories ought to be subsidized in a short season.

J. PATERSON, Member of Markets Committee, Auckland City Council, examined.

I am a member of the Markets Committee of the Auckland City Council. The Council commenced to deal with the fishing industry about four years ago. A loan of £20,000 was authorized, and with that capital the committee are working at the present time. The reason for entering upon the industry was on account of the high price of fish. The people were calling out about it. The Council therefore decided to do something to reduce the price, and it has done so to some extent. When we commenced we were told that with the trawlers we could catch fish at £5 per ton, but we have found that it costs us £10 all round. That is the cost of the fish landed in our markets—landed but not cleaned. We have two trawlers, one of 30 tons, the other of 69 tons. The Government took our large trawler sixteen months ago for mine-sweeping, and as a consequence the market has suffered considerably in the quantity of fish upon it. The larger vessel was a North Sea trawler, and can go out to sea a good distance, but the other vessel remains much nearer the shore. The market is controlled by a manager with a staff of eight in the daytime and of six at night. Altogether in the industry there are forty-one men employed—on the trawlers, in the shop, and in other ways. With five more men we could handle double the quantity of fish.

To the Chairman: The cost of the two trawlers was about £12,000. We also buy from the lines-men. Last year we purchased 361 tons of fish from them, for which we paid £6,283. Line fish command better prices than trawled fish. Snapper caught by the line are a better class of fish for smoking than the trawled snapper. Our chief supply is the snapper. In our market we sell to shops, and we also have a shop of our own. We supply hotels, restaurants, and so on from the market. In the shop we sell fresh snapper, cleaned, at 3½d. per pound; smoked snapper, 5d. and 6d. per pound. In the smoking there is a loss on the fish, hence the higher price for the smoked fish. Fresh mullet is sold at 4d. per pound, and smoked at 5d. At present we cannot supply the public with smoked fish for three days in the week, owing to an insufficiency of supply. Sanford Limited have three trawlers competing with ours. We try to work amicably with the Sanford Company. The venture on the part of the City Council is not very profitable at the present time. As a matter of fact, the trawlers are not large enough, and cannot go out to sea to work in all sorts of weather. Up to the present we have lost money on the undertaking.

To Dr. A. K. Newman: I cannot say whether the supply of fish, taking each year by itself, is less than it was ten years ago. The supply is less this year than last year, probably because we have not been able to go out far enough.

To Mr. Sidey: I do not think that the State could run the industry better than the City Council. The mesh of our nets is 4 in., and a great many of the small fish get through the mesh. We have chilling and freezing capacity up to 42 tons at the market and at the freezing-works. I understand that if there is a big catch of fish which would glut the market and bring down the price there is a temptation on the part of the fishermen not to bring the fish ashore. That, however, is not the case as far as the trawlers are concerned. At the market we take fish of all kinds—all the fish that are brought into Auckland by the fishermen.

To Mr. Craigie: The larger trawler could work even the west coast. The Government have tested the various fishing-grounds of the Dominion. If we had larger trawlers we could go out for three or four days and have a freezer on board. If the city wants to have fish in quantity it must go in for that scheme.

To Mr. Hudson: We pay wages to the crew. They have no shares, and we give nothing extra on catches. The captain gets £6 per week. We are not underselling Sanford. At present we are making a loss, but I do not think we will continue to do so. When we get our big trawler back we ought to be able to make ends meet. It is a beam trawler we use. I do not think our method of fishing, with a net with a wire or chain foot-rope, injures the breeding-grounds of the fish. We may not go over the same piece of sea-bed for a year or so. The 4 in. mesh is right through the net. There is a proposal at present to alter the fishing-limits so that the captains will have landmarks to guide them. If the limits are reduced it will not be detrimental to the line fishermen.

To Mr. Veitch: Sanfords do not get better results in trawling than we do.

To Mr. Sidey: The price of fish to-day is slightly in excess of the price before the Corporation entered into the business. This is caused by the higher cost of material, coal, and so on.

Witness: There is a point I should like to stress. The Government have admitted cotton twine free for net purposes. In nets there is a good deal of hemp twine used, and I consider that that hemp twine should also be admitted free for fishing purposes.

To the Chairman: There is no provision made for the treatment of the offal. Offal makes one of the best manures, and it should be all used. At present, however, there are no ways to make it into manure, and it is taken to sea and dumped. It takes 8 tons of offal to make 1 ton of manure. A plant of the value of £2,000 or £3,000 would be required to deal with the offal.

Witness: I also wish to make a suggestion in regard to the carriage of fish by rail. There is great difficulty in getting proper carriage in suitable vans, and the Government in their own interests ought to provide insulated vans.

To the Chairman: If we have a surplus after supplying the city we supply outside towns by rail as far as we can. When we established the business we were looking forward to supplying outside towns.

S. REID, Sales Manager, Wilson's Portland Cement Company (Limited), examined.

I represent the cement companies of the Auckland District, also the other cement companies in New Zealand. The following is an extract from Christchurch *Press of* Wednesday, 19th February, 1919: "M. P. Murray, representing the Textile Bag and Sack Company (Limited), stated that if a 10 per cent. or 15 per cent. duty were imposed on hessian and jute goods, which were admitted from India free, they could be manufactured in New Zealand. At present his company were importing these lines of goods." I desire to say that from the producers' point of view it looks as if this is a proposal to establish a machine-sewing industry at the expense of those primary producers in New Zealand who are users of jute, manure, cement, and lime bags, and, we understand, all bags below the size of corn-sacks and woolpacks. We do not quite understand what Mr. Murray means by the statement that bags could be manufactured in New Zealand, for we believe that they could simply be sewn. From a trade point of view the proposed tax must ultimately create a monopoly and extinguish the present open market and free competition. So far as we know, the Textile Company are the only people who go in for the sewing of bags, and as there are very few of the mills in India making such a small bag as the cement and lime bags it is quite probable that they would soon go out of the market altogether. With regard to labour, the industrial conditions in New Zealand do not warrant the establishment of such a business. There would be but few men required to operate the machines (the probability is that such would be done by boys and girls), but, on the other hand, the cost of labour would be very much greater than that in India. We have always been given to understand that the manufacturing of bags which was once largely carried out in Scotland was stopped, and the mills transferred to India, where labour and all the other charges were much more favourable. Under present conditions a 10-per-cent. duty on the above bags would add 1s. 3½d. per ton to the cost of cement, and a 15-per-cent. duty would add, practically, 2s. to the ton of cement.

To Mr. Veitch: We think that the Textile Company would have the business in its own hands, and would make its own prices. If we were assured of Government regulation of prices to prevent undue profits we would not be satisfied: what we desire is the opportunity to buy in the Indian market. The mills there sell through agents, who speculate on the jute crop, and we prefer to be in the speculation.

To the Chairman: The price of cement has always been to a certain extent regulated by the price of imported cement. There is no imported cement at present, but the Japanese Cement Association has actually written to us for full particulars of the cement industry in New Zealand. That association sells largely in Australia. The freight on cement from Britain to Australia is 12s. per ton, and British cement has practically always set the price. Comparing the selling-price in New Zealand and other countries, we are slightly below them. The Australian tariff on New Zealand cement is £1 10s. per ton. They have an 18s. advantage. We had an inquiry for 2,000 tons of cement for Australia, but we could not look at it on account of the duty. We do not fear competition with Japan unless they alter their standard of quality. Our prices have been inquired into by the Board of Trade, which agreed that they were perfectly reasonable. The shipping companies increase their freights at a moment's notice. Recently there was an increase in the freight between Onehunga and New Plymouth. The purchaser of cement at the side ports is at the mercy of the shipping companies at present. The present rate on cement from Onehunga to New Plymouth is 17s. 6d. per ton. Before the war it was about 10s. From Auckland to Wellington the freight is 15s., and to Lyttelton and Dunedin it is the same. The cost to Blenheim is about £1 12s., as the cement has to be transhipped at Wellington.

G. E. ALDERTON, Parenga Gumfields (Limited), examined.

I wish to speak to the Committee about the extraction of oil from kauri-gum. From the material we work with we extract 75 gallons of oil to the ton. [Samples produced.] Under another process, when we found we were losing the bulk of the oil, we tried the experiment of mixing the material with a solvent oil, and instead of getting 24 gallons to the ton we got 75 gallons. From an acre of ground we can get 250,000 gallons. That is particularly rich ground. Seven acres of ground have been turned over to a depth of 14 ft., exposing the layer of material with which to work. We have also 8,000 tons of material lying on the surface ready to treat, and we are putting up oilworks as fast as possible. Our plan is this: We put the whole of the material through in a body in retorts and get the oils. This is the first crude oil. [Sample produced.] We refine it, and get motor-spirits, solvent oil, paint-oil, and varnish-oils. The timber in the picture [produced] will run 110 gallons to the ton. We sent some of the wood to America to see what machinery we could get for breaking it up. Previously this stuff had been burnt. What I desire to suggest to the Committee is that, considering the importance of the matter, a Board of experts ought to be appointed by the Government to go thoroughly into the matter. Apart from private enterprise, the Government own 100,000 acres of swamp lands, and there is enough value in the oils in the swamp lands to pay off the whole of the war debt. Our examination has convinced us that the rich kauri swamp land will pan out at from £22,000 to £32,000 per acre, and the oil can be produced at low cost. The trouble is this: it is a new industry, and there is great opposition to it. We have received no assistance from the Government, but quite a lot of opposition. We applied to the Government for a bonus of £10,000, but it was refused. Everything we have asked for from the Government has been refused. I have also asked the Government to inspect the place, but nothing has been done in that respect. Here is another point: Dr. Maclaurin, the expert of the Government Department, has invented a process for cleaning and dealing with this class of gum, and his process has been taken up by the Government. Money has been found to work it, and he claims that his process of dealing with the gum is right, and that what we are

doing is wrong. In the report issued by the Kauri-gum Commissioner statements are made in regard to the working of another company for oil. The other company is working on different lines; they are extracting oil from peat. The other company, however, has not made good, as far as I know, and that fact reflects upon us. Another point: I asked a friend from England about the value of the process invented by Dr. Maclaurin, looking at it from a commercial point of view, and he laughed and said, "They are doing just what they don't want to do. They are cleaning the gum, and all the stuff they are rejecting is as valuable as the gum, because the linoleum-maker wants the whole of the stuff." Under Dr. Maclaurin's process I hold that the small stuff is rejected, which is oil, and the linoleum-maker wants the oil. By my process we convert the whole body of stuff into oil and get the greatest value out of it. Under the process adopted by the Government they are not doing that, but because the Government have adopted that process they say they are doing the right thing and that we are not. That is why the Government have treated us so coldly in the matter, and I claim that in a big thing of national importance like this they should give us a fair deal. An independent body of experts ought to be appointed to inquire into the whole thing with a view to proving to the public that the project is genuine, so that we or others may float a company. The bonus I suggested to the Government would, of course, be open to any one who could comply with the conditions. In developing an industry you require capital, and when you have the Government against you it makes it all the harder to get the capital. If an independent Board will look into the matter we are prepared to prove that we are right.

The Chairman: What capital does it require to test this thing out?—We have put £20,000 into the property. The machinery is going up, and it will be working in two or three months' time.

In what way can the Government help you?—I was trying to get assistance from the Government, but time is going on, and it seems to me we will have to do without it. The Hon. Mr. Guthrie went into the thing very thoroughly with me, but I have not heard any more of it. He said he would lay it before the Industries Committee, and I was surprised the other day to learn he had not done so. We have had the assistance of Mr. Crow, engineer and chemist, who is running the Wanganui Restar Works, and whose reports are more than satisfactory. At the same time, seeing the opposition we have had, the only way to thresh the thing out is to appoint a Board of independent and reliable men to tell the Government whether it is right or wrong. Our company is the Parenga Gumfields (Limited), and our capital is £40,000, of which £30,000 has been called up.

To Dr. A. K. Newman: There seems to be a doubt in the public mind as to the *bona fides* of the thing, and that is the trouble, and we want the Government to properly look into it and set the doubt at rest. If we had a report issued by the Government of New Zealand stating that the matter had been examined and that there was an opening for the development of the oil, we could go to the English market and get plenty of capital. I do not think the case needs research before it could be said to be commercially successful. For the last two or three generations other people have been buying our gum and turning it into oil. It is not a new thing. The land is worth £37,500 per acre. Although I make that statement probably no one will believe it, and I want an independent authority to come in and say whether I am right or wrong.

To Mr. Pearce: We also get opposition from the gum-workers, who reckon that this will knock their business flat. It will not do that, but they think it will. The Kauri-gum Commissioner told us that our process was not the right one. He supports Dr. Maclaurin's process. The cost of manufacturing oil, refining it, and putting it into casks is 6d. per gallon. We have not extracted enough oil to test it in a motor-car. We are not aiming at motor-spirits, but paint-oils and varnishes. We value the oil at 2s. 6d. per gallon, and produce it for 6d. The cost of production is 20 per cent.

To Mr. Sidey: Our capital has been subscribed all over New Zealand. Our only object in wanting a report by an independent Board is to enable us to get additional capital. I would rather take a report from our own experts than from outside experts. It was not a great success to bring out experts to Taranaki. We have plenty of smart men in the country, and we ought to give them a chance.

Mr. Veitch: You say that Dr. Maclaurin has a patent: does he personally own it?—Yes, it is his patent. His process is for cleaning gum.

Did Dr. Maclaurin report on your process?—No.

Has the process patented by Dr. Maclaurin been adopted by the Mines Department?—Yes, by the Government Department. In their Department in Auckland they have erected his cleaning process.

Are they putting that into practical operation with any of the Government lands?—They have been working it recently, but I do not know to what extent. They have had the machine running for only three months.

On Government land?—I do not know whether it is Government land or material they buy.

Where is that machine?—In the Kauri-gum Department here.

Has Dr. Maclaurin been asked to report on your process?—I do not think so. I have been asked to meet Dr. Maclaurin, but I have declined to do it, because what is the use of going to a man who has a patent to deal with a certain thing and that process is being used by the Government? It is not in human nature to go to him and say, "Here is a thing that will knock yours out." I want an independent report from outsiders.

Witness: I leave with the Committee some information with regard to peat, of which we have large quantities in the Waikato and the North. It is possible to produce vast quantities of electricity from peat. All details are given in the report.

Subsequently witness stated: I have here a copy of Mr. E. Crow's report as to the quantity and values of our oils per ton of *pukau* as taken by him from our Wairoa property, known as Wydur's. These values work out at £9 7s. 6d. per ton of *pukau* for oil, and the samples were taken from a bank of 7,000 tons awaiting treatment. The report reads:—

"Wanganui, 13th December, 1918.

"Mr. G. E. Alderton, Chairman of Directors, Parenga Gumfields (Limited), Auckland.

"DEAR SIR,—

"The following is the result of my investigations into the oil value of the sample of *pukau* collected from the heaps on Mr. Wydur's property at Red Hill, near Te Kopuru.

"The heaps from which the sample was collected represent a good average sample of the *pukau* which is being excavated from the property during gum-digging operations.

"Before commencing my tests I studied the methods adopted and results obtained by previous investigators, who apparently had spent much time in distilling, to destruction, the peat collected from the gum areas.

"In the first place it was apparent that the results to be expected from the treatment of peat would be much poorer than those from the selected gum-chip material known as *pukau*. Secondly, this dry distillation produced large volumes of incondensible gases accompanied by a small flow of oil.

"The process from which the following average yield was obtained is that known to you as the 'wet process'; by this method of treatment only a very small proportion of the vapours liberated is incapable of being condensed, therefore in the flow from the worm-mouth oil predominates.

"Six different samples averaged a yield of crude oil equivalent to 75 gallons per ton of dehydrated *pukau*. This crude oil was redistilled and collected in three fractions at the following temperatures: Fraction 1, up to 100° C., 22 per cent. collected; fraction 2, 100° to 135° C., 38 per cent. collected; fraction 3, 135° to 175° C., 20 per cent. collected; residue liquid pitch, 20 per cent. collected.

"Fraction No. 1 is a clear, light, highly volatile spirit possessing powerful solvent qualities, and would find a ready market in numerous industries. I estimate its value at 3s. per gallon. No. 2 fraction is an oil possessing good body, and would be absorbed chiefly by manufacturers of paints, varnishes, and kindred trades; my estimate of its value is 2s. 6d. per gallon. No. 3 fraction is a heavy greasy oil, and with a little further treatment would be quite suitable for lubrication; its estimated value is 4s. per gallon. The estimated value of the pitch residue is 6d. per gallon.

"Including distilling, refining, packages, transit to ship's side, interest, depreciation, and wages, my estimate of cost of producing the oil ready for the consumer is 6d. per gallon.

"Yours faithfully,

"E. CROW, Engineer and Chemist."

J. B. PARKINSON, representing New Zealand Marble Company, examined.

I think the Committee had some evidence submitted to it at Nelson in regard to the marble-deposit at Takaka. It must be obvious to the Committee that there is a scarcity of durable building-material in the Dominion. We have in the Takaka Valley a very fine deposit of a very high grade. There is an exhibition or sample of our marble at the entrance to the new Parliamentary Buildings, Wellington. The particular class of marble which we are trying to develop—the class of marble to which we are devoting our energies—is building-marble. We want to be able to put it on the market at a reasonable rate, so that public bodies and private people may be able to use the marble. The marble that we are using is dove-grey in colour. Our trouble seems to be like that of many others starting new industries—we are trying to develop this industry, but we are short of capital. We want to be able to put this marble on the market so that it will be universally used. We hope as time goes on and as facilities improve to be able to produce the marble at a marketable rate. I suggest that the Committee recommend that a bonus be offered, so as to help us to put this natural product on the market. As members of the Committee know, the cost of timber has gone up and is still going up, and timber is getting scarcer, whereas this marble is there in huge quantities for us to put on the market. I have no hesitation in saying that the texture of the stone is as fine as that of any imported marble that has come into this country. Up to the present time this deposit of marble has remained unutilized, and nobody has taken an interest in developing it. It is a new thing, and we have to work against the imported article. Our marble is one of the finest working marbles. It is "out on its own" as a stone for working-quality. We have some twenty men employed at the quarry and engaged in the industry. We are not a company; we are only a few private individuals. We have not floated the concern into a company. We have expended about £10,000 in connection with the industry. We are hoping to get a big output. We wish the Committee to use its influence to have the material specified for use in some of the new Government buildings. We would very much like to get Government tests made of this marble. I suggest that the Committee should recommend that the Government offer a bonus of 1s. per cubic foot to enable us to put this marble on the market to cope with all the requirements, so that the marble may be universally used as being one of the best things of the sort New Zealand could possibly have. The adoption of this marble for building purposes would mean doing away with the cost of maintenance. The stone practically lasts for all time. Aberdeen is built of granite. I do not see any reason why New Zealand, having this deposit of marble, should not be built of marble so far as its buildings are concerned.

To Mr. Hudson: If the industry were assisted by a bonus, or if some similar form of assistance were given, I have no doubt that this marble would come into general use for private build-

ings, &c. It is contemplated building several places out of the marble rubble—buildings of the bungalow style, as illustrated in the American journals. It is going to cost us more at the present time than it would in concrete or brick; but if we had assistance we would be able to produce rubble marble that would compete with both brick and concrete. The deposit is there; the trouble is to get the marble on the market at the right price. With the assistance we desire we would be able to land the marble at, say, Wellington at a rate that would compete with brick and concrete —that is, if you take the cost of maintenance into consideration. If we do not get the assistance we desire, then marble will no doubt have to be regarded in the light more or less of a luxury; it is not going to be within the reach of the populace. I feel sure if we had the assistance suggested under normal conditions the marble could be supplied to the public at reasonable rates for the purposes I have indicated.

To Mr. Veitch: During the time we have been running the output has varied from 50 ft. up to about 250 ft. per week. The granting of a bonus would enable us to supply the article cheaper. An import duty would not help us. Our shipping freights are heavy: that is a very serious difficulty. The transport charges are very high. I will furnish the Committee with details of these charges.

To Mr. Craigie: An estimate of the cost of sawn blocks is about 18s. per cubic foot. We are hoping to be able to provide rubble at about 18s. per ton. There would be 14 cubic feet in that. At present our material is 20 per cent. dearer than brick; that is the estimate. Takaka Harbour at present can only take boats of 6 ft. 6 in. draught; if the depth could be made 9 ft. it would be a big assistance to us. We have every confidence that it would pay to have an up-to-date plant.

To Mr. Sidey: There is another deposit of marble, and that is owned by the contractors for the new Parliamentary Buildings. That marble is of a different texture to ours. Practically all the marble used for the new Parliamentary Buildings has been taken from their quarry.

To Dr. A. K. Newman: We are at present using our marble for mantelpieces and for inside building purposes. If the harbour at Waiotapu or Takaka were deepened it would be of great assistance to us; and the lessening of the transport charges is a question of the greatest importance, for, as I have said, those charges are very heavy.

N. G. G. WINKELMANN, Engineer, examined.

I was connected with the ironworks at New Plymouth and at Patea, and I have invented a process of smelting ironsand at one operation and producing steel. I have expended about £500 on a small plant capable of dealing with a few pounds of metal. I had the Government expert, Dr. Maclaurin, up to examine it. I cannot proceed any further with the process now until I get some assistance of some kind. I have some photographs here of the plant. [Photographs of plant exhibited, and process explained to the Committee.] I have worked out the approximate cost on a basis of making 5 tons of metal in eight hours. My plant will make a non-stop run for twelve months.

To Dr. A. K. Newman: I have not worked out the price per ton. I have here some samples of the products of my process. [Samples shown.]

To the Chairman: I have here a copy of Dr. Maclaurin's report. [Copy of report submitted to the Committee.] The cost of the plant would not be so much as the cost of a cement-works plant. I want assistance so that I may be able to demonstrate my process on a larger scale; or, if I were to get £5,000 capital, I ask that the Government should subsidise it pound for pound. I have been trying for the last twelve months to get some footing to work out the cost of the ironsand deposit; but the Department wanted to know if a company was going to be formed, and as to the extent of the works I proposed to put up. I was not in a position to give them that information; but I want to be in a position to form a company. I cannot get any satisfaction from the Marine Department. They granted me an option for a few months and then cancelled it. This ironsand proposition has been a big proposition for a long time. I understand that over £200,000 has been expended in connection with it. All I want is to expend £10,000 to prove it. I have expended £500 altogether.

To Mr. Pearce: I bought the machinery for the Patea company and put it up. I estimate that the plant required for my process would be £10,000. In the event of the Government granting assistance to the industry I would like similar privileges as are at present granted to farmers for the free carriage of limestone by rail for 100 miles. There is a kind of slag which comes out of the furnace. It is not basic slag, because there is no phosphoric acid; but the slag that comes out is a good fertilizer. My process is one of general interest to the Government and to the country.

To Mr. Sidey: I have not produced any iron that has been used by any of the foundries; my plant is a very small one. I cannot produce pig iron. There apparently is no difference in the product of the process; but it is not cast iron. I am not in a position to say anything about mixing the ironsand with hæmatite; I have not tried it.

To Dr. A. K. Newman: A percentage of titanium is good for the steel, but it is no good for cast iron. I can supply the Committee with a small quantity of the material for analysis. I have read books published in England about ironsand. I suggest again to the Committee that my process be investigated. I think the Government should help me to carry out the experiments.

R. H. A. POTTER, representing Union Oil, Soap, and Candle Company (Limited), examined.

In referring to the candle industry we have the honour of handing you copies of documents handed to the Minister of Customs when a deputation representing the candle-manufacturing companies waited upon the Minister in Wellington in February, 1913; also a further letter dated the 16th June, 1913. The Hon. Mr. Fisher at that stage stated that he could not promise anything,

but that his desire was that the amount of capital invested should be used to its full capacity. He wanted to see the population employed, and he would do his best to prevent same coming into competition with sweated and coloured labour. The Minister was to make a tour of the Dominion and inspect the industries concerned. In 1914 the war broke out, and, of course, during the last two years New Zealand manufactured lines, including candles, have been in considerable demand. The fluctuations in importations of candles are interesting. In 1912 there were imported 1,837,023 lb., and New Zealand sales amounted to 2,460,215 lb.; 1913—imported 1,944,846 lb., New Zealand sales 2,138,617 lb.; 1914—imported 2,543,276 lb., New Zealand sales 2,550,628 lb.; 1915—imported 2,327,995 lb., New Zealand sales 2,406,983 lb.; 1916—imported 1,751,786 lb., New Zealand sales 2,609,451 lb.; 1917—imported 364,219 lb., New Zealand sales 2,881,767 lb.; 1918—imported 764,039 lb., New Zealand sales 3,330,661 lb. Since the armistice was signed there has been a general falling-off in trade, and everything points to the fact that trade is going to be exceptionally keen, and so far as our competitors are concerned we shall be placed in a very much worse position, because the rates of wages have been considerably increased, and there has been a general advance in the cost of coal, box timber, railage, cartage, engineering requisites, printing, &c. If our anticipations are correct, then the arguments and facts placed before the Government in 1913 should be taken into serious consideration. We particularly desire to emphasize the fact that the candle industry has never in reality received a protection through the Customs even with the duty of 1½d. per pound on imported candles, as we have had to pay 1d. per pound duty on paraffin-wax, thereby reducing the protection to ½d. per pound. This small margin is quite inadequate, and the remedy is, we are fully convinced, to be found in the recommendation made by the manufacturers in 1913—viz., either by increasing the duty on imported candles, or decreasing the duty on paraffin-wax, or by both—that is to say, the duty on candles could be increased by ½d. or the duty on wax be decreased by ½d., or ¼d. could be put on to candles and ¼d. taken off the wax, the object being to secure a further margin of ½d. between the cost of the wax and the cost of the candles. In Australia the general tariff is 2d., and on importations from the United Kingdom 1½d. This, we understand, in Australia is giving satisfaction, and has been the means of limiting importations of candles. It silently and effectively discriminates against coloured labour. We strongly and urgently recommend that a similar tariff be adopted by our Government in preference to taking any of the duty off wax, because we are not asking the Government to make any sacrifice in regard to revenue. Further, its retention would help the manufacturers, if necessary, to make stearine candles if the price of wax was increased out of proportion to the price of tallow. In this respect it must be remembered that at present we are entirely dependent upon outside producers for the supply of wax, and if the duty was taken off it is possible for a combination to raise the price of wax and thus deprive the user of candles here of the benefit of the concession. It is possible that the mineral-oil industry in the Dominion will still be further developed, and the retention of the duty on the wax will certainly to a considerable extent be an inducement for the investment of outside capital. The New Zealand companies undertook to purchase any wax produced, and are still prepared to do so. We believe that the general feeling in the community is that industries employing white labour should be fostered and adequately protected, and it is very apparent to all that if the standard of living is to be maintained wages cannot be materially reduced, therefore an adequate return for the investment of capital, and permanent employment, can only be secured so far as the candle industry is concerned by the necessary protection through the Customs tariff. In regard to linseed-oil, this could very easily be made here, and we would suggest that a duty of 2s. per gallon should be put on imported oil and £3 per ton on imported linseed. Mustard also could be made here, and we would suggest a duty of 2d. per pound on the imported article. I may add that the war gave us all the protection we wanted, and more, because we could not supply the demand; but now that the war is over the conditions will go back to the conditions of 1914. I have here a copy of a memorandum which was handed to the Minister of Customs by a deputation of New Zealand candle companies. [Memorandum read.]

To Dr. A. K. Newman: I do not think there is a probability of the competition from Burmah decreasing.

To Mr. Sidey: In the event of protection being afforded we would be agreeable to the State regulating the price. I do not think the suggestions made would affect the wax vestas company.

To the Chairman: Our packets are slightly over 16 oz. gross. We have to compete against packets of 12 oz., 14 oz., and 15 oz. During the war we did not attempt to get the highest price. In regard to caustic soda and other material, that is free.

A. HARVEY, representative of Alex. Harvey and Sons (Limited), examined.

We manufacture milk-cans and other metal-ware. Stamped metal-work is imported into New Zealand free of duty. It is possible to produce almost any article by the stamping process, and if these articles are imported with only one operation to be performed they come in as stamped, and are duty-free. Therefore we get practically no protection, except the little bit of labour required to finish off. Take a milk-bucket, for instance: the stamped bodies come in free, also the hoops and other parts, provided the buckets are not curled over at the top and the wire put in. The same also applies to many things which come out nested. Sweden and other countries can send out parts of milk-cans, provided they are finished off, paying 10 per cent. duty, which I submit is not enough.

To Mr. Veitch: We suggest that they should pay the ordinary duty, as on manufactured articles. We would like to see 25 per cent. duty on metal manufactures, whether completed or in the process of manufacture. We think it is reasonable, in the case of foreign goods, that there should be half as much more.

To Mr. Pearce: We want the tariff to apply to sheet-metal goods, 14 gauge or under. Cans are 16 or 18 gauge. This might increase the price a little, but competition would not allow it to become unreasonable. We do not fear the English imported cans, but we do fear the foreign cans from Sweden and Denmark. We would like to see the preferential tariff increased.

To the Chairman: Milk-can bodies now pay 25 per cent. on the block, plus half as much again for foreign. Hoops, handles, and covers come in free, provided they are not finished off, and the finishing off is a small matter. We want a duty on these things equal to the other. We think the duty should be 25 per cent. all round. It might advance the price a little, but it is better to have that than to have the foreign article coming in. Competition would keep prices down to a fair thing, and there would be no exploiting. There are other firms than ours engaged in the manufacture. There is room for great development if we get reasonable protection. In this department we employ about sixty-five hands. We usually employ from sixty-five to ninety, all males, and they are all married men. We have only half a dozen apprentices. We have a difficulty in getting apprentices.

To Mr. Pearce: Hoops, handles, covers, and bottoms of milk-cans come in free, but the other part is dutiable. We are afraid of the Japanese, because they are going round taking samples of these and other things. The price of a 20-gallon milk-can is £2 11s., less 10 per cent.

To Mr. Veitch: I cannot say what proportion of the New Zealand manufacture we are doing. We are not doing a quarter, but we could cover more. With a 25-per-cent. duty on the finished article we would be able to produce a larger quantity without increasing the price.

WEDNESDAY, 23RD APRIL, 1919.

F. N. ANDREWS, Furniture Employers' Association, examined.

I have been asked to approach the Committee on behalf of the Furniture Employers' Association with regard to our business. We consider that the present tariff is ample as applied to furniture made in the British Dominions, though we are of opinion there might be an exception made with regard to chairs, with the idea of fostering the factories here. A large number of chairs come from America. At present there is no plant in the Dominion to make chairs. In the South Island the beech is suitable for chairs, but we have no suitable timber in the North Island. There is a preferential tariff on foreign-made furniture, but we think it should be increased by 12½ per cent., making it 50 per cent., and wherever the standard of living is not equal to that in New Zealand there should be a still further restriction placed on furniture. The Government ought to foster any attempt to make chairs locally. We think, too, that the Committee ought to inquire into the manufacture of three-ply veneer from New Zealand timbers. This is made in the mills at present, but is not quite satisfactory. In order to develop the furniture trade the duty should be taken off materials used in manufacture, particularly textiles, moquettes, tapestries, velvets, plushes, &c.—that is, our raw material. Moquettes are used entirely for furniture. Tapestry is used a little for curtains. Utrecht velvets are used almost entirely for furniture. Further, our association suggest that action be taken with regard to the export of timber.

To Mr. Forbes: We ought to prohibit the export of timber used for furniture—kauri and rimu. We do not use white-pine. The cost of kauri and rimu is so high that it is interfering with the furniture business, and we hope that the Committee will investigate the matter and restrict the export.

To Dr. A. K. Newman: Japan is the only country that is likely to dump furniture here. We do not expect large quantities from America, except chairs, and an effort should be made to counteract that.

To the Chairman: The hours of work here are forty-four, and the wages 1s. 10½d., plus 2½d. war bonus. At present there is no cheap chair produced here. I think myself that the duty is ample on chairs, although if we could get the industry started every encouragement should be given to it. If any one would start a factory to make a cheap chair it should be further protected to get that chair on the market. There are many cheap chairs imported that we cannot produce here. There is a man in Auckland who makes a common chair, but he is not in a large way. I do not believe in the artisan class being penalized by not getting a cheap chair. We ought to try to produce a chair of the Austrian chair type.

W. T. SMITH, Furniture Employers' Association, examined.

The ground has been well covered by Mr. Andrews. Our association went into the matter thoroughly. There is one question I might refer to, and that is methylated spirits. At the present time, of course, things are abnormal, but allowing for that methylated spirits are now sold at the very high price of 11s. per gallon, and it is a hard matter to get a supply. Our association has communicated with the Minister of Customs and the Minister of Munitions asking them to facilitate the importation of methylated spirits, which are necessary in furniture polish and varnish. We think that the manufacture of the spirits might be undertaken in the Dominion. Mr. Black, of Christchurch, says that the spirits can be manufactured for 10d. per gallon. In normal times the price is 3s. per gallon. Methylated spirits can be manufactured out of almost anything, even sawdust. Mr. Black approached the Minister of Customs, but nothing came of it. As for the three-ply timber, it is largely used in the trade for backing and other work. Timbers in the Dominion should be suitable for the purpose, but the matter wants looking into, and we suggest that the Government should get some one to experiment to ascertain the best class

of timber for the purpose. This material is more suitable in the manufacture of furniture than heavy timber.

To Mr. Pearce: The Colonial Sugar Company produced the methylated spirits in Australia. I do not know whether they increased the price from 3s. to 11s.

To Dr. A. K. Newman: Kauri and rimu form practically the bulk of the timber we use. I do not think *Pinus insignis* would be suitable. We used to use honeysuckle, but it is out of fashion. Fuchsia is not used to any extent. Mottled kauri used to be used, but it is off the market. The trees now being planted at Rotorua will be suitable for box timber, but not for furniture.

E. A. WARD, Furniture Employees' Union, examined.

A conference has been held between representatives of the employers and representatives of the workers. The first matter placed before the conference by the employers was this proposal: "That we regard the present duties as applied to furniture made in the British Dominions to be sufficient." The workers' representatives did not bind themselves to agree to this suggestion until there had been a meeting of the union, and this is the resolution of our meeting: "That the tariff be raised on goods imported from Britain and the Dominions." The tariff is now 25 per cent. So far as purely British manufacture is concerned we have no objection to it, but I know what it is to deal with Jewish firms in London. Many of these firms employ Jewish Poles or German Jews in the manufacture of furniture at very low wages, and send it out here. I know that that was the case thirteen years ago when I was in London. Not long ago, when I was in Australia, £160,000 worth of furniture arrived there from London, all made by this cheap labour. Our union recommends, therefore, that the tariff should be increased. We know, too, that furniture is made in other countries and sent to England, then shipped to the colonies. I repeat that we have no objection to the real British manufacture, but we do object to the furniture made by the Jewish portion of the people, and that is the reason for our resolution. The second proposal of the employers was, "That the 12½ per cent. preferential tariff be imposed on furniture made in the Continental, American, and Allied countries"; and on that matter the union decided as follows: "That the preferential tariff be raised on goods coming from Continental, American, and Allied countries in the same proportion as the rise on the goods from Britain." No. 3 of the employers' proposals was, "That further restrictions be placed on the importation of furniture from those countries where the rate of wages and the standard of living are lower than in New Zealand." The union passed a resolution worded in the same way. At our meeting we also resolved as under: "That the Committee be strongly urged to inquire into the manufacture of three-ply veneer from the most suitable New Zealand timbers; that the manufacture of raw spirit for industrial purposes be encouraged to commence at once; that the undermentioned articles not now being made in New Zealand be admitted free of duty for the purpose of helping to keep down the price of furniture in New Zealand and enabling the manufacturer to compete with outside markets—viz., textiles for chair-coverings, as velvet, moquette, tapestry, plush; upholsterers' twine for spring-sewing and mattress work; cabinetmakers' brass foundry and ironmongery, as locks, hinges, glass movements, castors, domes, iron screws; tiles; enamel; majolica; and sea-grass for the manufacture of wicker furniture."

To Mr. Pearce: I suggest a higher tariff against Japan than against America. Under the third resolution Japan is included.

To Mr. Forbes: A factory equipped with up-to-date plant will turn out furniture cheaper than one which has not that machinery. I have been told that the plant in Mr. Smith's factory could turn out all the furniture required in the North Island. I do not think furniture will go up higher than it is at present, even if we get the protection we ask for. Many of the articles of furniture brought into New Zealand are made in England by alien labour.

Mr. Poland: Is it possible for the Government to recommend a tariff which will discriminate between furniture manufactured by British workmen in Britain and that manufactured by the foreign element in Britain?—That matter was mentioned at the conference, and it was suggested that furniture manufactured by alien labour in Britain should be registered with a number. I believe, however, there are employers there who would simply take the number off and put their own name on it.

Is 25 per cent. enough to enable you to compete against the British-made article?—Yes. I am told that wages are 1s. 8d. in London, and here they are 1s. 10d., and with the 25 per cent. and the cost of freightage it is quite sufficient.

Are the wages not likely to drop in England?—No, I think not.

Mr. Sidey: Would it be wise to discriminate between the two classes of labour?—As we cannot draw a line between the two we ask for an increase in the tariff on British goods, with a proportionate increase on foreign goods.

You do not suggest the amount of the increase?—I leave that entirely to the Committee.

To Mr. Craigie: I think that in America chairs may be produced in tens of thousands. At the conference we agreed that we have not got the class of wood here to compete with the Canadian bent-wood chair. We also agreed that a suitable kitchen-chair for the average worker must come out at about 5s. or 6s., and using New Zealand timbers we could not compete with the outsider. We consider that Japan will be a menace in the future. Up to the present I have not come across Japan-manufactured goods.

To Mr. Hudson: Although the wages in England are 1s. 8d., they do not apply to the Jewish worker. The unions take in British workers, but do not recognize aliens.

To Dr. A. K. Newman: A good deal of furniture that is regarded as British manufacture is made in parts on the Continent, made up in England, and dumped on the colonies.

Witness: With regard to alien countries, the Committee will notice that we ask that "further restrictions be placed on the importation of furniture from those countries where the rate of wages and the standard of living are lower than in New Zealand." I should like to know what is the present tariff on Japanese goods.

The Chairman: It is 37½ per cent.

Witness: We ask for 50 per cent.

The Chairman: The employers ask for the same.

To the Chairman: There are no Hindoo coolies in our trade in New Zealand.

W. T. SMITH, Furniture Employers' Association, further examined.

The Chairman: The Committee would be glad to hear a statement from the employers with regard to the manufacture of furniture by foreign labour in Britain.

Witness: The practice of manufacturing goods by Poles in the East End of London should not be allowed to continue, but it is a matter in which we have no power. It is a question for London. We could not consider here the question of so-much for British labour and so-much for alien labour in Britain. I know, however, that the conditions exist. I have seen them myself, and they are very bad. If anything can be done our association would be pleased to assist to stop those conditions, because they are a crying shame. We are quite in accord with what has been said by Mr. Ward—that such conditions should not be allowed to exist. Alien labour in Britain is mostly done in the people's homes, and the employers pay them just what they like.

W. AGGERS, Furniture Employees' Union, examined.

Mr. Ward has explained the position of the union, and I need not repeat what he has said. There is another matter I wish to refer to. The Committee may have heard about the Canadians beating New-Zealanders in the chair line. I have a composition here made from New Zealand products that it is possible to make into chairs, into three-ply, and various other things. [Samples produced.] You would think they were pieces of wood. The material has been tested at the University and found to be stronger than kauri or oak. It is made of flax and glutinous substances, coated with varnish to make it waterproof. It can be bent into any shape and made as strong as an Austrian bent-wood chair. When tested at the University the breaking-power was not quite as strong as rimu, though stronger than kauri or oak. It can also be stamped with carvings under pressure and heat.

To Mr. Pearce: The materials are cheap, consisting of the refuse of flax, paste, resin, and glue. Some of the flax used has good fibre. This is an imitation of marble. [Sample produced.] It is possible to plane it or sandpaper it. I have a chair that I made of the material three years ago. I will bring it along for the Committee to inspect. It is not meant for outside use, as the wet might affect it, but for inside use. I claim, too, that it will save labour.

The Chairman: What do you want the Committee to do?—I am not a man of money, and I want to get the thing on the market. As it is made from New Zealand products it would be a good thing for the country. The goods could also be exported. Austrian chairs and Canadian chairs come into New Zealand in thousands. This thing has been tested and found to be strong, and the work ought to be kept here for our own people.

Mr. Hudson: Would it be as cheap as the imported article?—I cannot tell until it is tried, but I think it would be cheaper.

Have you taken out a patent?—I have applied for protection, though I have not got the patent yet. You could use straw or old rags or anything. Flax is convenient, as it is strong and has a straight grain.

The Chairman: Have you any idea of the cost of 100 ft. of the material?—I could not say. I use a hand-cramp for it. I think the Government ought to come in and assist me, but exactly what I want I cannot say. It needs powerful presses. The stronger the press the less glutinous matter is required, and that cheapens it. You could use refuse tow, or rags, or straw.

To Mr. Hudson: I have mentioned the matter to one or two persons, but I have not gone into the thing very far. I think the Government should assist, as it is an industry that would benefit New Zealand.

Mr. Pearce: Could you tell us what a chair would cost?—I take it that a chair would come out cheaper than the imported article.

Are not varnish and glue expensive?—It is mostly paste and resin that I use. Flour is ⅜d. per pound and resin 1½d. per pound.

Dr. A. K. Newman: What is about the weight of timber in an Austrian chair?—About 8 lb. Eight pounds of raw material would cost very little, and if you had 3 lb. of binding-material it would be a small amount, and you would also save on labour. You could not make a board 3 in. thick and compete with timber, but you could make three-ply and beat it. If you made a board 3 in. thick it would require a lot of stuff. The material is quite strong enough for chair-legs.

H. BOLITHO examined.

At the present time tobacco, cigars, cigarettes, and playing-cards are made in Great Britain and foreign countries, and come into this country at fixed tariffs without regard to mercantile value, whereas most other importations pay the duty on value declared. The articles I have mentioned give the manufacturers an incentive to pack their goods in elaborate and expensive packages, whereas the packers of these goods in New Zealand in some cases pay duties on the material used in making up wrappers, &c., and the British and foreign manufacturers only pay the duty on contents. It is also the practice of some of the importers of the lines I have mentioned to register in New Zealand a trade-mark, or get power of attorney to act for manufacturers.

Sometimes the trade-mark is a Maori name or something inferring British or colonial make under which the goods are sold, and country of origin does not show on the packages. And in some cases, especially Continental, to be placed on the packing of a number of goods in bulk, the purchasing public being deprived of the means of ascertaining the origin of the goods used by them. Tins made in New Zealand for the packing of cut tobacco before the war cost 6s. 6d. per gross in fifty-gross lots, and at present packings it takes practically a dozen tins to pack 1 lb. of tobacco. If a minimum tariff was fixed on tobacco, cigars, cigarettes, and cards, as was in vogue previous to the war, when the goods were manufactured in Great Britain, any Dominion or possession loyal to the Crown, all other countries to pay duties as now on other goods, a percentage on the invoice value, or rated at a fixed tariff as per pound or dozen; and if a manufacturer or packer in New Zealand can show, or in the opinion of the Collector of Customs, the packing is so elaborate or expensive that it is impossible to compete, then a special duty should be put on the packing. The Dominion at the present time is in the position to make all packages and tins for the sale of the goods, and we are unjustly loaded down with the allowing of packings coming in duty-free. No foreign goods should come into New Zealand in bulk and be sold as local manufacture to deceive the public. An individual or corporation holding power of attorney in New Zealand should, if they are acting for a foreign company or for the sale of any goods from foreign companies, pay an income-tax on the same as if the profit were drawn by the foreign representative or representatives abroad. I have had under my notice a case of a man buying and smoking cigars for fifteen years thinking they were British-made because they had a picture of Lord Roberts on the package. He was a bit disgusted when he was told that the cigars were German-made; and it is a reason why all trade-marks and powers of attorney should be annulled when they are deceiving to the purchasing public. Mr. Justice Herdman, when Minister in charge of the Registration of Business Names Bill before the House of Representatives, informed me in writing that it would be impossible for the practice to continue when the Bill was passed, but the measure was dropped for some reason after the second reading. Another practice in New Zealand is the grouping of bonded warehouses and mercantile houses under one roof with passages between the departments, thus allowing goods of foreign manufacture being passed straight from the ship to bond in bulk, then to warehouse, and no person purchasing the goods can tell the country of origin. Take, for instance, the fact that when war with Germany was declared there were large quantities of German cigars as well as other goods in bond. These goods were cleared after the declaration of war and disposed of to the public; thus the Customs Department as well as the merchants were trading in enemy goods; and the money or credits of these goods should be in the hands of the Government to help the general taxpayers to meet the obligations placed on them, and the money should not be allowed to be remitted out of the country after declaration of peace.

To the Chairman: Goods in bond are not in the country, and they should have been stopped at the bond. Most of these questions were dealt with by the Minister when the Registration of Names Bill was before the House.

To Mr. Pearce: I do not think it is right that goods from other parts of the world should come here in bulk and then be packed and sent out with a New Zealand name after being taken out of bond. It should be made illegal to put any trade-mark or name on goods that is deceiving to the public. For instance, it has been brought under my notice that some ornamental crockery bore a picture of a New Zealand town, and underneath were the words "A present from ——," giving the name of the town. When those goods left their country of origin, "Made in Germany" was printed on them in Brunswick black; but after getting to the distributors those words were removed with turpentine, which will remove Brunswick black at once. The trade-marks law wants altering in order to prevent the public being deceived. Even after the war was finished goods have come into New Zealand without the country of origin being marked on them. There is another point I would like to draw attention to. There are cigars coming into this country which can be bought in some places at a low figure, and in others they are sold at 50s. a hundred. These goods are landed in New Zealand at about the same tariff, by the pound. The position in regard to playing-cards also shows that some alteration should be made in regard to the tariff. The import duty should be based on value.

To Mr. Forbes: The Collectors of Customs could deal with some of these questions if they were given the power. If the Registration of Business Names Bill were passed into law that would meet the point. The removal of "Made in Germany" should be stopped. The tariff should be a tariff on value.

S. J. HARBUTT, representing Auckland Provincial Industrial Association, examined.

One of the most urgent reforms needed in New Zealand is a reform of our tariff system. Originally instituted as a revenue-producer, it has taken now the wider and more far-reaching power—namely, the protection and stimulant of secondary industry. Unfortunately, in this latter phase our tariff leaves much room for reform. From my experience both in my own business and from information gained at first hand from other industrialists, the reform is required not only in the items and rates charged, but, much more important, in the mode or method of revising. It is needless to tell you gentlemen the present mode—you are only too well aware of the position. A member of the House told me when I spoke of some improvements required, "Oh, you know I don't understand anything about tariffs. Whenever anything of the kind comes on we just ask Mr. Wilkinson what we should do." Various Cabinet Ministers have told us that there is no business they fear to bring forward more than a Tariff Bill. The fact that the thousands of items constituting the tariff are all open for amendment when a Tariff Bill is before the House naturally causes the Minister to make every possible use of the party machinery to force the Bill through,

regardless of anomalies or absurdities which are perpetuated year after year. I submit then, first, we should have a Tariff Board that would take evidence as your Committee is doing, thus enabling a fully considered report or recommendation to come before the House for its approval or amendment. Second, in the case of a new industry all the facts covering its prospects could be considered promptly; and if such proposal were considered of sufficient value to the Dominion the Commission or Tariff Board could submit its findings to the Cabinet, which in turn should have the power to impose a tariff that would encourage the proposed new industry. Third, power should be available in case of a foreign competitor, as a result of cheap labour and lower standard of living, threatening any existing industry. The Tariff Board should have power to investigate and report to Cabinet, which in turn should be able to act immediately. Fourth, the Customs tariff should not be treated as an unalterable institution, but should be of a mobile nature, framed and designed to meet the changing needs of trade and industry. Fifth, the amendments of the Tariff Bill should be possible without throwing open the whole tariff.

Hydro-electric schemes: As representing the Industrial Association, I must emphasize the urgent need of developing the latent wealth in our waterways. You are fully possessed of information as to the industrial use of Lake Coleridge. I feel sure it is unnecessary for me to enlarge upon this question. I will simply ask that your most urgent attention be directed to the earliest possible completion of the North Island hydro-electric scheme as outlined by Mr. Parry. I do not mention South Island, as I understand the Power Board system of working is more favoured. I am firmly convinced that both our primary and secondary industries would be tremendously assisted and developed if these cheap power schemes were made available.

Afforestation: This is one question that every class of industry now existent, and such as may be started, is becoming more and more vitally concerned with. When it is remembered that New Zealand, once one of nature's grandest forest lands, is rapidly becoming a timberless country, it is time that no stone be left unturned to have provision made for the future. It is impossible for New Zealand to rank as a progressive country unless she is possessed of timber-supplies. Every industry is more or less dependent upon timber. This fact is realized now by the older countries. In Europe, Germany has built up the greatest forests in Europe. You must have noted the extreme care taken by Germany to absolutely destroy all the forest and trees possible whilst in France. Why was this but because the Hun realized only too well that the loss of her forests would be one of the greatest misfortunes that could occur to her competitor? The United States has realized the need of afforestation, and whilst still possessed of huge forests she has to-day the most advanced and energetic Department of Forests. In the United Kingdom £15,000,000 is proposed to be spent on this work. As you have been going round it must have been patent to you that our forests are disappearing at an alarming rate. It must also have been noticeable the little attempt made to replant either by native or exotic trees. In the interest of our industries of all kinds I submit that the most stringent regulations, even to the limit of absolute prohibition of all timber-export, should be brought into force. Second, the Government should, by way of either bonus or subsidy, encourage every landowner to maintain an area of timber. In passing, I may mention that a contract was advertised to float or deliver 3,000,000 ft. of *Pinus insignis* to Mercer from the Waikato—the term of contract to be three years. Can you imagine anything more suicidal than to allow not only the depletion and export of our native timber, but now to see the exotic timbers grown by settlers to be exploited by the overseas buyers. The Government should encourage the landowner to grow the timber on the one hand, and should also make it compulsory that for every tree cut for timber five should be planted. This system is in vogue in Switzerland and elsewhere. Third, the Government should be forced to show some reasonable degree of energy in the replanting of the present waste lands with quick-growing timber-trees of the *Pinus radiata* class. I do not wish to question the knowledge of the expert gentlemen who has been advising the Government with reference to native timbers, but I can speak from experience what exotic trees planted by my father in the early eighties have been recently cut and sold as timber, whereas kauri-trees in the Auckland Domain that have been for fifty years under observation are not worth the cutting and sawing up. It must be remembered that 75 per cent. of the timber used is what may be termed soft woods. It is this class of timber that I claim our Government should use its utmost endeavour to have planted. I would urge you gentlemen to carefully consider the question of afforestation in its relation to the industries of the Dominion.

Shipping: My executive wished to have this question mentioned to you so that you might secure evidence throughout the Dominion on the subject. The point raised is simply that New Zealand with its extended seaboard and inland waterways does at present and will much more in the future have to depend upon water carriage. The question is, should not the shipping, or at least the fixing of charges, be subject to a Board of control under the Government?

Conservation of raw material: It surely must have struck you as remarkable that such an amount of leather and woollens are imported into New Zealand. The conditions that have arisen through the war have made it compulsory that many of the lines under the headings "leather" and "woollens" have had to be tackled in New Zealand, with the result that many classes of goods are now made in New Zealand that formerly were made of New Zealand raw material in foreign and oversea lands and sent back to New Zealand in the form of leather or tweed, or only too often in boots. This question is largely one of tariff. If sufficient power were possessed by a Tariff Board and Cabinet, and we had a mobile tariff in place of our present cast-iron system, many of the difficulties that cause our local industries so much trouble and loss could be countered by quick action by the Tariff Board.

Finance or State banks: One of the greatest difficulties met with in advancing our industries is the need of financial help. Only too often the brains to develop an industry do not rest under the same hat as the power to finance. The industrial associations have for years been urging the Government to set up a Board of Industries on similar lines to the Board of Agriculture. We

all know the valuable work done under the Agricultural Department. The improvement effected in the handling and grading of primary products is an instance; and then there is the financial help accorded settlers under the Advances to Settlers Act.

Causes of failure: The result of my experience is that local industries are handicapped and in many cases doomed to failure by two or three things. First, owing to the want of capital the young industry has to crawl for so long that the proprietor acquires the habit and fears to stand up; second, owing to the failure of the Government to adequately or even intelligently protect by tariff, and, worse, the lack of support of the local article by the Government Departments, has influenced popular taste away from instead of towards the hearty support of local industry.

New industries: You have this as one of your points of investigation. I regret not being able to give you more definite information. From experiments being made it appears that there are great possibilities in the production of peat-oils, &c., from our great northern swamps. A company is in existence endeavouring to develop this industry, but is sadly handicapped for want of the services of an active reliable Board of Industry, supported by its experts. Second, iron: You gentlemen know more of this than I can tell you. Third, glass: From information supplied to our association we believe the northern peninsula is bounded by an inexhaustible supply of the finest possible sand for glass-making. For the lack of a State Department of Industries the development of all our latent natural wealth is left to private enterprise to initiate. I claim that with a live Department the possibilities of successfully establishing many such industries as peat-oil, iron and steel, and glass could be thoroughly investigated, with the result that the investing public might receive reliable data enabling it to promote companies for such development with a reasonable chance of success.

Industrial needs: First and foremost we want established in our Dominion a strong public opinion favouring local industry. This can be greatly helped and fostered by a sympathetic Government, by an active State Department devoting itself to educate and encourage the public to the advantages of patronizing local industry; second, by the establishment of a Board of Industries constituted and run on the lines of the Agricultural and Tourist Departments, provided with the best staff of experts obtainable, and able to assist infant industries with both scientific and technical help; third, by Government financial assistance, given by similar means to the Advances to Settlers Act in New Zealand, or on the lines of the United States, where sites are given free to likely industries, and buildings and equipment are financed; fourth, by the introduction of a more modern system of tariff regulation, whereby a mobile instead of the present cast-iron system would help to build our secondary industries. Here we can afford to take a lesson from the wily Hun, for undoubtedly the Hun understood more about the power of tariff than perhaps any other nation.

Now, gentlemen, after what you have seen and heard it is useless for me to expand the question of the possibilities that lie in the way of utilizing latent mineral and other resources of the Dominion. As President of the Auckland Industrial Association, after some six years of office, I can state with full assurance that if we had in New Zealand a Department of Industries carried on in the same capable method that the Agricultural Department is, we to-day would have been much more prepared to carry our increasing taxation, and also would have less trouble and anxiety to repatriate our returning soldiers.

To Dr. A. K. Newman: In regard to the question of the establishment of an industrial bank, or making advances as in the case of the Advances to Settlers Department, I am not possessed of sufficient information to be sure which is the best method to adopt. I think that a Board of experts might be appointed—a Board which should consider each industry or proposal and give advice; or, if we had a Department of Industries, that Department would have its officers, and the Department could go into any proposal brought forward.

To Mr. Pearce: Whilst we ask for this Tariff Board, we do not necessarily ask for a largely increased tariff. I think it has been proved in most countries that having a tariff does not necessarily increase the rate all round to the consumer; it has not been the case in the United States.

To Mr. Forbes: I do not think that ironbark is of so vital importance to us as our own soft timbers. In the north we are beginning to build bridges of concrete. With regard to ironbark, I would be prepared to face retaliation from Australia. Hard timber can be procured from other places besides Australia.

To Mr. Poland: With regard to the manufacture of glass, I think it requires protection for one thing, and I think in addition it might want financial assistance from the Government. That is why we advocate a State Bank or State assistance in the same way as our settlers get assistance. What we want is to get real tangible help for our industries, and principally in the early stages. I do not take exception to the local consumption of *Pinus insignis*, but I do take exception to a firm being able to step in and export it.

To Mr. Sidey: In regard to State-owned ships, I have no strong feeling one way or the other, but I do feel that the Government should have a voice in regard to the rates and charges that are levied. I cannot say that I am in favour of the State owning and controlling the whole of our shipping. I would be quite agreeable to the State owning a certain proportion of it so as to be able to assist them in controlling it.

To Mr. Craigie: As to the number of members of the Tariff Board, that is going into details; I have not really thought that out. I think in Australia the Tariff Board consists of three members. I am not sure on that point. The members of that Board should be the best men available, irrespective of party or anything of that sort. I do not think the Board should consist of less than three members nor more than five. Industrial banks, with expert advisers, as exist in some other countries, are something on the lines which we recommend: that system has been very successful in other countries.

Witness: I desire to draw the attention of the Committee to another matter. I am not now speaking as president of the Industrial Association. On behalf of the corn-broom industry I wish to direct attention to the attitude taken up by the Australian Commonwealth with reference to our industry. The past two seasons have been disastrous to the cultivation of broom-corn in New South Wales, consequently all reserves have been depleted. However, through the rise in cost of millet from £1 5s. per ton to £5 5s. per ton, causing a corresponding rise in corn-brooms, the demand was reduced so that sufficient supply was obtainable. The Australian manufacturers succeeded in cornering millet. Subsequently they induced the Commonwealth authorities to place an embargo on the export of all millet. Having thus blocked New Zealand manufacturers obtaining the raw material, they then set agents to work to canvas New Zealand for orders for manufactured brooms, thus causing a considerable loss of business and employment to local manufacturers. Fortunately we had a considerable carry-over, otherwise the loss would have been greater. I would point out that through the working of the Australian combination forcing prices, together with the Government intervention, New Zealand customers have had to pay the great increase in prices during the past twelve months. On behalf of the manufacturers I would urge that the tariff should be so adjusted that the same rate be placed on corn-brooms imported into New Zealand as is placed on the same article when imported into Australia—that is, 40 per cent. against foreign countries and 30 per cent. against British goods; that Australia should be treated as "foreign" so long as the Australian authorities place New Zealand on the foreign list; or, in the alternative, I would recommend that the flat rate of 35 per cent. *ad valorem* be placed on corn-brooms.

W. COWPERTHWAITE, representing Cowperthwaite Cement Roofing-tile Company, examined.

I wish to put before the Committee the position of what has become a new industry in the Dominion, and I also desire to submit to you samples of our manufacture, and a sample of Japanese roofing. [Samples shown.] I commenced to manufacture these cement roofing-tiles some seven or eight years ago, but Marseilles then were so cheap that with New Zealand labour it was impossible to compete satisfactorily—it was not worth while. Directly there was a change in regard to iron I developed the thing further. I now hold a patent, and at the present time it is a success. These tiles are now "taking on" exceedingly well. I will put it this way: for every £1 in wages that I pay in my factory I have to use 10s. worth of cement. That means that it is helping another industry. At present my wages-bill is about £80 a week, and that has developed since the war on this particular line. My works are in the Mount Eden district. The tiles which I now show the Committee are everlasting, practically; they are weatherproof. I have patented this in New Zealand; I hold three patents; and I have applied for patents in Australia and in America. I am not asking for favours; but I put the position in this way: at the present time I cannot supply all that Auckland would take. For normal requirements I would need something like five times the amount of factory-room and number of men. The sample of Japanese roofing which I submit is of cement and asbestos. I have carried on this tilemaking at my own expense, and, as I have said, it is a success. I can always compete with the clay tile; but if outside tiles are to be dumped into New Zealand we would have to close down.

To Mr. Veitch: I have not touched on the question as to what protection would be necessary to keep the foreign article out. I simply desire to bring the position under the notice of the Committee. When such an article as we turn out is produced in New Zealand, I would like to ask why we should not get some support from the Public Works Department.

To Dr. A. K. Newman: The price of iron would have to come down a lot before I could not compete with it, and the quality of the other article would also have to go up a lot.

To the Chairman: The price per square would be about £4 10s. The colouring is Spanish oxide. I cannot get any other oxide. If any local manufacturer will give me an oxide which will appeal to the public I will buy that oxide; in fact, I would rather give more for the local product if it is good. If there were a tariff put on Marseilles tiles that would cover this, but I think the suggestion might with propriety be made by the Committee that the Government should use this article when it is applicable.

R. R. HUNT, representing R. R. Hunt and Co., examined.

The Committee has already had the question of Parapara iron-ore brought before it. I may say that some years ago I went to England with all the Parapara leases in my pocket. I failed to float a company because of the crisis which then existed. I may state that during the war I have received letters from abroad asking to be supplied with 3,000 tons of iron-ore from Parapara. Parapara hæmatite is wanted in Canada, America, and England; and the letters I have received state that even after the war is over the raw ore would be wanted. Of course, I had to reply that there was no means of shipping the iron-ore from Parapara. There is no wharf or tramway there. It is a matter of bringing down the ore to a deep-water wharf in Golden Bay so that an ocean liner could take in a thousand tons—the ore sliding into the hold of the vessel by means of gravitation. If that were done there would be a market for the product. I can substantiate my statement by letters which I have. With regard to paint, Mr. Washburn has given evidence before the Committee. I may state that I took 5 cwt. to England and submitted it to large paint firms there. It was suggested that it was valueless. I told them to try it; and I then had them running after me to get it; but it could not be produced. There was only a small plant available. The quality of the article has, however, been proved. When I came back from England I erected a house of my own and I had some Parapara paint used in connection with it. That paint can be seen now, and it is apparently as good to-day as it was when it was first put on. I think Washburn's iron-paint deserves protection. What I came principally to speak to the Committee about

is Coromandel granite. I have here some samples. [Samples shown to the Committee.] All attempts to get the Government to help me in connection with this matter have failed, whereas assistance has been given in the case of Southern marble—I refer to the assistance given in connection with the material used for Parliament Buildings. They might have had the Parliamentary Buildings finished five or six years ago, because I have got immense quantities of this grey stone within 250 ft. of the water, and it is deep water; and the material can be produced very cheaply. Moreover, there is water-power available which could be utilized in connection with the works, so that the cost of production would be cheap. But all efforts to get the Government to do anything have been quite fruitless, although the Government Architect thinks it is the best building-stone in New Zealand. Assistance is given in connection with the gold-mining industry; yet here is a mountain of granite—the supply, like reefs, will not run out—yet we cannot get a shilling in the way of assistance from the Government; at the same time they have granted assistance in the other instance I have referred to. What I want to complain about is this: that when stone is selected for such an important building as the Parliament Buildings, there should be some people who know something about it appointed to advise the Government. Instead of that, the Government selected three Civil Engineers who knew nothing about it whatever. A geologist should be selected for such work—such a man as Professor Park. The best stone available should be used in connection with the construction of public buildings, no matter what part of the country that stone may come from.

To the Chairman: We want similar assistance to that granted by the Government in connection with gold-mining. The addition of the words "or quarries" after "gold-mines" would be sufficient—that is, if the section of the Act were so amended.

To Mr. Poland: There is some Coromandel granite in the basement of the new Parliament Buildings. In regard to duties: rough granite is free; sawn stone is charged 5 per cent., except marble, which is free; wrought stone is 25 per cent. *ad valorem.* As there is good stone in New Zealand I suggest that there should be a duty of 5 per cent. or 10 per cent., sawn stone 25 per cent., and the rate should jump up about 15 per cent. or 25 per cent. on wrought stone.

S. I. Clark, representing Auckland Builders' Association, examined.

I may mention that I am chairman of the Timber Committee of the Auckland Builders' Association, and I want to deal with the question of the future supplies of timber and with the question of afforestation, also to refer to the matter of the present supply. The Forestry Department is now under the control of Sir Francis Bell, and the question of the present supply has been referred to the Board of Trade. The Board of Trade has an Advisory Committee, of which I am a member. What I want to emphasize particularly is this: that we must do more than is being done for the future, and for the immediate future. The question of forestry was referred to by Mr. Harbutt, President of the Auckland Industrial Association, in his evidence. He said that it was a question affecting every industry more or less—it should have been "more" without the "less." It absolutely affects not only every industry, but the whole of civilization. There is no trade or business that can carry on without it. The capital wealth of the whole Dominion is estimated roughly at between five hundred and six hundred millions. Unless we have timber supplied that will keep our industries going our capital wealth must vanish. That is what a committee like this should remember. It is at the base of all industries. I desire to earnestly express the hope that very much more active steps will be taken in the future with regard to the reproduction of trees suitable for timber. We know what can be done in the case of fast-growing pines. Probably no country in the world is so well adapted for the growing of such trees. There are still very large areas of beech (or birch) trees in existence in different parts of the Dominion, and the beech is of very great value for certain purposes. For structural purposes generally it is not a desirable timber, and even if it were the price already puts it out of court from the point of view of cheap production. Our young people are now trying to get homes over their heads, but timber is such a price that it means carrying a load for many years, if not for a lifetime in many cases. The price of timber is going up all the time, and unless we make provision for future supply the price must go up still further. Whatever means are taken to deal with this problem should be taken in hand in a systematic way. Incidentally I might mention that within the last twenty years the price has gone up as much as 200, 240, and 250 per cent. for the same article. I have in my possession price-lists and accounts paid for timber, and in some cases timber which formerly cost 13s. is now being sold for 38s. I do not accuse anybody of overcharging; they may be only charging a fair thing; but by making proper provision the timber can be produced at a very much cheaper rate. I earnestly hope this Committee will endeavour to see that something is done in this matter.

The Chairman: The Committee has taken considerable evidence upon the question, and there is not the slightest doubt that the Committee will make a recommendation upon the matter.

Thursday, 24th April, 1919.

T. Wilkinson, Wheelwright and Blacksmith, examined.

I make pick-handles, axe-handles, motor-car spokes, coal-miners' handles, hammer-handles, and other articles. I make them out of tanekaha, titoki, manuka, rata, or anything that is suitable. I have a factory with three machines, each of which cost £100. These handles come into New Zealand duty-free at present. I make handles for merchants and also for miners. I am afraid that when the war is over I shall not be able to compete with outside. Imported handles are supplied to the miners at 30s. per dozen, but I can supply them at 14s. 6d. When shipping

becomes normal these handles will be brought out cheaper than at present. The handles I make are very tough and springy. I employ four hands, but I could employ twenty-four if I had protection. I make all classes of handles. The Australian handles are lower in price than the Home article, perhaps 22s. There is a duty of 20 per cent. on spokes for wheels, but no duty on the naves, which come in from Australia free. There ought to be a duty on the naves. It ought to be a duty of 20 or 25 per cent. I could then compete with anybody, even Japan. If I do not get protection I shall have to do the best I can. The tanekaha is as good as hickory.

J. W. WISEMAN, representing the Auckland Saddlery, Harness, and Bag Manufacturers, examined.

At a meeting of the trade a resolution on the question of Customs tariff was passed, "That it is desirable that an increase should be made in the Customs tariff on goods that can be manufactured locally." This resolution was brought forward so that our industry should be protected at least to the same extent as boot-manufacturers, which is an allied industry, and also enable us to pay the ever-increasing wages of employees. Regarding the anomalies in the Customs tariff, we have not much to complain about, but we think certain items should be admitted free of duty as not being made in the Dominion. The proposed addition on saddlery, &c., would compensate for the loss in revenue by the remission of duty. The items I refer to are: Bits, stirrups, and spurs, which being free would reduce the price of saddlery and harness. Serge for riding and harness saddles: While serge can be made locally, it is not so suitable as the imported article for our purpose. Kersey: This is dutiable 20 per cent., and is a much better grade of material than collar-check, which is free of duty. Buggy-rug linings: Linings for buggy-rugs are dutiable 20 per cent., while the top waterproof material is free, and if the linings were free more of these would be made. Belt-buckles, except in a few instances, are dutiable 20 per cent., and should be free, as are all other kinds of buckles. The extra duty charged on saddlery and harness would make up for the loss of revenue suffered by the remission of duty on the above-mentioned articles. Leather: The retention of the present embargo on the export of hides is, we think, beneficial and desirable, which has the effect of steadying the price and shortage of leather, and enables the Dominion manufacturers to obtain their requirements.

To the Chairman: The employees work forty-eight hours per week, with a minimum of 1s. 6d. per hour, going as high as 2s. 2d. In pre-war time there was a great deal of saddlery-work imported. We have a hundred employees. The serge made in New Zealand does not work well; it is more a dress material, and we require a stronger kind.

To Mr. Forbes: The principal leather we use is made in New Zealand. We wish to have the primary product. We desire an opportunity of getting what we want before the balance is exported. My firm has not imported any English harness-leather for a long time. Pigskin for the seat of the saddle is imported. We are satisfied with the quality of the leather supplied to us locally. It is good leather for reins. We used it for our purposes before the war.

To the Chairman: We are getting protection now, but we want something additional. We understand the boot-manufacturers are getting 30 per cent. Wages have risen by 50 per cent. since we got the protection we now have. Leather has gone up by 20 per cent. since 1908 or 1910. We suggest that the embargo on hides should be continued. If they are exported we are short of leather, which is detrimental to the country. We pay the same price as the exporter can get when he sells his hides for export.

To Mr. Sidey: We fear importation from England and America. I do not know that wages will ever come back in England to what they were before. We were getting on all right with the duty we had before the war. I speak for the trade. Personally I do not believe in too high a tariff.

J. A. GRAHAM, representing the Auckland Saddlery, Harness, and Bag Manufacturers, examined.

I produce some belt-buckles. On the large one we pay 20 per cent. duty, but the others come in free. We claim that all the buckles ought to come in free. I produce some collar-check and kersey. The collar-check is free, but the kersey has a duty—that is to say, the better quality is dutiable. It ought to be free. I also produce imported serge. New Zealand does not supply us with an article that we can use as saddle-serge. Hundreds of Japanese saddles have come into New Zealand. It is plain to me that if any one went to Japan and taught them to make saddles at the price they would cut out our product. Hogskin saddles from Japan have been offered to me at 23s. The shape and make are deficient, however, and the saddles are not saleable here. However, if a practical saddler went there and taught them they would simply swamp our market at their price. They pay 30 per cent. now, and at the price at which they come in we could not compete with them, even with the duty on them. Our saddle would be double the price of their saddle.

To Mr. Sidey: I think the duty against Japan ought to be high. Boots are now protected, on an average, 27½ per cent. I really cannot say, however, what the tariff ought to be: I have not given consideration to the matter. The English agents are round New Zealand now taking heavy orders, and I take it, therefore, that we require further protection. They are getting orders which are ten times in excess of the orders we can take.

To Mr. Veitch: A Tariff Board, with power to alter the tariff from time to time, would be a good institution. At present things are in a transition stage, and it is absolutely impossible to say that such-and-such a tariff will meet the position.

L. A. WALSH, Auckland Aviation School, examined.

We ask the Committee to recommend that the Government should give encouragement to the aircraft building industry by placing orders locally for at least a portion of the country's

future requirements in aircraft for military, naval, and postal purposes. Government support in the direction indicated is essential not only to preserve the present nucleus of an important industry, but also to foster the construction of aircraft within the Dominion, in which industry an additional avenue may be found for the employment of considerable capital and labour. This industry is capable of considerable expansion, and will find remunerative employment for carpenters, cabinetmakers, boatbuilders, upholsterers, engineers, and sheet-metal workers. There are many branches in aircraft-manufacturing in which employment for returned soldiers could also be found.

To the Chairman: If the Government imported their own machines they would probably come in duty-free. We have proved that flying-machines can be built here. All we ask is that a recommendation should be given effect to that wherever possible a certain number should be built within the country, because the industry is capable of big expansion. We do not ask for a monopoly of the whole of the building, but only a portion. The industry is of growing importance, and it is essential that support should be given to it for some time at all events.

To Mr. Sidey: As to the Government taking over the industry, that is a matter that is probably being dealt with at present. We hope that we will always be connected with the building of aircraft.

To Mr. Hudson: Our materials are imported, including the timber. It is difficult to obtain sufficiently seasoned timber. Our fittings come in free.

J. MAJORIBANKS STEELE, representing New Zealand Peat-oils (Limited), examined.

I think the Committee has already had a certain amount of evidence given to it with reference to the extraction of oil from peat. I should like to say, first, that any statement made to the effect that the Government has not been interested in this matter is quite untrue, or that it has been made simply owing to want of knowledge. I can point to the report on the kauri-gum industry presented to Parliament. The report is that of Mr. R. P. Greville, Kauri-gum Superintendent. That report shows that the Government has come forward very substantially by granting 3,000 acres of specially selected land at Kaimaumau, north of Mangonui. This land was selected on account of its depth, the great amount of peat, its easiness of access for loading vessels, &c. Unfortunately there has been a great deal of delay. The land was first granted three years ago, but owing to a lot of fantastic statements that were made the Government thought that there was probably nothing in it—it was too highly coloured; and that lease was vetoed by Mr. Massey. When it was proved that the investigations were being conducted on scientific lines the lease was reinstated, and they gave us 3,000 acres, as they were empowered to do, instead of the 2,000 acres originally granted. The investigations have been carried out on scientific lines. Dr. Maclaurin has had samples of peat which were taken out by men in the presence of Professor Worley, Mr. Greville, and myself. We got samples of peat from the surface and down to about 12 ft., because this soil, as you may easily understand, alters its character. Mr. Greville states in his report—

"Samples of the Kaimaumau peat taken out in the presence of Professor Worley, of Auckland University College, and of myself, in November last, were sent to Dr. Maclaurin for analysis. The samples were carefully taken from a hole 12 ft. deep sunk through the peat. After being roughly dried the samples were divided by Mr. F. J. Hagger, of Kaimaumau, into two similar lots, one lot being sent to Professor Worley in Auckland and the other to the Dominion Laboratory, Wellington. The following results were obtained by Dr. Maclaurin:—

	Sample No. 1.	Sample No. 2.	Sample No. 3.	Sample No. 4.	Sample No. 5.
Total crude oil, in gallons per ton	29·8	17·3	20·2	40·9	29·0
Gas (cubic feet per ton)	..	..	..	..	4,300
Ammonia sulphate, in pounds per ton.. ..	11·9	13·2	11·2	10·5	14·1
Charcoal (hundredweight per ton)	..	..	..	..	7·2
Acetic acid (pounds per ton)	..	..	..	..	8·0

"In the course of his report Dr. Maclaurin says, 'In the present investigation it has not been found possible to make an exhaustive examination of the oils, but further work on them will be carried out as opportunities arise. Owing to the very high prices of sulphuric acid and caustic soda in New Zealand the manufacture of refined burning and lubricating oils is out of the question, but it would be quite feasible to redistill the crude oil into fractions suitable for motor-spirit and fuel-oil. The results show that in the composite sample (No. 5) the fraction up to 200° C. is 8·8 per cent. of the crude oil. This fraction would no doubt prove suitable for use as motor-spirit without requiring much, if any, refining. It could be increased to 10 or 12 per cent. by raising the temperature of distillation a few degrees higher. With 11 per cent. of light oil and 9 per cent. of coke the loss would be 80 per cent. of fuel-oil.'" The actual results obtained were these: we got 29 gallons of oil from the soil nearest the surface; we went down to 17 ft. and 20 ft., and when we got to the kauri strata—that is to say, where the kauri-trees had been covered by the other vegetation—we got up to 40 gallons; and 40 gallons per ton may fairly be claimed to be an extremely good working basis. We only claim that 30 gallons would be obtained from the dry kauri peat, although it is not quite dry. This is what Dr. Maclaurin states:—

"Paraffin-wax: The amounts of paraffin-wax from the fractions distilling above 350° C. are shown in the following table:—

	(1)	(2)	(3)	(4)	(5)
Pounds of paraffin-wax per ton of peat	26	14	8	8	13
Melting-point of wax	56°C.	54°C.	54°C.	56°C.	54°C."

Peat in the Old Country and in Europe generally has been used for making coke and sulphate of ammonia. Here we have something better and with a far higher percentage of oil, because the basis is kauri-gum. This gives the oil a peculiar value, and that is why this oil is sought after so much by firms in the United States—paint and varnish firms. They are anxious to get the crude oil. The following extract from a report of the secretary of the company gives the result of a trial of the fuel-oil:—

"Since 1917 the development of the kauri-peat oil-extraction industry has been progressing slowly but surely—slowly because of the amount of investigation required, surely because such investigation has been in the hands of experts. It may be said at once that many super-optimistic anticipations, advertised by irresponsible amateurs in practical work, are not warranted by facts. At the same time reliable tests go to show that kauri peat has a real, a unique value. It is much richer in oil-producing quality then European peat, which has now been found a payable proposition when treated for gas, alcohol, ammonia, &c. Kauri peat contains only a small percentage of ammonia, but this is probably more than made up by other products.

"A satisfactory trial of the fuel-oil produced by the New Zealand Peat-oils (Limited) was made by the Northern Steamship Company in the s.s. 'Paroto' at the beginning of the year. This was the more satisfactory because the oil was very crude for want of proper appliances at Kaimaumau. The following was reported by the Chief Engineer: 'The run was from Auckland to Whakatane, a distance of about 170 miles. The trial was with two 60 horse-power Beardmore engines, which gave very little trouble. Actual oil received, 180 gallons; hours run to date, 20 (neutral 3 hours); speed, 8·5 miles per hour; consumption, 4·3 gallons per hour; oil remaining, 77 gallons. On removing the cylinder-covers very little residue was found, the cylinders appearing to be much clearer than on Australian oil. The vessel was propelled beyond her average speed.'

"An up-to-date plant which is now being erected will shortly treat our peat on a commercial scale, and if the results are, as may be anticipated, about on a par with those obtained in the laboratory an important industry should eventuate."

The point is this: this oil was used just as it was. The oil consists of light, medium, and heavy, and the light could be run off as motor-spirit without any difficulty, but the others require rather expensive and complicated apparatus. The return of 30 or 40 gallons of oil is really a very fine one. Dr. Maclaurin in his report states, "Prior to the war the local prices of petrol and the cheapest petroleum oils used in Diesel engines were approximately 1s. and 6d. per gallon respectively. At these prices the value of the oils distilled from No. 5 sample would be—Motor-spirit (3 gallons at 1s.), 3s. per ton of peat; fuel-oil (23·2 gallons at 6d.), 11s. 7d. per ton of peat: total, 14s. 7d. per ton of peat." He only gives us 3 gallons of motor-spirit per ton, and that is a very conservative estimate indeed. Dr. Maclaurin further states in his report: "To this must be added the value of the ammonia recovered in the process. The pre-war price of ammonia sulphate in Britain was about 2d. per pound. At that price the ammonia recovered would be worth 2s. 4d. per ton of peat. From this must be deducted the cost of the sulphuric acid required to combine with the ammonia; but on the large scale, with a properly constructed retort, it is probable that the yield of ammonia sulphate would be considerably increased. About 1s. may also be added for the acetic acid, making a total value of approximately 18s. per ton of peat. This does not give a very large margin for the cost of treatment, but it should be sufficient, provided that the industry is carried out on a sufficiently large scale with an efficient plant and a capable manager."

To the Chairman: Mr. J. W. Poynton, S.M., who I believe is a very good amateur chemist, and who was asked by the Government to inquire into the question, after a thorough investigation, recommended to the Government that we should be given 1s. per gallon up to the first 10,000 used, and 6d. per gallon for the second, and 3d. per gallon for an indefinite number afterwards. But the Government has demanded 2½ per cent. on the net value of the product, and they are charging us rent for the swamp as well. The rent is 3d. per acre per annum; the lease is for twenty-one years, but is renewable. If we run off the oil as crude oil and sell it as fuel-oil we get 9d. per gallon. But if we go about the business thoroughly we must have a very large plant, which will cost, I suppose, at least £100,000. The bonus is no use to us unless we make the oil, and we cannot make it without a plant. After the valuable products are taken out of the material the remaining oil will be sold as fuel-oil. When certain things are finished we have to get further investigations made showing the probable returns, and then it is our intention to float the business into a big company. But we have been handicapped by the Government in connection with the negotiations for the lease, and our capital has been running away in the meantime; and we have had nothing to go to investors with—we could only go to personal friends for capital.

To Mr. Veitch: It is proposed to adopt a process which Professor Worley has evolved in the course of his experiments. It is quite different to other processes, which are perfectly well known. As to the processes we are using at Kaimaumau, we hold the sole patent rights for them. I suggest that the Government should have investigations made as to what is being done in this matter in other countries, and I think they ought to put up some money. The investigations and experiments have cost us a large sum of money.

To the Chairman: We now want an investigation by the Government, and I think they should give us a bonus on production.

THOMAS FINLAY, of Household Necessity Company (Limited).

We are manufacturers of boot and lino polishes, also "No Rubbing" Laundry Help, and we would be glad of some further protection to facilitate our New Zealand industry.

NAPIER.

SATURDAY, 26TH APRIL, 1919.

F. C. HARTSHORN, Commission agent, examined.

When I was last before the Committee I was asked if the New Zealand Tobacco Company, Napier, had found the trust antagonistic. I said we had not. Since then, however, certain things have taken place. After giving evidence in Wellington I received a letter from Mr. Brodie, representative of the British Empire Trading Company, asking me to meet him by appointment. I did so, and he asked me to sign a letter practically disclaiming the evidence given by Mr. Fallover and myself.

The Chairman: We have a copy of the letter. We do not want, however, to go into any quarrel between you and the other company.

Witness: It is a matter of showing that there is a trust in New Zealand and the methods they are adopting.

Mr. Veitch: Was there any attempt to suppress the company or to coerce them?

The Chairman: The British Empire Trading Company disclaim anything of the sort. They say they have been friendly towards the local company, and have assisted them.

Witness: We admit they have been of use to us, but I wish to show that there is a trust existing here, and that they are antagonistic to us. At any rate, I refused to sign the letter. The next matter has reference to Mr. Gilmour, the man we had engaged as manager. He had been in the employ of the trust, but on the 10th February we engaged him to work for us on a five-years engagement. He left Wellington for Napier, but at Waipukurau he was met by Mr. Brodie, who got him off the train and into his car and took him back to Wellington. We had to go to law to get him into our service.

The Chairman: In what way is the other company that you term a trust hampering your operations?—We are not being hampered at present, because we are not dealing with them; but they are apparently doing all they can to stop us from succeeding.

By interfering with your workmen?—In any way they can. They interfered with this man to stop him.

The Chairman: That is sometimes done by firms that cannot be called trusts. They bid against each other for expert services.

Mr. Veitch: Was Mr. Gilmour managing for the trust when he was engaged by your company?—He was manufacturing for them. He was not manager.

You offered him a better position?—We offered him an engagement straight out.

And he is now managing for you?—He is manufacturing for us; he is not managing.

Was he doing the same work for them?—Yes.

And he came straight from them to you?—Yes.

If the witness can tell us anything to show unfair competition or any attempt to coerce there might be something in his evidence?—The only thing we have against the trust is that they tried to kidnap this man.

It seems to me you were the aggressor. You collared their man and they tried to get him back?—We called for applications, and this man applied and got the position. We did not approach the man for his services. We advertised in the *Dominion*.

JAMES GILMOUR, Tobacco-manufacturer, examined.

The Chairman: What are the prospects of successfully growing tobacco-leaf in the Hawke's Bay District?—I have had occasion to go over New Zealand and have examined the soil and seen the results of several crops of tobacco, and I think that New Zealand can produce better tobacco than Australia, both in texture and quality. I believe Nelson will grow tobacco as good as America. I have seen all the two-years leaf and supervised the growing, and I think we cannot better Nelson in any district in New Zealand.

What about Hawke's Bay?—Hawke's Bay grows good tobacco, but unfortunately the last crop was badly managed. With careful handling you can produce a good tobacco here, but of the two districts I prefer Nelson. One reason is that the Nelson land is not too near the sea, and you get no salt on the leaf to interfere with the combustion of the tobacco. That is the fault of the Hawke's Bay tobacco—that it is grown too near the sea. Nelson is sheltered from the sea, and we get something pretty near to the American article, and with a little more experience I believe the growers will turn out equal to the American article. I am very much taken up with New Zealand. I have been all through Australia and seen all their productions, but I like the Nelson tobacco better than any of them.

Mr. Poland: What class of soil do you require?—A light sandy soil and no late frost will give a good crop of tobacco, provided you are not too near the sea.

Mr. Veitch: How long have you been employed by the Hawke's Bay firm?—About two months. I have been with the trust nearly all my life.

You have no experience of manufacturing tobacco here?—Yes, I am manufacturing now. I was manufacturing for thirty years in Australia.

Are you getting over the salt difficulty?—We have too much salt in the Clive Grange tobacco. Taking it all round, I cannot say anything too good in favour of the Nelson tobacco, and I think the industry is well worth going into. It is here to stay, because there is a proper man handling the leaf, and this year he has proved very successful. I have been coaching him for two years. There is not much to say about tobacco, except the handling after the harvest. Any man who can grow a cabbage can grow a tobacco-plant, but it is in the handling after the leaf is ripe where the experience is wanted, and that is what they have never had in New Zealand before.

It is a thing you cannot put down in black and white. It wants a man on the spot all the time. I am satisfied that I could teach others as I have been taught myself.

To Mr. Craigie: If a farmer took up tobacco-growing in New Zealand it would pay him better than wheat, potatoes, or any cereal crop. He would get a better return, provided we could manufacture the finished article and get the market, which I feel sure we could do. Our company has the best plant in New Zealand for manufacturing tobacco, and it would be a shame to see the thing go down. The difficulty comes after the harvest. I could give growers instructions in black and white up to the harvest, but after that I would have to attend them personally. Mr. Lowe's place at Harakeke, near Motueka, is favourably situated for growing tobacco.

To Mr. Sidey: I have had only Australian experience. The company here is a grower of tobacco, also a manufacturer. I have suggested to the company that they should transfer their growing operations to the Nelson District. The districts in New Zealand I have examined are Hawke's Bay, Blenheim, Motueka, round the Tasman, Akaroa, and as far as Christchurch. The farther you get south the worse the climate is for tobacco-growing. I have not been farther north than Hawke's Bay. I have seen tobacco growing in the districts I have spoken of. Nelson is the most suitable climate both for soil and climate. There is more land about Nelson than New Zealand will require to grow leaf. The Australian Government are building barns for growers for slow curing. They do not hand the growers cash, but give a bigger price for the leaf. A barn 16 ft. by 16 ft. will cure half a ton. A man could handle 10 acres of tobacco himself. Ten acres with good crops will produce 10,000 lb. Eight hundred pounds weight to the acre is an average crop. If a man had 10 acres he could handle them with the assistance of a couple of children for the transplanting. One barn would cure about 10 acres of tobacco, but no more. Every grower must have a barn. The Government must assist in the building of barns. It would be possible to have a barn large enough to serve a number of growers. If the Government advanced money to growers for the building of barns it would help to a great extent.

To Mr. Poland: The Government could also assist by appointing experts to assist the growers. I have seen tobacco grown in districts north of Hawke's Bay, but it is too heavy. I have seen only one sample from the North of Auckland, and when I say that the article from north of Hawke's Bay is too heavy I base my opinion on the sample from the North of Auckland.

To Mr. Hudson: The tobacco-plant feeds on the climate; it is not always the soil. It is more the climate than the soil. I think the sample I saw from the North of Auckland was a fair sample for the district. One factory would meet the requirements of Hawke's Bay and Nelson. The factory in Port Ahuriri would be as good a place as anywhere else. I prefer Nelson to Napier for a factory-site, for the reason that it is near Wellington. At Port Ahuriri, however, we have the plant all fixed up. The small man is up against a big problem when there is a trust in existence unless the Government help in some way. In regard to the operations of the British Empire Trading Company, I do not think they are out for the assistance of the tobacco industry. They have as much American leaf as they can handle, and they will not grow tobacco in New Zealand. It is to their advantage to import leaf, and their tendency would be to encourage the import rather than the local growing.

To Mr. Forbes: It is not likely that New Zealand will export tobacco-leaf. New Zealand will consume all the tobacco it can grow for the next twenty years. In Australia, after growing for thirty years, they have about caught up to the requirements of the country. We can get different grades of tobacco in New Zealand—dark, light, plug, cigarette, &c. We can grow different varieties to suit the taste of the public. Australia is not more suitable for tobacco-growing than New Zealand. I have sampled both and been through the districts, and I fancy Nelson every time. Motueka is an ideal district. It is sheltered by a range of hills. I reported to the British Empire Trading Company that Nelson was my district every time. I like it better than Australia. My brother has been fifty years in the trade, and he is of the same opinion. In Motueka you have the best district in Australasia, and the Government would be well advised to push the tobacco-growing there. The Americans cannot handle our tobacco. We have imported men from America for growing, and have had to return them. The American ideas do not suit these colonies in handling the tobacco after it has been grown. The conditions are different here—as different as night from day. The American tobacco has nothing to take out of it after it is grown, but the Australian tobacco has a lot to take out of it. The rankness is the worst thing we have, and it must be taken out. America is the home of tobacco. With time and handling afterwards we can grow tobacco equal to America. We can produce the same flavour as the American article by treating the New Zealand article. In three or four years from now we will have a New Zealand tobacco that you could hardly tell from the American. Much of the flavour of tobacco is brought about by ingredients; it is not all the leaf. New Zealand with skilful manufacture could overcome the difficulties now in our way. With careful handling of the leaf, proper curing, and proper manufacture we could supply all the demands of the Dominion.

To Mr. Veitch: American manufacturers put nothing into the tobacco that would act detrimentally on the health of the people. Anything that hurts the eyesight or offends the taste or injures any part of the human system is not made use of. Of course, there is no written law on the subject. Anything that is put into the tobacco I would put on my dining-table. If a man smokes so many cigarettes that he injures his health it is his own fault.

To Mr. Sidey: Australia has appointed a man from South Africa, a leaf-curer, to go round and instruct the growers as to slow curing. My brother also goes round and instructs. It is now proposed in Australia to give the growers assistance in cash. When the industry started in Australia the Government did not give a bonus. The local company's plant is quite up to date in every detail. It could be increased in size, but there is everything there to produce all the smoking-tobacco that New Zealand requires at the present time.

To the Chairman: In Australia the tobacco is grown mostly by Chinamen, who never buy land. The owner leases the land. Two-thirds of the tobacco in Australia is grown by Chinamen. It is not grown by Chinamen on account of cheap labour. They get their price. The value of the land in Motueka is £10 per acre. It would be to the advantage of the local company to go to Motueka, and I have tried to advise them that way. There is ample land in Motueka for the purpose at £10 per acre. The busy time for cutting the leaf comes in between other crops. Tobacco-seed can be obtained from America or Australia. Both places would be pleased to furnish us with all the seed we require. The Government here have no expert whom they could send round to instruct growers. The British Empire Trading Company tried to prevent me from taking service with this company.

To Mr. Craigie: At Waipukurau, on my way to Napier, I was misled. I was told I would be taken to Napier by motor, but I was taken back to Wellington.

To the Chairman: There are two small companies operating outside the trust in Australia. At the start there were eleven companies, but the majority of them have now been absorbed. We cannot get at the head to tell who it is. The British Empire Trading Company is merely a branch of it. The effect of the absorption was that one year the growers would not grow any leaf as there was no competition. I can give the names of eight or nine companies that were merged into one company. By having fewer companies it was better for the company that controlled, but it was all the worse for the growers. The value of the land in use in Australia is less than £10 per acre. Nelson will produce a bigger and better crop than Australia. On behalf of the British Empire Trading Company I advised Mr. Lowe how to handle tobacco. I want him now to sell his tobacco to me. He may sell to the other people, because they can afford to give a bigger price. Mr. Lowe kiln-dries his tobacco to take the rankness out of it and make it bright. I think that a small royalty for production might be given to each grower. It might be 1d. per pound on the finished article, the Government to supply an expert to supervise the leaf from the start to the finish—that is, in the bale at the barn. The grower is finished with it when the tobacco is in the bale at the barn. If I had 20 acres and the Government gave me a royalty of 1d. per pound, an expert to supervise the growing at different stages, and financial assistance to build a barn, I would give up manufacturing and go in for growing tobacco. It is light and interesting work, and would do for soldiers. Factory-work would also give work to soldiers. I hope to see, in three years, three hundred hands—men and women—in our factory. They make big money—up to £2 or £3 per week. It is a healthy occupation.

To Mr. Craigie: The cost of a barn 16 ft. by 16 ft. would be about £180, and of heating-apparatus £10 or so. If the Government would advance two-thirds of the money to the growers it would be satisfactory.

To the Chairman: The grower would require to get 1s. 6d. per pound, which is a fair average. A man can make a lot of money out of 1s. 6d. per pound.

A. B. Fallover, Manager of the New Zealand Tobacco Company (Limited), examined.

During the operations of our company at Clive Grange the only child labour employed in the growing of the tobacco was on Saturdays, when the older children were employed at 3s. 4d. per day and supplied with meals and given morning and afternoon tea. As regards the bonus of 1d. per pound to the grower, Mr. Gilmour is a manufacturer and not a business man. Such a thing as 1d. per pound is too small and out of all reason. I desire to bring before the Committee the fact that the trust has started to operate. The *Mercantile Gazette* reports the registration of W. D. and H. O. Wills (N.Z.), a private company, on the 17th April, 1919, with a capital of £10,000 in 10,000 shares of £1 each, and with the object of carrying on the business of growers of tobacco, manufacturers, importers, brokers, &c., and agents in connection with tobacco in all their respective branches. The trust has opened a factory in Wellington, and it is ready to operate. They would have been turning out cigarettes to-day if we had not secured their manufacturer. They hold 600 hogsheads of tobacco in Wellington, each weighing approximately 800 lb. The American tobacco pays 2s. import duty, and the trust people mix it with New Zealand tobacco and save that amount on the local leaf. They can afford to pay 2s. more than we can. They can mix the imported leaf with the New Zealand leaf, and sell it as the brands that are well known on the market to-day. The local company manufactures the brands known as "Three Diamonds" and "Gold Pouch."

To the Chairman: We get the benefit of the import duty of 2s. on the imported leaf, but we are selling at 1s. for $1\frac{3}{4}$ oz. as against the trust's 1s. 4d. We are trying to keep down the price of tobacco. We have to pay 1s. excise duty.

Witness: With regard to the unsuitability of the Hawke's Bay land, we realize that it is not exactly an ideal place or equal to other parts, but we have other places in view. There is land towards Petane which is reasonably outside the frost area, and we can get 100 acres there at a small rental for our growing. We are prepared to allow our expert to supervise growing operations, but not if the growers sell to the trust. Our company are placed in this position: On a previous occasion we asked you for a refund of the duty we had paid, such refund to be regarded as a bonus for the starting of the industry in New Zealand. We have spent a considerable amount of money in trying to put it on a sound basis, and we feel that we are entitled to the support and assistance of the Government in still furthering the industry. We would like the Committee to give the matter earnest consideration, because we are sincere in our efforts to make the industry worthy of New Zealand.

To Mr. Veitch: I suggest that the preference should be limited to companies with purely local capital to begin with. Under the circumstances I think the preference should be 1s. per pound

on all tobacco manufactured, either in the way of bonus to the local company or increased tariff against outside companies operating and manufacturing in New Zealand.

To Mr. Hudson: With regard to the suggested payment of 1d. as an encouragement to the grower, I say that if the Government would increase the tariff, or give a bonus to the local companies, or take away the excise duty of 1s., the companies could increase the price to the grower. At the same time it would make safe our position against outside competition.

To Mr. Poland: We would be pleased if the Government would give a bonus to the growers on condition that they sold to New Zealand companies with New Zealand capital. It would require 3,800 acres to supply New Zealand requirements. There would be no necessity then to import tobacco. Australia is to-day growing about 1,000,000 lb. weight of tobacco, or about 8 per cent. of the total amount of tobacco in use.

To Mr. Sidey: A bonus of 1d. to the grower is not sufficient, and I suggest that it ought to be 1s. On 10,000 lb. of tobacco a man would get a bonus of £500. The new piece of ground we are looking at is a mile and a half from the sea, and hills between the block and the sea. Mr. Gilmour has not seen the land yet, so cannot express an opinion about it. Nelson can supply a bright leaf and Hawke's Bay a dark leaf, and that being so the works need not be shifted. I am arranging to put down 20 acres near Whangarei, and I am inquiring for an analysis of the soil of the Cook Islands. I have seen samples of tobacco grown in the Cook Islands. If Nelson is the most suitable place it does not follow that the factory should be there. There is more labour at Napier than at Nelson. Here we have the option of drawing labour from Napier and Hastings. If Nelson grew sufficient tobacco to run a factory we might put up a branch factory there and manufacture certain classes of tobacco, such as the cigarette-tobacco, while we could manufacture plugs in Napier.

J. H. EDMUNDSON, representing Acetone Illuminating and Welding Company (Limited), examined.

We have expended quite a large amount of money in establishing a new industry. We had to pay very heavy duty on all our machinery when we imported it into the country. Some of the gases like those we are manufacturing are being imported into this country free of duty—for instance, nitrous oxide—N_2O. That appears to me to be an unfair position to put a young industry in. We paid over £2,000 in duty on our plant. We made representations, but we got no satisfaction. In addition to that, we have put the railage question to the Railway Department on quite a number of occasions, and we have had no satisfaction in regard to that either. Our gases are classed "A." In England railway companies are pretty conservative, but they class our gases in the same class as they carry soda-water. Soda-water in this country is Class B. I do not see why our Railway Department should not carry our gases under the same class as the gases in England are carried. This makes a considerable difference. For instance, the difference of Class B and A on a set of cylinders of gas to Dannevirke from Napier—seventy-nine miles—is as follows: Class A, 11s. 11d.; Class B, 9s. 11d.; and 22s. 9d. and 17s. 9d. On the other hand, ammonia comes under Class A—that is, the imported ammonia—whereas the ammonia manufactured at Christchurch comes under Class B; so that the Department has given preference to the locally manufactured article in the case of ammonia.

To the Chairman: We hardly hope for a refund now after such a lapse of time, but we want to get the railway charges put right. I do not see why they should not give us something even better than we are asking for. In some cases we pay the freight, and in some cases the customer pays. It would often make a difference in the price; the user pays in the long run. I think a reduction in the freight would lead to increased consumption; the cheapening of an article always popularizes it, even if it is only a small amount.

To Mr. Veitch: The gases are used in the engineering business for welding, also for marine lights. We supply the Marine Department for forty lighthouses around our coasts; we also supply dentists with anæsthetics. The Railway Department says that our product is a dangerous product. If the English railway companies are prepared to carry the gas at the same rate as soda-water they cannot regard it as being very dangerous. We have had no outside competition in regard to compressed oxygen or compressed acetylene; but these articles have been used rather more extensively in England and America since the war started. Those countries have increased their output of these goods, and it is quite likely that we might have to meet competition in the future in that direction. In the matter of nitrous oxide, that article is being imported in competition with our manufactured article. We had to pay duty on the plant to produce that gas. The English gas is being imported in competition against us, and it is free of duty. I ask that there should be a duty put on that gas. And in the event of the other gases coming in in competition with us I suggest that a duty should be put on them also; up to the present we have had no competition against us in regard to the other gases.

To Mr. Poland: The Railway Department does not take special precautions in carrying the gas; they carry it as goods or parcels and in ordinary trucks. I think that probably 50 per cent. of the nitrous oxide used is imported. We can produce all that this country requires. In the event of a duty being put on imported nitrous oxide, in order to make it clear that the public was not being exploited we would be prepared to submit our prices to a Board.

To Mr. Sidey: Our head office is in Napier, and we have works here and in Dunedin. I think the duty we paid on our machinery was 20 or 25 per cent. We originally started business in this country about ten years ago. We paid the duty on our last plant for nitrous oxide about two or two years and a half ago. We import nitrate of ammonia to produce the gas: it is admitted free. I do not think there is a sufficient quantity of that article required in New Zealand to warrant the erection of a plant for its manufacture.

C. H. EDWARDS, representing Napier Gas Company, examined.

I desire to speak to the Committee on the coal question. I dare say you have had this question brought before you at some of the other centres you have visited. It is a very serious question at the present time not only for the manufacturer, but also for other users of coal. We have been practically living from hand to mouth in respect to coal. Last week I had to go to Wellington to buy some coal out of vessels there, and I had to rail it all the way through to Napier. I had to do that in order to carry us through the Easter holidays. We have by the courtesy of the Coal Committee been able to get a vessel diverted to Napier, and next week I suppose we will get a sufficient supply to last for two or three weeks. I brought this matter up some time ago before a conference of Chambers of Commerce. The position is this: that practically there has been a shortage of coal in New Zealand during the last three years, and that has been largely due to the fact that the State has not done what an ordinary business firm would have done. The State is the largest user of Australian coal—that is, for their railways—and they also have the coal-mines at Greymouth. According to the Year-book they produced 250,000 tons of coal last year, yet the State has not got a single vessel to carry that coal. The position, therefore, has been that we have been entirely in the hands of the Union Company, which company, although they have been doing their best to scratch along for us, has yet been unable to bring that cargo along; but for themselves they have done the very best thing—they have increased the freight. Twelve years ago we were landing coal into trucks at our Breakwater and inside the port—that is, New Zealand gas coal—slack—we were landing that class of coal, including freight and wharfage, at 16s. a ton; and we were getting at that time Australian coal at 17s. or 18s. a ton delivered into trucks at the Breakwater. To-day the same coal is costing us 33s. 3d. a ton delivered into trucks either at the Breakwater or inside the port—that is, New Zealand coal—and 37s. 3d. for unscreened coal. We have to take that class: we cannot get the slack. I am getting a cargo of Newcastle coal, and I understand the price will be about 43s. a ton—that is screened coal. The reason I have come before you is really to ask you to urge upon the House of Representatives the advisability of having State vessels. We do not want you to go in opposition to the Union Company, but we consider that the State ought to own vessels to carry their own coal at least, and that would set the Union Company free to do other business, and then we probably would be able to get coal, and we might get it at cheaper freights. I may state that I know the freight the Union Company was receiving from Newcastle twelve years ago. They were bringing Newcastle coal at 8s. freight to the Breakwater and 9s. 6d. to the Inner Harbour. To-day their freights are 22s. 6d. a ton at the Breakwater. The New Zealand freights I do not know.

To the Chairman: The ships are unable to bring the New Zealand coal. It was stated in the newspapers that on one occasion at least last year the coal-miners were unable to work more than so-many days a week because there was no shipping to take the coal away. That in itself is sufficient to show that had the State its own vessels to carry the coal the miners would have been able to work six days a week instead of four days. We know also that there was sufficient coal available at Newcastle to supply all the requirements of New Zealand if there had been vessels to take it away. We have a trawling fleet here, and we supply them with coal; but we have been unable to supply the vessels with coal.

S. HARRIS, Hat and Cap Manufacturer, examined.

I am a hat and cap manufacturer, Napier; and we supply from here all the warehouses in New Zealand, and also the majority of retailers from Auckland to the Bluff. My complaint is in connection with railway freights. I think the manufacturers should be given a chance to pay the lowest rate instead of the highest. The rates we pay now are the highest class—"A," by weight. I cannot say anything about the shipping, because we have no choice—we have to pay whatever they ask. Also, we are greatly in trouble because we cannot send any stuff south; we have stuff that has been lying in store sometimes four and five weeks.

To the Chairman: I think the manufacturer should be given the chance of paying the lowest freight, because he employs hands and he expends a great deal of money, and that money is expended locally. What we ask for is a fair or moderate freight. We also ask that we should be able to issue bills of lading from here through to all parts of New Zealand.

To Mr. Forbes: I certainly think the railways ought to be made to pay interest on capital. I think we should get a reduction in freight in order to encourage local manufactures.

To Mr. Sidey: There are two similar firms in Dunedin that make caps; but the warehouses buy their own materials and make them up. The Kaiapoi Company is the only manufacturer besides ourselves.

To Mr. Craigie: We employ twenty-eight hands, mostly girls. I started business twenty-five years ago, but in Napier about thirteen years ago.

D. WHYTE examined.

I wish to put before the Committee some points that have come before my notice in connection with my work as a company-promoter. I have been engaged a great deal in the promotion of companies connected with gold-mining in New Zealand, and in my judgment the mining question wants to be gone into very closely by the Government, because it is one of our best industries. It is one of our best national resources, and is capable of bringing in an enormous sum of money for the benefit of the country. I suggest that the following amendments be made in the Mining Act:—Terms of mining leases: (1.) That work be divided into two sections—first, development stage; second, mining stage. (2.) That the mining stage be autho-

rized by the Government Mines Department only after the Mines Department is satisfied and has declared that the mine is, after proper development, a proved mine. (3.) That the mining stage be begun only after sufficient capital is subscribed to permit of mining on proper scientific lines. (4.) That during the working of a mine as a proved mine a proper proportion of the net profits be set apart to form a development fund and be applied to development purposes. (5.) That no dividend be permitted in the absence of a proper development reserve fund. Capitalization of mining companies: That a permanent Board of Commissioners consisting of mining experts and financial experts be set up by the Government to protect the mining industry by—(1.) Perusing, and passing or rejecting on their merits, every prospectus compiled by a company before such prospectus is permitted to go to the public. (2.) That such prospectus shall disclose (*a*) the amount of contributing share capital in the company, and (*b*) the amount of goodwill represented in fully-paid-up shares, otherwise known by the name of "watered stock." (3.) That the industry be protected against exploitation by providing that—(*a*) No vendors who are option-holders be allowed as profit on their options more than 10 per cent. of the total authorized capital in a properly capitalized company, such profit to be in fully-paid-up shares and not in cash; (*b*) that no profit be allowed to option-holders outside New Zealand unless they provide from outside New Zealand at least 50 per cent. of the required contributing capital. Making the industry self-contained within New Zealand: That the Government immediately establish in Wellington a smelting-plant to deal with refractory ores; also a bullion plant and a mint. I want to make this statement, based on my experience in connection with company matters, principally our mining—namely, that mining is used to a considerable extent not as a genuine industry to supply the vital needs of the country, but simply as a gambling-machine. Then there is the exploitation that is carried on on behalf of wild-cat London concerns. New Zealand needs to be protected against that. What occurs has the effect of causing investors to be very biased against mining concerns. I believe if the provisions I have set forth were carried into effect they would cause the mining industry to be placed on such a footing that investors would have confidence in putting their money into the business, and the profits would be circulated in New Zealand and not sent outside for watered stock, for which the investors have paid nothing. I would like to read the following suggestions made by Mr. John McCombie, the well-known mining engineer and manager, the suggestions being made at a recent mining conference held at the Thames: "Mr. McCombie also suggested that amendments to the present system of granting mining leases should be made in order to prevent 'wild-cat' flotations. 'The Warden should have the power to refuse the granting of a lease to any man, or party of men, who cannot prove that the ground that they are applying for is marked off on the line of a known lode system, or that they have a lode exposed to view within their own boundaries,' he said. 'This would undoubtedly check the flotation of bogus concerns, and would give those who are honestly endeavouring to exploit legitimate mining properties a chance to obtain the capital necessary for that purpose.'"

To Mr. Forbes: At present there is no control exercised by the Government over prospectuses issued in New Zealand by mining companies—the statements are not verified in any way. I think in the interests of mining the Government ought to exercise greater supervision of these matters. It would create the mining industry into a solid industry in this country; it would conserve the reef system to New Zealand as a solid asset not only for the Government, but also for the people who are working it; it would create sound investments—investments on a basis which would instil confidence in the mines, and men would be quite willing to assist in providing it as a sound basis and investment. From my own experience there are any number of men who would be prepared to put their money into any concern regarding which they were satisfied as to its genuineness and soundness; there is no difficulty in getting men to invest in concerns if you put before them a sound speculation. I may mention that the *Mining Handbook* of 1906 contains an introductory article which is devoted to a large extent to this topic—"Mining *versus* Stock Exchange Speculation." It is a magnificent article.

To Mr. Veitch: I have had experience in the actual flotation of mines. I have not had any experience with the Mines Department in connection with those flotations. Once a concern has reached the mining stage my proposal is for the purpose of conserving the asset for the benefit of the Government and the country, who are the owners on the one hand, and protecting the public against the frenzied finance methods which are in practice and which are hampering the mining industry in New Zealand.

To Mr. Sidey: I do not think my proposals would interfere with the legitimate work of prospecting of present companies; in my judgment it would assist it, because it would give investors confidence.

To Mr. Craigie: My suggestion is that experts be appointed by the Government to peruse the statements which promoters propose to place before the public for the purpose of inducing the subscription of capital; I propose that the promoters should come with all the information, for which they have paid, and place that before the Government experts. Their report would only be a report regarding the Government's own asset; at present that asset belongs to the Government, and the Government would be only protecting their own property by seeing that it is being worked on a sound commercial basis, and that the statements made are backed up by reports from certificated engineers, and that the concern is not a bogus wild-cat concern. My object is to protect the public and put the mining industry on a sound commercial basis.

To Mr. Veitch: The whole object at which I am aiming is to see that the facts are stated, and when the facts are placed before a man he can judge whether it is worth while putting his money into a proposal.

Witness: I also desire to make the following suggestions, to assist in making New Zealand a self-contained country, and to foster its industries, particularly the timber industry, the mining industry, the agricultural and pastoral industries, and the shipping industry: (1) That the Government resume the leases over the iron-deposits in Golden Bay, paying to the present holders a reasonable sum by way of compensation; (2) that the Government likewise resume the Mount Burnett coal leases in Golden Bay; (3) that the Government apply these iron and coal deposits to establish smelting-works to manufacture rails for tramways, fencing-wire for pastoral development, and pig iron for allied iron industries.

I would also like to say a few words in regard to the question of soldiers' land-settlement. We are faced with the fact that an enormous sum of money is required to put soldiers on the land. I have thought out a basis of finding money for that purpose without interfering with the money that is necessary for the development of our industries. I leave with the Committee a copy of a paper which I recently read on the subject of "Soldiers' Land-settlement." I will read the following extract from that paper:—

"Every returned soldier is entitled to equal privileges whether he possesses private capital or not. It is within the power of our country to provide these facilities for all, and for that purpose I make the following proposals: (1) That the Government provide the purchase-money for land for the soldiers; (2) that the land be purchased by the system of Government debentures, redeemable in twenty-one years, at not more than 5 per cent. interest; (3) that the Government make adequate advances at stated periods for purposes of improvements, working capital, and stock, at not more than 3 per cent. interest; (4) that the money for improvements, working capital, and stock be advanced by the issue of State notes through a Government Agricultural Bank; (5) that all finance business of the selectors be done through the State Agricultural Bank, which shall hold security over the land, stock, wool, and produce, until the liabilities thereon are redeemed."

H. Hill, Mayor of Napier, examined.

I wish to say a few words concerning questions of national importance. The first is in relation to the Taupo lands for industrial purposes, the second is in relation to hydro-electrical development, and the third is in relation to oil-development. I have spent a good deal of time and study upon these matters, and having made myself acquainted in detail with the geological features of the East Coast for many years I should like to put before the Committee questions that to my mind are of prime importance in connection with production. To my mind the essential feature in connection with our future is production. I have given many years to the study of the Taupo Plateau, because of its apparent sterility. I have sections of it which I sent to the Department, but which owing to the war could not be considered. I have traversed the whole of the country between Napier and Taupo and lived on it, with the object of ascertaining whether it is possible to utilize that vast area for economical purposes. When the question of research was under consideration I made application for a grant to enable me to study this question at holiday-time. The sum of £20 was allowed, but it did not go far. However, I have been time and again to the place at my own expense. I have sectioned the whole of it, taking heights mile by mile. The plateau I refer to is in the form of an oblong, the corners of which are at Taupo, Waiotapu, Galatea, and Rangitaiki. This vast area of half a million acres could be readily and easily utilized if the question of water could be solved. At present nobody can live there without having special provision made for water-supply. I have given forty years to studying the artesian-water-bearing beds of the North Island. I am not a water-diviner: I do it geologically. My offer to the Government was this: If the Government are prepared to place at my disposal two or three prisoners, with an officer, and will lend me the artesian-well-sinking apparatus, I am prepared to locate the places where I think there are good prospects of water. This would place in the hands of the Government a valuable asset which is at present valueless. [Section maps produced.] My desire is to help the country with a view to settlement and production. On this question I have tried the Department of Internal Affairs and was told to go to the Lands Department; I wrote to the Auckland Land Board, and they say the matter is under consideration, and it has been under consideration for I do not know how long. It is a case of battledore and shuttlecock—"You go and see So-and-so"; and at last I gave it up. I have noted in my book places where I think there is water, but I have not fully investigated them. Let me call your attention to the splendid work done by industry and the supply of proper manures on some of the sterile land by prison labour. A large part of the plain has become a garden, and has been turned from a desert into a land of fatness. I saw some magnificent samples of vegetables at the prison camp, and I suggest to the Committee that they should visit that part of the country and see for themselves what it is capable of producing under proper supervision.

To Mr. Forbes: At present the plateau is a sterile desert, but the work of the prisoners shows what it can be turned into. I believe I could find water on the plateau.

To Mr. Sidey: The plateau is all pumice country. At the prison camp they have a supply of water, and they also have a spring. There is abundance of rainfall on the plateau—about 60 in.—and if it could be conserved it would be everything.

Witness: The next point I should like to deal with is that of hydro-electrical development. This question is one that concerns us very closely. Those who have taken the pains to study hydro-electrical development throughout the world must recognize that this new power is one of the most important factors we shall have to consider not only in connection with our own production, but in connection with our competition with other countries. I desire to draw the attention of the Committee to the storages of water at Waikaremoana and at Taupo, because this East Coast has a larger production at the present time than any other area of similar size. If

we are to produce more we must get those means placed at our disposal in the way of light, heat, and power, and we have comparatively near to us the Waikaremoana power, as if placed specially by nature to give us a helping hand at a time of need. I have never seen anything equal to Waikaremoana as a source of development in America or anywhere else. If something could be done with a view to developing this power pending the general plan for the North Island it could supply even Auckland and Wellington instead of beginning at Mangahao, from which we cannot possibly have any beneficial effects up this coast for an indefinite number of years. If Waikaremoana were developed as it should be we could use it for many purposes. It is one of the most important questions that can be considered by the Parliament of the country. I am chairman of the East Coast Hydro-electric League, and the League believes that the scheme would cost comparatively little. If the Government would only do the installation we would do the rest ourselves.

To Mr. Craigie: If the Government will do the installation we will do the reticulation. If we are going to do our duty as citizens we must go in for development, and we can only get development by cheap electric power.

Witness: On the question of oil, I may say that some years ago a Commission from the Home Country came here, and I wrote a paper for them dealing with the oil possibilities along the East Coast. If the Government would take the matter in hand and utilize its resources to discover where there is oil it could lease the field to private companies for development purposes. On the East Coast there are places where you get all the signs of oil-beds, such as salt-water springs, gas springs, and so on. The whole of the East Coast gives symptoms of oil. To the west of Gisborne you can collect oil in the seepages. My suggestion is that the Government should test in the various places where the promises are good, and having discovered an oilfield they should let it to companies for local development.

HASTINGS.

MONDAY, 28TH APRIL, 1919.

H. G. APSEY, of Messrs. Apsey, White, and Co. (Limited), Wholesale Fruit-merchants, examined.

I wish to speak to you about the fruit industry as it pertains to growers. One thing that is most important is the conveyance of fruit from Hastings to its various destinations. The Railway Department give us a wagon for the transit of fruit, but it is badly ventilated. Most of the wagons will carry four hundred or five hundred cases, and it is impossible for the air to circulate. When a huge load of fruit is placed in the truck it generates heat, and unless there is good ventilation the fruit will deteriorate. When in New South Wales recently I saw a railway-truck in use. It was made wholly of iron, and was ventilated from top to bottom, and the head of the Cool Storage Department at Melbourne informed me that the truck was unique. I suggest to the Government that they should make a move in this matter and provide suitable trucks for the conveyance of fruit. As to cool storage, under the Fruit Preservation Industry Act the Government may lend £9,000 to any company, but this is not sufficient. The Act was brought into force in 1913, and owing to the enormous acreage coming into use every year a larger amount is necessary. We have a capacity for something like 25,000 cases. When we built we thought our premises would be large enough, but they are quite inadequate to-day.

To the Chairman: The Government will lend up to £9,000 to any one concern. If a second company starts here it can also get a loan. The amount, however, is not sufficient to equip the works. I suggest that the Government should lend up to £15,000. We are also handicapped in regard to onions, potatoes, eggs, &c. We have no space in Hawke's Bay to hold onions or eggs. Twelve months ago onions were selling at £144 per ton. If we had the storage to hold stocks the price would not rise so high, and the public could get onions at a reasonable figure. I recommend that the Government should increase the loan, otherwise the industry will suffer severely.

To Mr. Hudson: It takes four or five days to send fruit from Hastings to the Auckland market. It is impossible to send peaches to Auckland because of the bad ventilation. It is detrimental to apples to be held for four or five days. It is almost impossible to send fruit to Auckland owing to the conditions on the railway. The Government ought to make some provision to supply ships to the South American market. It is most important that the Government should get away a lot of the fruit from New Zealand—a matter of vital importance.

To Mr. Veitch: We were exporting before the war, from Wellington to America.

To Mr. Forbes: Our principal market at present is all over New Zealand. Our firm ship to the individual shopkeepers throughout the North Island, and in the South Island if they need it. We send away everything—peaches, plums, apricots, and everything else that a grower produces. Peaches are grown largely, and we also grow large quantities of apples and pears.

To Mr. Hornsby: Prior to the war the railway conditions were the same as they are now. We have never experienced delay in sending fruit from Hastings to Masterton or Carterton. Many times we have been short of insulated trucks and have had to use ordinary coal-wagons. If the Railway Department were to assist by giving the fruit reasonable despatch to Auckland the time occupied would be two days and a half. We have got fruit through to Auckland on the express at times.

To Mr. Poland: We cannot send peaches to Auckland as they will not carry, being such a long time in transit. We can get them to Hamilton, but the amount of trade with Hamilton is small owing to the fruit arriving in bad condition.

To Mr. Sidey: We represent the growers, and get rid of the fruit that the growers produce. I have not heard of the suggestion that the State should commandeer apples and pears from orchards that produce over 100 cases for sale, and I cannot express any opinion about it. The only chance the public have to get fruit at a reasonable price is for the Government to assist more in the extension of cool storage.

To the Chairman: Three or four years ago delegates from Hawke's Bay approached the Railway Department and had the ventilation of the X truck improved, but nothing has been done since. The Railway Department say it is next to impossible to put a truck for fruit on the mail-train. We have not suggested to the Government that the amount lent to companies might be raised. One penny per pound in the orchard for apples and pears, as suggested at Nelson, would be a profitable price. Such a price as 6d. per pound in the shops for apples and pears is unduly high. The Government have given every assistance in regard to dealing with pests in orchards.

To Mr. Hornsby: If we had the specially insulated trucks the fruit would carry much better, and on its arrival in Auckland would be in a better state than it is now.

To Mr. Veitch: I am in favour of insulated trucks, but they are costly. We are more likely to get ventilated trucks from the Department. The insulated truck is preferable to the ventilated truck.

To the Chairman: We have our own mill to supply timber for cases. We are using *Pinus insignis*, which is suitable in every way.

A. WHITE, of Messrs. Apsey, White, and Co. (Limited), Wholesale Fruit-merchants, examined.

I wish to speak about the quality of the local paper that we use for apple-wrapping, and the wood-wool we are using for packing the fruit. The duty on the paper and the wood-wool is £7 10s. per ton. The locally made paper has never been as good as the imported paper. It is much heavier, it does not go so far, and it is more difficult to handle. The texture of the paper ought to be made similar to that of the imported Swedish wraps. If the local production cannot be made equal to the imported then the import duty should be removed. With regard to wood-wool, some of it is manufactured in Nelson. It is a good article, but not so good as the Swedish product. To foster this branch of the industry in Hawke's Bay financial assistance should be given by the Government to enable a wood-wool plant to be installed. We think the poplar could be used very well.

To Mr. Hudson: We have used a ton or two of the locally made paper to test it. Packers cannot pick it up so well as the imported article. They can pack the cases better with the imported paper. I consider that the poplar would be suitable for wood-wool.

Witness: As to the orchard-tax, it is a tax on fruitgrowers of 1s. per acre of bearing orchard, the minimum being 2s. 6d. The tax has been collected from the grower by the Department of Agriculture, and handed free of any charges to a body called the New Zealand Fruitgrowers (Limited), who have spent it or misspent it for about three years. There is grave dissatisfaction amongst the growers here and in the rest of the Dominion about the way this tax has been spent, and it has been pointed out that for all the good the tax has done it need never have been levied. I have here a copy of the balance-sheet of the Federation for the year 1918, which shows how the orchard-tax, which is practically the sole income of the Federation, has been disposed of. The largest amount has been spent on advertising within the Dominion. A sum of £600 or £800 was spent last year on such advertisements as "Do you like apples? If so, buy one," &c. Even such unbusinesslike advertising might have brought some business, but practically no attempt was made to arrange for fruit to supply any demand created. The tax last year realized about £1,800, and it took an office staff and other expenses to expend that £1,800. The largest item of all was the £600, which realized no return, while only £17 was spent on experiments for the benefit of the industry, and that is all the good that was done with the money. There has been so much dissatisfaction among fruitgrowers that representatives of four of the leading co-operative fruit companies met and decided to form a body called the New Zealand Fruitgrowers' Exchange. This body is willing to work with the Federation, but they want to see some good done with the orchard-tax. Growers who pay the tax would not consider it a hardship if they were sure it was being spent in proper organization.

To Mr. Hudson: Fruitgrowers do not regard the tax as a hardship, but they do not like the manner in which the money is being spent.

To Mr. Veitch: I object to the tax if it has no result, which it has not had so far.

To Mr. Forbes: Our company is a member of the Federation. I do not know whether the representative from this district has brought before the Federation the question of the manner in which the money is spent. It is the opinion of the four companies who have formed the Exchange that the money is not wisely spent. The tax was intended to foster the industry.

To the Chairman: If the Dunedin brown wrapping-paper is said by a Nelson grower to be satisfactory we have not found it so. There is no danger of overproduction of apples as long as we can get export and cool storage. Our association did something before the war to develop trade with South America, and we are now awaiting advice from the Government as to when steamers are likely to be sent that way. Generally speaking, for the sake of the whole industry, I think the export to South America ought to be gone into at once, but export to England and the European markets should be considered at the same time.

THOMAS HORTON, of Thomas Horton (Limited), Nurseryman, examined.

I am here as the representative of the nursery trade as well as the fruitgrowing industry. I am managing director of Thomas Horton (Limited), and I am also a director of the Hawke's Bay Fruit Company. I am here principally, however, in the interests of the nursery trade. It might be of interest to the Committee to know that in Hawke's Bay the average weekly wage of nursery hands before the war was only £2 a week. The wages have gone up now, and the average is £3 5s., wet or dry. That includes holidays and wet weather. The total amount now paid annually for wages is about £12,000 in the nursery trade in Hawke's Bay. There has been a considerable increase in the cost of production of nursery stock as the result of the increased wages, the increased cost of materials used in packing, and the increased price of the implements we use. There has been an increase of about 80 per cent. in the cost of production, and it is strange that there has been but little increase in the selling-price of our stock. There has been no increase at all in the selling-price of the main nursery lines—fruit-trees, shelter-trees, and forest-trees. There has been an increase of 10 per cent. on small lines, such as gooseberries, currants, roses, and so on. The reason there has been no increase in the shelter and other trees is that the Lands Department are offering these trees at a price which we consider is lower than the cost of production.

The Chairman: The idea is that they should be sold at about cost price.

Witness: We say that the *bona fide* settler who can afford to pay a fair and reasonable price for his trees is not the man the Government intended to supply with trees at a sum lower than it costs to produce them. If the Lands Department are supplying trees to reafforest the country we say the Government are doing a grand thing; but when we see the big wealthy squatter buying small quantities—fifty, a hundred, or one hundred and fifty—which are used only to beautify his home and garden we say it is a hard thing on the nursery trade of the country, and that is the position to-day. If the planter is going to get the trees for *bona fide* reafforestation purposes we say that even if the Government give them away we would applaud the act, because it is time that millions of trees were planted in the country. But that is not the case at all, and all round us we see planters getting small quantities from the Department for decorative work. In reference to the fruit-tree business, we grow large quantities. When the planting of fruit-tree orchards commercially was undertaken in a big way we were short by many thousands annually, and numbers were imported from Australia. No doubt the Australian trees were very fair, and mostly true to name, but the time came when large consignments were condemned because it was said they contained a disease. The result was that the Government prohibited the importation of these trees, and the nurserymen of the country then started to grow extra-large lines so that they would be able to meet the demand for trees. The Federation of Fruitgrowers approached the nurserymen and asked us not to raise the price of our trees if the prohibition of fruit-trees became effective. We, through our association, agreed that we would not raise the price of fruit-trees to the planter for a period of five years, so that the planter would have a guarantee that for at least five years after prohibition became effective he would get his trees at the price at which he had obtained them prior to the prohibition. Last year was the first year that trees were prohibited. We undertook to do this in order to foster the industry.

The Chairman: And where is the difficulty?—That the cost of production has gone up, and we cannot get any more for our trees.

You must have known that the cost of production would increase?—We were prepared to take the risk, and I suppose we shall have to suffer.

It seems to have been a matter of bargaining between two sets of individuals, and I am afraid we cannot help you?—Then I will come back to a matter in connection with the Lands Department. There have now been issued regulations for the grading of fruit-trees for sale from nurseries. This will increase the cost of production, because we are not allowed to sell trees to any *bona fide* orchardist unless they come up to certain measurements and contain certain lengths of growth. Personally I think it is right that every planter shall know it is impossible for him to get anything like a weakling or a scrubber. At any rate, the cost of production has again gone up on that score.

Mr. Hornsby: Have you ever thought to what extent the Government, having imposed these restrictions, might pay a small subsidy that would give relief to the nurserymen?—I have not worked it out, but I will be glad to supply the Committee with a statement as to the extent of subsidy that would be necessary to enable us to get over the difficulty that now faces us.

To Mr. Hudson: The Government can discriminate between the *bona fide* forester and the planter of ornamental trees. It may be taken for granted that any man who plants a small quantity of trees is not helping much with the reafforestation of the country. A minimum number of trees should be fixed, and the trees planted under Government supervision. The Government should not consider the small planter.

To Mr. Forbes: If the Government were to charge a proper price for their trees the nurserymen could compete with them. I am under the impression that we could supply the Government with trees cheaper than they can grow them. The Government could buy from nurserymen and supply the demands upon them, and they would not lose anything by it.

A. M. ROBERTSON examined.

I represent the Hawke's Bay Fruitgrowers, and wish to bring up one or two matters for the consideration of the Committee. One of the chief questions is the distribution of fruit to the public. As fruitgrowers we realize that the public are not getting the benefit of our industry. If we can get fruit into every home in New Zealand there will be no need for export for some

time to come. The people will benefit, and the industry will benefit. There are various things to consider, therefore, in the cheapening of fruit to the public. I am not here to suggest all the means whereby fruit might be cheapened, but one factor I wish to point out is the cost of the cases. At present in Hawke's Bay the bushel cases cost £4 16s. per hundred, whereas three years ago they cost £3 5s. per hundred. These costs have to be borne by the people. We have endeavoured by organizing into companies and by borrowing money to put up cool storage, but the overhead charges have increased costs by 100 per cent., and those costs the public have to pay. There are three ways in which the Government may help in the reduction of the cost of cases: (1.) We know that the country is being depleted through the export of white-pine, the timber we want for cases. Failing the Government putting on a prohibitive tariff on the export of the timber we ought to be allowed to import cases into New Zealand for the fruit. At present there is a duty on cases, and on going into the question of the importation of Baltic pine and Oregon timber we found we could get the cases for about 6d. each. This was when the boats were loaded with big timber on the deck. The tax, however, is 2s. per 100 ft., which helps to make the timber dearer. (2.) We have thought that the paper-mills of New Zealand should be encouraged, either by subsidy or otherwise, to manufacture a case that might be suitable, such as a corrugated cardboard box, which might be reinforced in some way. If we could not get these boxes in twenties or forties we might get them in tens, and grade them and send the fruit to the grocers. This would cheapen the fruit to the public. There are about 300,000 cases of fruit sent from Hawke's Bay in a season, which will give some idea of the number of cases we require. (3.) We think that there should be a vigorous planting campaign carried out on the waste lands of timber suitable for casemaking. Since timber has advanced in price one or two of the companies have started small mills of their own, and have cut *Pinus insignis* and poplar. This is a poplar case. [Case produced.] It makes a good case, but the timber splits when dry. If dried before it is put together it warps, so that it is not altogether satisfactory. If handled in a half-dry state it is very satisfactory, however. The case costs about 10d. We have a large acreage round this district which might grow poplars, and in a few years the trees would make good timber. *Pinus insignis* is said to grow quicker than poplar, but I do not think that is the case in Hawke's Bay.

To Mr. Sidey: As to the cheapening of fruit to the public, I would like to say this: I am a member of the New Zealand Fruitgrowers' Association, which has been concerned a great deal with the cheapening of fruit, and one of its aims has been to organize the whole of New Zealand into companies, which would link up and make a chain round New Zealand which would say to the retailer of fruit, "We can supply you with so-many thousand cases of any variety you want"; whereas at present he has to go all round New Zealand for his supplies. In the second place, the Federation set aside £400 last year to have a depot in Wellington. Fruit would be sent there, and retailers or the public could get it direct from the depot. Further, we hope to have our own deliveries running, so that fruit will be sent from Hawke's Bay to Wellington and taken from the depot without any further handling. There would be no auctioneers' charges, as the fruit would be distributed through the depot. This would prevent the auctioneers from skinning the consumer. In order to have a depot like that there must be grading regulations. If any one was allowed to send in fruit you might get a good grade from a man to-day and a poor grade next day. The public might get a good case one time, and the next time they would be disgusted, and the result would be that they would not buy any more fruit. We have been urging the Government to draft regulations, which I believe are on the point of being gazetted, and when they become operative we will be in a position to supply the depot with graded fruit at a price which the Government will fix from month to month or from quarter to quarter, and the public will then know what they have to pay for a particular kind of fruit. I am not familiar with the proposal made in Nelson under which the Government would commandeer apples and pears. It is a matter that requires consideration before expressing an opinion about it.

To Mr. Craigie: If there were central depots in Wellington or Auckland people who sent in for five or ten cases would be able to get them at once instead of sending to Hawke's Bay and having to wait a week or a fortnight. If a grower got 1d. per pound for all his fruit from Hawke's Bay it would pay him. If that price were given and a central depot provided the consumer would probably pay 3d. per pound for apples instead of 6d. as at present.

To Mr. Veitch: Our Federation took in hand the organizing of the Nelson Province, but after going through the district the Nelson people seemed to be opposed to it, and the matter was dropped.

To Mr. Hudson: The American price of cardboard boxes is 4d. per half-bushel, but the duty is about 2d. The Federation attempted to get the Mataura Paper-mills to manufacture boxes, but they were not strong enough. We thought the Government might be more in touch with the paper-mills than the Federation, and could arrange to get something suitable for us. It is a New Zealand industry, and if forest not used for anything else could be utilized for the corrugated cardboard boxes it would be competent for the Committee to make a suggestion to that effect.

To the Chairman: It costs 7d. railage to Auckland, and 3d. per hundredweight for delivery to the public at the other end. Orchardists find that if they want to grow good fruit they cannot be the commercial man and the orchardist. A man cannot look after his orchard and be a seller too. The present weak spot in regard to cheap fruit is in the distribution. As growers we are satisfied with from 1d. to 2d. per pound. For some of the apples we are now getting 2d.

To Mr. Veitch: The increased cost as between the consumer and the public comes in here: the case costs 1s., and packing and handling 1s., and if the fruit has to be put into the cool

store and kept for a time it costs 6d., while the railage costs 7d., and by the time it gets to Wellington 100 per cent. must go on to it.

To Mr. Hornsby: If we were getting 1d. the public would have to pay 2d.

Mr. Hudson: As a director, did you ever consider the advisability of appointing a man who might be described as a detective to go thoroughly into the handling of fruit from the grower to the consumer?—No.

Would it not be a good idea?—Yes, it would.

The Chairman: The growers of fruit ought to take into careful consideration how to get fruit cheaply to the consumer.

Witness: There is little being done in Hawke's Bay in the way of providing orchards for returned soldiers. We think the Government ought to take up some of the rich lands to establish returned soldiers on them. The Karamu Estate, not far from Hastings, belongs to the estate of the late Mr. Ormond. It ought to be cut up. There are 800 acres within two miles of Hastings, 16 acres of which would keep a soldier and his family, so that the 800 acres would keep fifty families. Some of the land has been sold at £125 an acre. Each soldier on 16 acres could make £200 a year with matured trees. For the first four years he could make £25 per acre per year by growing vegetables between the trees. Another subject is that of rook nuisance, which is a very serious thing in Hawke's Bay. It is becoming almost impossible to grow walnuts here. The rooks take 75 per cent. of them. They also do great damage among pumpkins, maize, and potatoes, and all we can get from the Government is that protection is taken off for four months. They are here in thousands. Owners of rookeries ought to thin them out at nesting-time, and if we could organize parties to go in and shoot it would help to get rid of some of them. I also wish to say that we as fruitgrowers support the hydro-electric scheme. It should be a national undertaking.

To Mr. Hudson: Returned soldiers should be put on the very best land—land at from £100 to £150 per acre.

W. D. Southcott, Manager of the Hawke's Bay Fruitgrowers (Limited), examined.

I represent the Fruitgrowers' Association. I want to get good apples and other produce from the growers to consumers at a fair price. I have often asked myself, "What is cheap fruit?" If a person goes into a shop, he would sooner pay 6d. per pound for fruit than 2d. The whole matter is to get the fruit before the public at a price the public can pay. But before that price can be settled there are certain things that come into operation between the time the fruit leaves the orchard and the time it reaches the shop or the consumer. The first thing I wish to speak about is the transit. The transit regulations as regards Hawke's Bay are painful. Napier is two hundred miles from Wellington, but if we want to send the fruit from Hawke's Bay to Wellington we have to load one day, and it does not leave until next morning; it reaches Wellington that night, and is not sold until the following day. It takes thirty-six hours to reach Wellington, and it is the same with Auckland, Wanganui, New Plymouth, and other places. Then we have to put the fruit in a railway-truck which is badly ventilated. The Railway Department open their doors for taking in fruit up to 1 or 2 o'clock in the morning in the fruit season. That, however, does not assist us. We want fruit that is growing in Hawke's Bay to-day to be in the hands of the public within twenty-four hours, and not thirty-six or forty-eight hours, as at present. We have asked the Railway Department to consider better means of getting the fruit away from Hastings. If the railway people can do that, even to the extent of a special train, what can we offer? From Hastings Station during January, February, and March of each year 1,400 tons of fruit are sent per month, or 300 tons per week. The next thing is the cheapness of fruit. If you go to any hotel you are disgusted with the apples they put on the table. The reason is this: there are itinerant growers who take round fruit that the companies will not touch, and they offer it to the hotels at a low rate. I do not blame people for not eating that fruit. The Federation asked the Government to bring out grading and packing regulations, and I ask the Committee to use its influence to ensure that the Department shall keep those regulations up to date. We consider that no man should put inferior fruit on the market. If the regulations are kept up to date the majority of these people will have to put their fruit through the companies, and that will guarantee to the public a sound article. It was said this morning that the grower would get 1d. per pound, or 3s. 4d. per case. If you add the extra charges it brings the cost up to 6s. 8d. But the shopkeeper cannot sell this fruit at 2d. a pound, and if he charges 4d. it cannot be considered an extortionate price. I think first-class fruit can be bought for 4d. per pound in the large centres at the present time.

Mr. Hornsby: You have to pay 6d. or 8d. for Jonathans, Cox's Orange Pippins, and Delicious.

Witness: The Jonathans and the Cox's Orange Pippins may have been in the cool store for a month, and that cost has to be paid for. We do not sell Delicious under 3d. per pound wholesale. First-class Jonathans will cost about the same, and the best Cox's slightly more.

The Chairman: Now, we want to know your difficulties.

Witness: There are the difficulties of transit. The next is as to export. We exported heavily to the Argentine four years ago, and in the first year of the war. However, information that has come to me from the South American buyer is that it is doubtful whether any ships will be going by the Cape Horn to the Argentine again. Can the Government assist the industry in this matter? As far as I can see we are blocked from the Argentine market.

To Mr. Hudson: If the Railway Department could see their way to grant a special train it would be a great assistance to the district. One special train a week would not meet the situation. My company sends out seven, eight, or nine trucks a day; the other company does the same, and independent growers the same.

Mr. Hornsby: You propose that the Government should do with the fruit what it does with the cheese and butter—everything shall be graded before it goes to the public?—Yes.

In that way you would eliminate the poor-quality stuff that is sold in the shops and purveyed by the private seller?—That is so.

Would it be a hardship to the man who has a few trees—fifty or so—if he had to bring his fruit to the store so as to have it graded before going on the market?—That matter requires consideration. In the first place, I say that no fruit should go on the market unless it is graded. As to the hardship, it is for the man to say whether he will pack and grade or sell through the store.

Can a man grade his fruit sufficiently well?—Some can.

What would you propose to do with the rejected fruit—fruit that is not first-class and that would not be put on the market?—In Hastings at the present time there are evaporating-works and canning-works being started, and the lower-grade apples could be dried or canned.

Is there a good demand for the evaporated and canned apples?—There is a large demand for the canned apples, but I cannot speak for the evaporated.

Can you tell the value of the evaporated apples?—No. There is another witness to speak on that point.

Mr. Poland: How many acres are under fruit in Hawke's Bay?—Three thousand acres.

Mr. Sidey: Do you approve of the suggestion of the previous witness with regard to special trucks with a good ventilation?—The time in transit is what I object to mostly.

Would not that time be of less moment if you had properly ventilated trucks?—It might to a certain extent, but even then you will not get stone-fruit and other produce on to the market in its best condition.

H. E. ROBERTS, Manager, Hawke Canning Company, examined.

In pleading for the Government's assistance in the development of the fruit-preserving industry, which includes jam-making, canning and evaporating or drying of fruits and vegetables, it is necessary to first emphasize the fact that in this industry we are up against very formidable competitors in the American and Australian manufacturers, who in some of our lines have practically secured a monopoly of the trade. This is due to dumping a surplus of their enormous production in this Dominion at a very low figure. I especially refer to canned dessert fruits. Prunes: Up to the present the whole of the trade in prunes in this country has been entirely supplied from America and Australia. This product has entered New Zealand duty-free. In a short time, however—in fact, next season—prunes will be turned out by local manufacturers, and therefore if a suitable import duty was then imposed it would assist to ensure a payable market for the local product. Fruit-pulp: At present fruit-pulp entering New Zealand pays a duty of 1½d. per pound, which in this case is detrimental to local industry. Fruit-pulp is used in the manufacture of jams and fruit cordials, and certain varieties are necessary which at times are unprocurable in the Dominion owing to the scarcity of the particular fruits. I especially refer to raspberries, strawberries, and black currants. At the present time the shortage of raspberries compels manufacturers to import raspberry-plup if they are to include raspberry in their assortment and keep their trade. We therefore trust that you will recommend that this duty of 1½d. per pound will be removed from the Customs tariff. Railage: Owing to Hastings' unfortunate position with regard to shipping, local manufacturers are under a greater expense in reaching their markets as compared with those more favourably situated. In our particular trade it is the general custom to pay freight to the customers' nearest port. Therefore to pay freight from Hastings to, say, the west coast ports we incur the cost of transit by rail or road to Napier, outward wharfage, freight to Wellington and port charges, and then another freight to Wanganui, Foxton, Patea, or New Plymouth. This route makes prompt deliveries, which are, as you know, a big factor in securing business, out of the question. The railway under these circumstances should be our best means of transport, but freight on canned fruit to Palmerston North costs 10 per cent. of the value of the goods; jam to Wanganui 10 per cent., and canned fruit to the same place 14 per cent. The same goods could be shipped direct from Wellington to Auckland at about 5 per cent. The Government could therefore afford us much assistance by reducing the railway rates on jam, canned and evaporated fruits of local manufacture to the same as charged for fresh fruit.

Coal: One of the most important requirements of the preserved-fruit industry is a cheap and plentiful source of heat and energy, which at present in this country is both unduly dear and scarce. Can the Government do anything to secure us a cheap and plentiful supply of coal? During the fruit season it is imperative that we have ample stocks of coal, as we cannot deal with the fruit without heat and power being immediately available. The season is a limited one, and fruit will not brook delay through lack of fuel. At present coal is almost unprocurable in sufficient quantities, and the price is prohibitive to successful local industry. We believe that the solution to this very important industrial problem would be by converting the potential water-power of the Dominion into cheap electrical energy, by which we could boil our jam, cook or evaporate our fruit, and drive our machinery more economically than by any other means.

Labour: As labour is also scarce and dear, it is imperative in order that New Zealand manufacturers can meet foreign competition that labour-saving machinery should be utilized as much as possible, and to get the full benefit of this cheap power must be available. We all know that in this country this can only be obtained by a national hydro-electric scheme being brought into effective operation. The greatest assistance the Government can give the fruit-preserving industry in Hawke's Bay is to give us cheap electrical power and heat.

Machinery: In conclusion, I might mention that an industry like this is crippled by having to pay duty on the machinery it has to import. Practically none of the plant required by the fruit-preserving industry is made in New Zealand, and has to be imported from Australia and America, and therefore we beg to urge that plant required for this local industry should be exempt from Government tax. To sum up, then, the Government would afford the fruit-preserving industry in Hawke's Bay both valuable and necessary assistance by securing it the following requirements: (1) Import duty on prunes; (2) removal of duty on fruit-pulp; (3) reduction of railway rates on jam and preserved fruit and vegetables of local manufacture; (4) cheap coal or electrical energy; (5) refund of duty on machinery and plant used by fruit-preservers.

To the Chairman: It seems to me that jam might be carried at the same rate as fresh fruit. If the Committee made such a recommendation, of course it would be possible for a half-way house to be arrived at.

To Mr. Hudson: During the past season we could not get raspberries at a reasonable price—that is, down to 5d. or 6d. per pound possibly. If pulp were admitted free of duty we should probably expect to buy it cheaper than that. I do not think the removal of the duty would mean a lower price to the grower because he can sell all that is produced now. The leading jam-makers have bought all the raspberries they could get during the past season.

H. J. JOLL examined.

I am here by appointment of the local branch of the Hawke's Bay Farmers' Union to represent the small-farming interests. The small-farming interests, as you are aware, have a tremendous radius. There is not one aspect of trade that does not affect this class of the population. I maintain that it is one of the most important classes, and its interests deserve special attention under the present post-war conditions when the obligations of the Dominion are so great in respect to payment of interest on its war debt, &c. The first question I would like to touch upon is the matter of shipping. Probably you are aware that the principal freezing-works of Hawke's Bay at the present time are jammed to the doors with frozen produce. Before the war we had certain shipping carrying our produce to overseas markets, but since the war that shipping has been curtailed. The farmers have been asked to do all that they could to increase the amount of production, and I think they have done very well in that respect during the war. Not only have they sent their young men to the war, but the farmers have well maintained the volume of production. But the farmers are in this position: the Argentine is closer to the Home and European market, and ships can make two trips to the Argentine to one that they can make to this country for frozen meat. The result is that nearly all the shipping has been diverted to the nearer ports. Representations have been made to the Government, and the reply is this: the people are starving in Europe, and two voyages can be made to the Argentine to one to New Zealand. The Argentine is a neutral State. Our population is only a little over a million, and we have incurred great debt in helping to carry on the war to a successful termination. What is the result? Every class of our primary production is being held up because of the arrangements which have been made in regard to shipping. Simply because we are a little farther away than the Argentine we cannot get our produce away. Scores of thousands of fat stock are now standing in the paddocks, to say nothing of the meat that is deteriorating in the works. We would like the Committee to impress upon the Government the urgency of having some of this shipping brought back to our Dominion. If it is brought back in, say, three months it would make a tremendous difference; and it would help this country and the Old Country. It is said that the embargo will be removed in June twelve months; but if the present position of affairs continues, what will be the position? It will be serious. Another thing that I hear a lot of complaints about is the tax on the dairyman and his family. It takes the dairyman all his time to run his concern. The Government does not take into consideration the number of the family that it takes to make his income. Supposing he makes, say, £500 a year, he is taxed the same as if the income were made by one man; but that is not taken into consideration.

The Chairman: A man is allowed to pay the members of his family; but the money must be actually paid.

Witness: There are complaints in regard to that matter. Some change should be made in regard to the taxation in such cases. The small farmer with a family feels that he suffers an injustice in respect to this matter. There is one other point that I want to refer to, and that is in regard to the embargo on hides. This is another matter that affects the small farmer very closely. Under the present conditions he is allowed to export so-much in the way of hides, and there is an embargo on the balance. That means a difference of 2d. per pound to the grower; and the farmers say in respect to that that it would pay the farmer to give every boot operative £3 a week and allow him to walk about with his coat on. In saying that my authority is the *New Zealand Farmers' Advocate.*

The Chairman: That is a sweeping statement to make. How would the New Zealand Government have found boots for our soldiers if there had not been an arrangement made for an increased production by the boot-factories in New Zealand?—That was all right when the war was on. This embargo has been imposed quite recently. Whereas there was an embargo on the whole thing while the war was on, they have now released 25 per cent.

Do you say that the price gazetted by the Government is not in accordance with the true value of the hides?—We can get more in the open market.

All you have to do is to submit the hides to New Zealand buyers before exporting them. No one seems to be complaining very much about the price?—They do complain a great deal. My authority for the statement as to paying the boot operatives is the *New Zealand Farmers' Advocate.* If that is wrong, I am wrong. I think, as we are asked to produce more—and we all recognize

that it is necessary for us to do so—it would be a good thing if the Government were to appoint stock instructors. We have any amount of stock inspectors, but very few stock instructors. If a cow can be made to produce another £1 a year or £2 a year it would mean a great increase in her productiveness. £20 a cow is an average; and it would be quite easy under proper supervision for the amount to be increased to £30 a cow. I suggest the use of manures in making the land more productive. I think that too much superphosphates is being used—in fact, too many acid manures are being used altogether. What we need in New Zealand is a lot of lime. The Government have been doing wonders in that respect—I quite agree with that; but if the Government can educate the people to the fact that lime is the best thing they can use in this country, the land could be made to produce nearly double what it is doing now. These instructors could advise the farmers how to cull out their cows, and they could demonstrate the value of herd-testing. If they did that it would give the dairy industry a tremendous impetus. Then, not sufficient notice is taken of the importance of drag harrowing—that is, with tripod harrows. If it is done in the spring and autumn there is no end to the good results; it freshens everything up and makes the grass grow. Lucerne-growing is another thing that all small farmers should be instructed in. We really do not know what there is in lucerne-growing. There are other improved methods of farming that can be suggested. Then there is the question of the importance of an increased production of the amount of wool per sheep. Improvements in these and other methods can be brought about as the result of further instruction from capable instructors.

To Mr. Hornsby: I think if the instructor visited the individual farmer and gave him the benefit of his experience it would do infinitely much more good than having experimental farms. I believe that in Taranaki they have instructors to assist the dairy-farmers.

To Mr. Forbes: I quite believe that experimental farms as headquarters from which these experts or instructors could work would be an advantage.

To the Chairman: In regard to testing cows for butter-fat and as to the rejected cows, I think the man who owns them should be compensated—compensated to the extent of, say, a third of her value as a milker. I would have her fattened if she is one of the fattening breed; it should certainly be at the option of the owner to fatten his cow or take the Government price. The Government would send the cow to the abattoirs, the same as rejected or condemned cattle. The farmer would have to take her there, but I do not think it ought to be at his expense. The cow should be branded as useless for milking, and could be fattened afterwards.

J. Craick, Te Mata Vineyards, examined.

You know that the Government has expended a lot of money in the last twenty or twenty-five years, perhaps longer, in fostering this industry. At the present time—in fact, ever since I have been in charge of Te Mata Vineyards—we have had to pay very high wages for any labour we could get. There is no skilled viticultural labour here. It is hard to get. South African wine is allowed to come in and compete against us at 2s. a gallon; whereas Australian wine, which is a fair thing, pays 5s. a gallon. That is a fair protection for us considering the conditions of labour. In a country like New Zealand, where the wages are high, I do not see why the Government should allow the product of cheap labour to come in here under the conditions I have indicated.

The Chairman: The special South African tariff was the result of a reciprocal arrangement made with the South African Government. We have had that matter brought under our notice, and no doubt the Committee will carefully consider it in drawing up its report.

Witness: All winemaking machinery—crushers and so forth—is taxed. That machinery is not made in this country; it cannot be made here. And then, in regard to casks, we pay duty on all those things. I think they should be allowed to come in free. We have to import storage casks—big casks of from 350 to 1,000 gallons or 1,200 gallons. I do not think they can be made in New Zealand. The Government experimental farm at Waerenga tried to get them made in Auckland, but I consider it was a failure. With regard to the grape-growing industry, it is a very suitable industry for returned soldiers. There is no heavy work attached to it. There is a good living to be made out of it; it is interesting work. Very poor land will grow grapes. The poorest land in Australia grows grapes from which the best wine is made. Our wages account comes to about £1,200 a year for 37 acres of vines. It means a lot of labour. Continual labour is required in vineyards As soon as you get a crop off it is time to get to work pruning, spraying, washing, &c., to contend with the blights. When the spring comes there is tying up, disbudding, &c. From the amount of wages we pay the Committee can understand the extent of the labour that is employed. There is another matter that deserves notice. The Government has been trying to get people to go on the land to grow grapes. For twenty-five years they have had an experimental farm at Waerenga. Another was started at Havelock. The object of starting that farm was to find out the best stocks—American stocks, phylloxera-resisting stocks, &c. They have put a lot of their vines out and advised people to grow them on those stocks, and I think a lot of them have been failures—they have not been as good as the old European stocks. If a man cultivates only 8 or 10 acres it runs into a lot of money, and by the time the vineyard comes into bearing and he is expecting to get a return there may be a general election poll, and out he goes. The vine-grower has no security of tenure, for prohibtion may come about. I maintain that the vine-growing industry should be exempted from the provisions of the ordinary Licensing Act. It is well known that wine-drinking countries are the most sober countries in the world.

To Mr. Hornsby: I would be satisfied with a similar provision to that in Australia so far as the vine-growing and wine industry and the licensing vote is concerned. It is a great industry. There is a lot of wine imported into this country. We could supply the wine here quite well.

To Mr. Sidey: There is any amount of suitable land here.

To Mr. Forbes: Notwithstanding the duty, a lot of South African wine comes in. It is not sold as South African: it is sold as colonial, or Australian wine, or any brand. I consider it very inferior wine, taking it as a whole. I have tasted two or three good samples. The public is not aware that it is South African wine. The merchants—the exploiters—get the South African wine and I suppose they sell it as Australian. They have got about fifteen or twenty different varieties. I met two travellers six or seven years ago, and each of them had twelve or fifteen samples. I think South Africa should be put in the same position as Australia; their wine is the product of cheap labour.

To Mr. Hudson: If prohibition of the manufacture of wine were carried we would have to root out the vines. The grapes are too small for dessert grapes; there is too much sugar in them and not enough flesh for dessert purposes, and they would be no good for currants or raisins.

W. BURFIELD examined.

I may state, in the first place, that I have had considerable experience, both in this country and in the Old Country, in the boot and shoe trade, both as a buyer and as manager of some of the biggest firms in the Old Country; and being independent—that is, practically speaking, independent—of any issue connected with the trade, I think I can give my opinions without any suggestion that I have any axe to grind. The question of boots and shoes deserves the utmost consideration, as it affects every one in New Zealand; and to the man with a family the question of boots and shoes is a serious problem. It is a waste of time to study standardization whilst fashions and fancies are changing almost with every setting of the sun. It has been suggested through the medium of the correspondence columns of the papers that we should abandon all idea of production in New Zealand, do away with the tariff, and draw for our supply from our cousins and brothers in the Old Country. It is the greatest mistake any one can make. The time of cheap boots and shoes from Home has gone, and I sincerely hope has gone forever; and I do not think that 5 per cent. of the people of New Zealand would hope for pre-war conditions in the boot trade of the Old Country if they knew the conditions under which the cheap boots and shoes were produced. The victory that has been won on the battlefield is not the only victory; consequently the workmen in the boot trade of the Old Country will never allow their labour to be exploited so that boots and shoes can be sold to their kinsmen in the dominions any cheaper than they can be produced in New Zealand. The only way to reduce the price of boots and shoes in New Zealand is to look into the source of the supply of raw material. We have in New Zealand an abundance of hides being stacked up daily by our different freezing-works These hides are shipped away and handled many times in the course of things, and every handling means a profit to some one who does nothing to earn it; and every one interested in leather has a picking of the best leather these hides produce; and as a last resource, to clear, all the wasters are sent out to the colonies at an exploited price; and this is called "London quotations." I would suggest that these hides be not allowed to be shipped away, but that large tanneries be established in close proximity to our freezing-works, with the finest equipment of machinery, and with every assistance in research work supplied by the Government. There is not any doubt that the finest and best leather could be produced, and if handled well the industry could furnish employment for a number of returned soldiers. The industry would give the farmer a better price for his hides, and it would place the manufacturers of New Zealand in the position of drawing their supply first hand. The price would have to be fixed not by London quotations, but by what the leather could be sold at after showing a fair profit on the amount of capital invested; and I think that labour, acknowledging capital is entitled to a reasonable interest, would show that there is a silver lining to a very dark cloud that hangs over the industrial world. It may be said that we cannot produce good leather in New Zealand. If some of the tanneries in New Zealand can advance the quality of their produce 300 per cent. with the war on in three years, surely if the subject is looked into earnestly and scientifically we can produce the finest in the world and make New Zealand self-supporting in its leather requirements, and possibly an exporting country of leather. I have seen "Durox" sole-leather produced at Awatoto second to none in the world for wearing-qualities. The question may arise, How can we give the farmer a better price for his hides? My views are that the farmer is the backbone of New Zealand, and his family is the very muscle of that backbone; and in computing the price of the financial article you must see that the very foundation is cared for. Now we will take the question of manufacturing. The manufacturers of New Zealand can and do produce boots that for durability are far and away ahead of the Australian production; and given good sole-leather, such as might be produced by tanneries of our own, by having the best hides their boots and shoes are second to none. I can show you boots produced by a New Zealand firm that will compare with anything from any part of the world. Their boots are produced under conditions that any one may be proud of; the rooms are lofty, well lighted, and well ventilated; the sanitary conditions are the very best; the machinery and appliances are good; and they produce a range of shapes and styles to meet the most fastidious taste. The workmen and workwomen are well treated, and are not looked upon as wage-slaves. But, notwithstanding this, the manufacturers regret being unable to supply the public with a cheaper boot, owing to the fact that they are at the mercy of interests over which they have no control. Given a fair source of supply, the manufacturers of New Zealand will return to the public of New Zealand as good as can be obtained from any part of the world, and at a fair and reasonable price; and the time is fast approaching when New Zealand will be more and more dependent upon her own self-support. I might state further that 90 per cent. of the leather used in the English factories is produced in America. The factory that I was employed in never at any time used anything for sole leather

during the whole ten years I was with the company but American hemlock. I think one thing that will help New Zealand considerably in the reduction of the price of boots would be to prohibit the American Shoe Machinery Company from operating in New Zealand. I understand that some years ago pressure was brought to bear on the English Parliament to check the operations of the American concern in the Old Country, but they are getting their grip on New Zealand, and if not checked will in course of time draw the blood out of this country.

To the Chairman: They do not sell their machines to New Zealand people—they hire them out; and every revolution of the machine means money in their pocket, and that money goes to America.

To Mr. Hornsby: They are operating here pretty considerably. I guarantee that on 90 per cent. of the boots in New Zealand 3d. on every pair goes to America as royalty for use of the machines; and if the hides are allowed to go away we will be absolutely at the mercy of America, with no possible hope of reducing the price of boots and shoes.

H. J. M. RODGERS examined.

I desire to draw the attention of the Committee to the question of hydro-electric power. I am quite aware that there has been a very full discussion on the subject right throughout New Zealand; but I would like to point out one or two aspects of it which specially affect the people of Hawke's Bay and the industries here, particularly the freezing-works. As you know, they are at present all run by steam. I want to point out the tremendous stand-by losses connected with the steam plant as compared with hydro-electric power. I have got some figures from the consulting engineer at Borthwick's. He stated that in the case of the Belfast Freezing-works at Christchurch during the busy season, running three shifts, their coal bill for one month was £350 to £400; and after the change to the Lake Coleridge hydro-electric power, and getting the Government concession in running after 10 o'clock at night and running during the day, the bill dropped to £50 a month—as compared with £350. In addition to that, he pointed out that there was a very large saving in the stand-by losses, which were eliminated; as soon as the whistle blows and the current is cut off the meter stops registering; they pay on the actual amount of the current used. In the case of the Auckland tramways, some years ago when they used a steam plant the stand-by losses were tremendous. I take it that when the Waikaremoana scheme is developed here there will be very little difference in the price per unit as compared with that charged in connection with the power from the Lake Coleridge system; perhaps those in a district nearest the source of supply might get the power a decimal of a unit cheaper. There is a wonderful lot of bush around Waikaremoana, and I see no reason why wood-pulp should not be produced. In Christchurch they are now manufacturing carbide. It strikes me that Christchurch is going to be a big manufacturing centre, and have great advantages over other districts, unless hydro-electric systems are soon established in other parts of the Dominion. Sweden affords a good example of the advantages of hydro-electric power so far as manufactures are concerned. In that respect Japan will be in a similar position in respect to hydro-electric power and manufactures. Returned soldiers who have visited the manufacturing districts in the Old Country will be surprised at the lost opportunities in this country—our lost opportunities in not harnessing our water-power. The members of the Committee no doubt know of the great difficulties we have in getting coal in this district; at present it is extremely difficult to get coal.

W. G. JAEGER examined.

I am a tailor, and I have been in business in Hastings for about fifteen years. Until six months ago I used to buy what were recommended to me always as Scotch tweeds by different travellers. About six months ago a traveller who was going to the war told me in a burst of confidence that I had been buying Oamaru tweed. I had a bet with one man. I told him it was real Bannockburn; I honestly thought it was so, but I found I was mistaken. It might be Mosgiel, but I think it is Oamaru; but I want to say that the quality is simply wonderful; the way it wears is such that I do not think it can be beaten in the wide world. It might be twisted a little tighter; the woof might be a little tighter and the web slightly tighter, but still it would not press so well. This material should be branded "Made in New Zealand"; it would be a good thing for this young country. It should be stamped like the English stuff every two or three yards, so that the public may know that they are buying New Zealand tweeds.

To Mr. Forbes: I desire to stress the importance of branding the New-Zealand-made material. The Oamaru people have standard patterns that are really good. In regard to prices, if the present state of affairs continues the working-man will not be able to buy a tailor-made suit, and that is not fair to the working-man; at the present time they really cannot afford to buy them.

To Mr. Hudson: New Zealand tweeds are as good as any you can buy in the Old Country. The manufacturers will not sell direct to the tailors.

To Mr. Forbes: The increase in the price of clothing is caused by jobbing. In Auckland a few weeks ago I asked a man the reason for the increase in price, and he explained to me what happened in the case of one line. He had one line of serge which cost 8s. 6d.; it was sold at 11s.; it was bought back at 14s., and was sold again at 18s., and was bought back at 22s. I did not ask him any more, but he had some serge that he wanted me to pay him 38s. a yard for. There are about 3½ yards in a suit.

To Mr. Hornsby: With regard to the profit of the tailor and the difference in the price since the war began, I may explain that there are many of us who indent everything. Saltaire was a great line. If we could get behind the warehouse we could buy it at 8s. 1d. instead of 14s.; but the buyer has to pay 12s. or 14s., and if he got £1 on a suit he was very lucky; and now on a suit costing £5 15s. or £6 6s. he might get £2. At present we cannot get supplied from Home.

Now that I know how good New Zealand tweed is I think the man who manufactures the clothing should be allowed to buy direct from the mills.

Mr. Hornsby: I used to pay £6 6s. to £6 10s. for a lounge suit, cash; and now I pay £9 10s.: who gets the difference?—I think the warehouseman at the present time. At one time you could buy that material for 8s. 1d. to 10s., and now you cannot buy it under 27s. 6d. a yard.

This is New Zealand tweed; I could not get English tweed under £11 11s.?—The only increase the tailors have is 10 per cent.

D. WHYTE further examined.

I want to supply the Committee with a record giving full particulars with reference to Parapara iron-ore. [Witness handed to the Committee a copy of the prospectus of the Onakaka Company (Limited); analysis of Mount Burnett coal, and samples of iron-ore and limestone.]

PALMERSTON NORTH.

TUESDAY, 29TH APRIL, 1919.

J. A. NASH, M.P., examined.

I want to say at once that I do not claim to be an expert in regard to the matter which I desire to bring under the notice of the Committee, but it is an industry which I, with many others, regard as something of use, and as something which is going to be of a very telling nature in the near future. For some time past we have been endeavouring to float a small company, with the object of extracting acetic acid and oils from various woods. We sent in a request to the Minister for the formation of a company, and it was promptly turned down. The amount of capital we wanted was £10,000, but knowing that it was fixed by legislation that it should not be more than £3,000 we were content with that. However, after waiting for some considerable time it became necessary to go to Wellington and personally interview the Minister upon the matter. It was pointed out that this was going to be an important industry and something very advantageous to the Dominion. The Minister said he felt greatly impressed with the representations, and that he did not quite understand the application when it was first made, and he would grant the formation of the company. So we are forming this company locally in Palmerston. The amount of the capital is only £3,000; as I have said, before it was to be £10,000; we are content with the £3,000 as a start. I am very sorry that our expert, Mr. Russell, is not able to be in Palmerston North to-day to give a demonstration to the Committee. He gave a demonstration about a fortnight ago, and the Committee could then have seen the whole process. Those present were quite satisfied that this industry has a future before it. The results of treating one cord daily will give you an idea of what it really means. Take one cord of rata wood—rata is the principal wood, although any other kind of wood may be used, including sawdust. The wood goes in whole, cut up into small sections. It comes out just as it went in, but all the oils and acids have been extracted. The wood as it comes out can be used in ways which I shall explain later. The expert estimates that from one cord of wood there could be produced £50 worth of acid, 17s. worth of oil, 15s. worth of tar, and £2 worth of charcoal. I have some samples of the products, which I would like the Committee to look at. They were extracted locally, and you will see what has been done. [Samples produced.] There is an abundance of rata wood. Rata is the best wood; the best results are got from it. There is an abundance of this wood adjacent to Palmerston North. Instead of taking up a large block of land and erecting the necessary buildings and machinery, it has been decided to start in a smaller way and have the wood brought in. It is not proposed to deal with probably more than three or four cords a week. This industry has taken a great hold in America. They have been working at it for some years, and the figures available give some idea of what is going on in that country with regard to this industry. First of all, with regard to the acetic acid which is produced; some one has said that there would never be a sale for the acetic acid produced. In 1914 the total amount of acetic acid brought into this country, and upon which Customs duty was paid—75 per cent.—was £80,000. That was for acetic acid alone. That in itself is an indication to the Committee that it would be a flourishing industry. The products also include oils, tar, potash, and pitch. Then, in regard to the rata wood itself, the Telegraph Department is always ready to purchase arms for telegraph-poles, and the wood can be used for that purpose. Charcoal and potash can also be produced. Potash is a very valuable product, especially at the present time. I do not know the scope of the Committee's investigations throughout New Zealand, but I take it that this will be one of the most important industries you will have to deal with in your report. I am quite willing to have samples of the products forwarded to the Committee in Wellington. The industry is one which we hope to have in operation in the course of another two or three months—that is, to commence operations properly.

To the Chairman: We will probably require the Committee's assistance in regard to the plant; but in that connection I will have to interview our expert, Mr. Russell, who is away at Hawera. He will be coming to Palmerston North to work this plant. We will probably soon be able to send you samples of what we produce here locally. These samples were produced in the presence of a number of people. The plant will have to be brought from America. It is subject to duty; and we think in the interests of the Dominion as a whole it should be admitted free. We do not think it is patented, and will be available in the market in the ordinary way. It is

unfortunate having to start with such a small company, but we could not do otherwise owing to the War Regulations. I do not think we can have any proprietary rights over the process. There will be nothing to prevent other people commencing in the same line. Of course, the people who get in first will be most fortunate.

To Mr. Hornsby: We have not made any tests from sawdust, but our expert says we can use that material, because they have done so in America for years. Our expert anticipates using up sawdust in large quantities. I hand in to the Committee a copy of our prospectus. [Copy of prospectus handed in.] We desire to have the power to increase our capital—we desire to get that power soon after the industry is started.

To Mr. Hudson: This is a pioneer effort as far as New Zealand is concerned. Mr. Russell has studied the question for years. We will not require much machinery until we increase the capital of the company, and then we will require larger machinery.

To Mr. Poland: Our works will be started at Palmerston North, but as soon as we float the larger company we will start works wherever there is an abundance of timber.

To Mr. Craigie: Hydro-electric power will help us, but we can manage all right in the meantime.

Captain PREECE examined.

My observations during many years have shown me that there are a number of dyes which were originally produced by the Natives from different trees. Rata produces a red or a brown dye, which was used by the Natives for dyeing their flax mats. Tanekaha is a pine which grows largely in the north and also on the face of Tongariro. It produces a yellow, almost khaki dye. In the case of this timber the dye is produced from the bark principally. Hinau produces a blue and almost a black dye. In 1871–72 when we were chasing Te Kooti through the bush he wrote me a letter, and the ink he used was produced from the hinau dye—a beautiful blue. It can be produced from the bark of that tree, and also from the roots. This dye was largely used by the Natives for different purposes. It has occurred to me that if this and other dyes were thus used by the Natives—dyes produced in their simple manner—if scientific processes were applied to these trees and barks a great industry could be established in this country. The hinau timber grows practically all over New Zealand. I do not know any district in which it does not grow. There are other dyes produced from different trees, but I do not think I can give you any great information in regard to them at present. The root of the flax produces a yellow dye. I think this whole question is well worthy of investigation. If a successful industry could be established it would be a great benefit to the country. I think most of the dyes which we have hitherto imported have been imported from Germany. Anything we can do in the way of establishing a local industry in dyes will benefit this country.

To Mr. Forbes: Some time ago I wrote to the Government on the matter, and I received a letter from the Minister of Internal Affairs stating that my letter would be referred to the Department for investigation, but I do not know what has been done.

The Chairman: We will make inquiries as to what has been done.

A. SEIFERT, Flax Industry, examined.

I have been asked by the Palmerston North Chamber of Commerce to give evidence before your Committee on the above industry. I have been engaged so long in the industry that I found it difficult to pick out evidence suitable to your Committee. The industry has advanced until it now occupies a very important place in New Zealand, but under the old method of growing flax a further advance cannot take place. My reason for making this statement is that practically all the flax areas have been made to grow flax by draining swamp land to an extent suitable to the crop, while destroying other plants that would hinder the growth of flax. I do not know of any further areas that can be brought in by following the same method, so if the industry is to expand or even hold its own the cultivation of the plant must be undertaken, because there is a good deal of evidence to prove that the existing areas are gradually being reduced. Some of the flax is being destroyed in order to make dairy land, while in other cases the yellow-leaf disease is destroying the plant. Already considerable damage has been done to flax in this district by this disease, and up to the present no remedy has been found to check it. When we consider that a decline in this industry can only be prevented by cultivation, it is important for the Government to do what is possible in order to induce farmers to plant flax. It is a crop that is very suitable on all the rich dairy lands, and would afford considerable relief from the monotony of dairy-farming, while at the same time returning fully as big a profit as dairying. I am of the opinion that flax-planting will pay, and pay well, providing it is systematically carried out on the right lines. Small areas have been planted in different parts of New Zealand, but I do not know of a cultivated area large enough to keep one stripper going. The company I represent —A. and L. Seifert's Flax-dressing Company (Limited)—have experimented to a certain extent planting flax. Judging by our own experience and what I have observed of plots planted by other people I am of the opinion that planting without first thoroughly cultivating the land is useless and a waste of money. My own experience has gone to prove that when suitable land is thoroughly worked before the plants are put in, and after being planted, the land cultivated between the rows for a couple of years to keep down weeds, a very satisfactory crop can be grown, which yields a large return within four years. Flax makes splendid wind-breaks, and I think the farmers are making a mistake by not using this plant for shelter. Four rows of flax could be planted 6 ft. apart for shelter. After the flax had grown, one row could be cut each year and the leaf sold. The farmer would be in a position of having a good wind-break that would return a steady profit. There is no other shelter-plant that I know of that will make good shelter and at the same time return a steady profit to the grower. I would be very glad to advise farmers how

to grow flax for shelter, because I am convinced that planting for shelter would benefit the farmer and also the flax industry. Considering that the industry can only expand by planting flax it is very important that experiments should be carried out to find the most suitable varieties to plant. Plots should be put down in several places and careful observations taken to find out—(1) The time each variety takes to mature; (2) the quality of the fibre in each variety; (3) the power to resist disease in each variety. In addition to making the above observations various methods of cultivation could be tried, and also different kinds of fertilizer. No doubt the present varieties could be greatly improved by careful selection. I suggest that our State farm should undertake this work with a view to improving the flax-plant, and especially in regard to early maturity. I am sure that several flaxowners would be glad to co-operate with the Government in carrying out such tests, and would be prepared to give plots of land where flax is now being grown successfully. I consider that no time should be lost in doing all that is possible to help the industry in this way. I have no doubt some farmers would be quite willing to grow flax if they knew how to plant and the return that they would get from a good crop of cultivated flax.

By-products: I cannot go into this question very fully because my company has had research work carried out for two years and a half with a view to finding a profitable way of utilizing the waste from flax-mills. Carrying out this work has cost money and taken up considerable time outside the usual work. We have now a great deal of information which I cannot disclose, but our experiments have been somewhat encouraging lately, and we are now making inquiries in England and America for apparatus suitable for utilizing the waste. I cannot deal with the nature of the research work because some of it is in a half-digested state, and in any case until we prove in practice what has been worked out in theory and experiments it is impossible to say whether our efforts will be successful or not.

As regards machinery, I cannot see how the State could go further than they have already gone in giving encouragement to inventors. A great deal of money has been spent by private individuals in working out new ideas. It has been found that large mills can be worked more economically than small mills, but the taxation of the country is against large concerns. It is a question of how far the State should go in a policy tax of this sort. We have got to produce hemp at a low price, because our hemp is in competition with sisal and manila that is produced by Native labour where the living-conditions are very low. The price of New Zealand hemp is regulated by the above hemps, which are produced in much larger quantities than ours. For these reasons it is a mistake to regulate taxation to crush out industries that can work economically. This applies to all other industries that are in competition with the outside world. There are various industries that can only be run economically with an immense capital. If this Dominion has an excessively high rate of income-tax for large concerns, and these companies have got to compete with foreign countries that have a low rate of income-tax, then New Zealand must go under on account of the unequal contest. If farmers would undertake cultivating flax in small plots their leaf would find a ready sale. In my opinion the flax industry would become established the same as freezing-works and dairy factories; that is, they would be kept going by supplies from small farmers. It would be even possible for the farmers to start co-operative mills if they thought the price being offered was too low. I again wish to stress the point that the best assistance that could be given the flax industry would be to improve the plant and to encourage cultivation by finding out the best way to go about planting; that if planting is not undertaken fairly extensively the industry will rapidly decline. At the present time the industry is working under two outstanding difficulties in this district. One difficulty is the yellow-leaf flax-disease, which is doing an immense amount of damage to the flax all over the Dominion. Up to the present no way has been found of checking the disease. The other difficulty is the blackberry. This plant grows very rapidly in the rich flax lands, and is very difficult to locate on account of the flax being such a tall crop. Already some flaxowners say they will have to destroy the flax crop in order to keep down the blackberry. Should flax be cultivated it would then be grown in rows and cultivated for a year or two after being cut; by this means the plants would all be found and destroyed. The disease would be most likely got over by selecting plants that have immunity to the disease, therefore the difficulties should not prevent cultivation.

To Mr. Sidey: In connection with the planting, growth of flax, prevention of disease, &c., I recommend that experimental works be carried out, and in the meantime all the evidence that could be collected could be obtained; a leaflet could be issued, and the information could be circulated by means of the *Journal of Agriculture*. And, further than that, I suggest that plots should be put in and observations taken. Imported hemp is a different hemp altogether. No doubt this country can produce good hemp, the same as Ireland—in fact, we know it will; they are already growing hemp for linseed. It would be a very good thing, because other classes of hemp would grow on land where flax will not grow. As far as we know, flax wants to be grown on fairly damp land and on good land; but other kinds will grow on poorer land.

To Mr. Hudson: The price of our hemp varies, but there is fairly keen competition for any flax that is for sale. I think fairly definite terms could be offered to farmers extending over a number of years. As to shelter-belts, in four years most of the heads would be about 10 ft. in height. I have grown flax on clay soil. It would grow anywhere in this district, provided the land is properly cultivated.

To Mr. Hornsby: I have heard of the machine in Dunedin which does away with the beating-bars. I have seen specimens of the fibre. The process is evidently a rolling process. I also inspected a machine in Wellington; that is on another line—it is a rolling process, using centrifugal force; it is a rather ingenious idea. I know that stock eat the refuse from the mills; it has fattening-qualities.

To Mr. Veitch: As to shelter-belts of flax, four rows could be planted 6 ft. apart and one row could be cut every year. The shelter would be quite effective in that way. I might mention

that there are certain seasons in the year when flax should not be cut—especially in the fall of the year—that is, in April and May. I run to perhaps a few days in April, and then close down, because I find that if cut in those months a large percentage of the plants die. Strange to say, flax can be cut in July and August without any ill effect on the plants.

To Mr. Forbes: My company has experimented with the plant in a small way; we have a considerable area of flax on which we are working. I think if extensive plantations are undertaken the method of propagation that should be adopted would be from seed or from shoots: the cheapest way would be to establish a sort of nursery and then plant out.

To the Chairman: Experiments have been made by us with regard to the utilization of the refuse. Several ideas have been under consideration in respect to that; for instance, there is distillation, and making use of the refuse as a fertilizer. As to the use of the fibre for fabrics—dress materials, &c.—our experience has been that it is rather hard; it would have to be broken down; and the staple is short. If we could make our hemp suitable for shop-twine it would come into competition with Italian hemp. It takes dye fairly well when finished, but the great difficulty is the short staple. If you "break the gum down" you lose a certain amount of weight, and then you have got a short staple. It is rather harsh for making corn-sacks, but I think something might be done in that direction. We have devoted a considerable amount of money to investigations in connection with the making of twine and rope. I think it would be a good thing if the Government made further investigations in connection with that matter. We have already co-operated, and are willing to further co-operate, in connection with such experiments.

To Mr. Hudson: We have experimented with the cabbage-tree fibre, but I do not think it is worth considering in competition with flax; the fibre is all right, but the product per acre is very much less.

M. A. Eliott examined.

The Chamber of Commerce has asked me to speak on wool-scouring and fellmongery. Wool-scouring and fellmongering sheep-skins already provides employment for a large number of men in New Zealand, and the industry is capable of being considerably enlarged provided encouragement is afforded by the Government, particularly in the direction of cheaper railage. Wool-sorting can be done by returned soldiers and others who are incapacitated from doing hard manual labour. Every facility should be given to scour all suitable wool in New Zealand and to work all sheep-skins in preference to exporting them unworked. Prior to the war the average quantity of wool scoured in New Zealand was 50,750 bales per annum, and about 3,000,000 sheep-skins were fellmongered. For the season 1917–18 under the Government commandeer 107,706 bales of wool and 1,931,116 sheep-skins were worked, and in addition about 4,000 bales of scouring-wool were shipped to Canada and France. This shows that without any increase in the number of scouring-works more than double the quantity of wool—*i.e.*, 107,706 bales as compared with 50,750—was scoured in the Dominion, and at the present time the works and plants are capable of treating all the wool suitable for scouring produced in New Zealand. The reports received from the Imperial Supplies Department, London, regarding New Zealand wool state that the scouring has been well done, and no fault can be found with the treatment and general get-up of the wool. The treatment of this additional 57,000 bales in New Zealand has provided employment for a large amount of additional labour. If pre-war conditions are reverted to this labour will not be required. Prior to the war large quantities of greasy wool, bellies, pieces, locks, crutchings, &c., were bought by speculators, or on direct orders, and shipped out of New Zealand to Great Britain, the Continent of Europe, and Japan, and then scoured in those countries. This wool should all be treated in New Zealand, and it has been proved that it can be done and well done here. The Government might prohibit the export of scouring-wools in the grease, but this course would probably give rise to considerable opposition from the farmers. A better means of encouraging the industry would be by means of rebates on railages of wool purchased for scouring in New Zealand. Prior to the commandeering all the large sales of greasy wool were held in the seaports—Auckland, Napier, Wellington, Christchurch, Timaru, Dunedin, Invercargill—and these centres will be again reverted to when the commandeer is over. Most of the scouring-works are situated at considerable distances from these centres, and this must be always so on account of water-supply, area of ground required, &c. Therefore the scourer in New Zealand who is forced to purchase his supply of wool at the above-mentioned ports is handicapped by having to pay heavy railages from the port to his works, and then back again to the port for shipment, whereas the speculator who buys the wool for direct shipment out of New Zealand does not have to pay any railage at all. Very often the Government are paid for three railages, over the same ground, on the same bale of wool. The farmer pays railage from his country station to the port, the scourer pays railage a second time from the port back to his works (often situated in the district the wool came from), and then a third railage is paid on the scoured wool back to the port for shipment. If the wool is bought by a speculator the Government only get the first railage—*i.e.*, from the farm to the port. Surely, therefore, the Railway Department should in their own interests (and quite apart from the advisability of fostering the industry) give rebates of, say, 50 per cent. on the railage of wool bought for scouring in New Zealand from the ports back to the works, and from the works to the port. This would enable the wool-scourer to compete more successfully with the speculator, thus providing more employment for labour in New Zealand, and giving the Railway Department three railages on a bale of wool instead of one. It will be noticed that the number of skins worked in New Zealand under Government control is about one-third less than prior to the war. This is accounted for (1) by the butchers taking more of their supplies of mutton out of the Government stocks in the freezing-works than formerly; (2) less meat being eaten owing to the high price; (3) owing to a large number of meat-eaters being out of New Zealand. These matters will automatically alter when pre-war conditions pre-

vail, and the arguments used in connection with wool-scouring apply just as strongly to the working of sheep-skins in New Zealand.

To Mr. Forbes: Experiments are being made by Professor Easterfield in grease, and we hope to know in a few weeks what can be done with it. In Bradford and other wool-scouring centres the wool-scourers are not permitted to put the grease into the rivers. The grease, which is termed "lanoline," is really a valuable by-product. I am glad to hear that some parties at Oamaru are working in the matter, and I would be glad to hear particulars of what they are doing. The grease can be handled to pay handsomely, and I believe there is a market in New Zealand for all of it, even if it is not refined.

To Mr. Veitch: There is nothing secret in the process of extracting grease from the liquid in which the wool is washed. In nearly all cases fellmongery and wool-scouring works are situated a long way from the ports, in consequence of the quantity of water required for the works and the high price of land near the ports.

To Mr. Craigie: You extract, roughly, a third of the weight in scouring, and therefore in shipping Home you would save a third of the freight-charge. If the Government said that all the wool was to be scoured in the country I do not think there would be any difficulty in getting labour, especially after the war. A large amount of the work such as sorting, can be done by women or by men who are not capable of doing hard work.

To Mr. Sidey: I think it would be wise for the Government to prevent wool with 30 or 35 per cent. of grease from being exported. It would not pay to scour certain classes of wool in New Zealand. In regard to the railway rebate I suggest, I think there should also be a rebate on skins brought back to the fellmongery works. The work on the skins can be done and well done in New Zealand.

To the Chairman: The Government should have scientific research made into the saving of wool-grease from the liquid. It would not be more economical to have the works situated near the ports when you take into consideration the extra amount you would have to pay for the land, and the question of water-supply. In my opinion, machine-drying is infinitely superior to sun-drying. Reports received from the Home Government show that the wool scoured in New Zealand is equally as well done as wool scoured in any other part of the world.

WILLIAM COOK, of the Palmerston Cooperage and Butter-box Factory, examined.

In regard to the supply of white-pine timber for butter-boxes, I consider that white-pine will be a thing of the past very soon. In twenty-five years there will be little of it left in the Dominion. I estimate there are about 1,400 or 1,500 acres of bush cleared every year to obtain the requirements of the North Island for butter-boxes. Other timbers are also disappearing. No time should be lost in making provision for the future by planting quickly-growing timber-trees, such as the yellow poplar, which is most suitable for butter-boxes and cheese-crates. Attached hereto is an illustration of a poplar recently cut in America. This tree produced 4,500 ft. super. of first grade—that is, perfectly clean timber. The poplar is noted for producing clean timber, free of odour. I estimate that 100,000 ft. of millable timber can be obtained from 1 acre of land in about forty years. The same can be done with *Pinus insignis*—perhaps not quite so much timber per acre, but thirty or thirty-five years will produce good millable timber very suitable for fruit and packing cases. At present thousands of acres between Paekakariki and Wanganui could be used with great advantage to the surrounding districts. Landowners should be exempted from all taxation on plantations of timber. Also, all native-timber areas should be dealt with by license only, and exempted from taxation. Otherwise there is not sufficient inducement to hold land with timber on it. In fact, the owner cannot afford to hold, but must obtain some return from it by felling and grassing. Another great saving in our timber can be effected by the Government compelling sawmills to install modern bandsaw mills. These mills effect a saving of 25 per cent. in sawdust over the large circular saws used in New Zealand. The only circular sawmills allowed in New Zealand should be in the small isolated areas of, say, from 50 to 100 acres, on which a portable circular mill can be erected in a few days. The Government could lend to the sawmiller money to install band-mill machinery, and technical schools could instruct young men in the art of bandsaw tensioning and filing, as this calling commands high wages—in some cases £400 a year. In America there are very few circular saws used.

To the Chairman: The poplar we grow in New Zealand is different from that in the photograph I produce. I have never seen in New Zealand a tree like the one in the photograph. I have seen them in America, where they are very numerous in the parks.

To Mr. Sidey: I think *Pinus insignis* timber could be treated and used for butter-boxes. It is used for confectionery-boxes. It would not be suitable for butter-boxes without treatment.

F. J. NATHAN, of Joseph Nathan and Co. (Limited), examined.

I appear to put in a plea on behalf of the dairy industry for scientific encouragement by the Government. We have nobody to go to who possesses scientific knowledge about our industry. Everything is a matter of our own research. I have the greatest respect for the men in the Department of Agriculture, but the Department consists largely of men who were managers of factories only a few years ago. That, of course, does not apply to Dr. Reakes. We have found on putting in an application for advice that a man comes along who was at one time our manager. The Government do not do what even local bodies do in sending officials Home for information and experience. Why not give Mr. Cuddie or some other officer a cheque for £1,000 and send him Home to make research? Or, why not get experts from Home who have gone deeper into

the whole subject than any of our men have done? Our firm has imported a chemist, and if we want to go still deeper into the matter we have to consult people in England. There is no one in New Zealand whom we can consult. The dairy companies in Taranaki are sending two men Home to find out more about the sugar-of-milk and dried-milk processes. Then it seems foolish that this country has to send its casein to other places, where it is used in the manufacture of different articles. Why is that not done here? We cannot gather knowledge here as to the proper method of treating the casein. For much of the information we have on different matters we are indebted to American or other papers. Again, we were promised that for the benefit of our factory-managers a dairy school would be established, but as soon as the politician got on to it we were left. It seems that no Government is strong enough to establish a dairy school in one place owing to opposition from other places. The Department of Agriculture ought to say that the dairy school is a necessity because the managers require scientific education, and fix upon a central place; but it seems we have never had a Government strong enough to do it. It is a serious want. I do not care whether you put the school at Marton or anywhere else, but it ought to be provided. Then, in the breeding of plants there is nobody here whom one can consult. There is no plant-breeding in this country, though there is a little plant-selection, and the Government do not seem to be prepared to ask any one to come out here to undertake it. There are any number of men at Home who could be brought out. We have been begging for the dairy school to give our men a chance, because the quality of the butter and cheese of New Zealand is not what it was a few years ago.

To Mr. Sidey: The establishment of a Board of Science and Industry would meet my view if the scope of its operations was wide enough.

To Mr. Veitch: We urgently require a dairy school, which would include a department of research. We have sent some of our materials Home to obtain advice concerning them. If we want a report on the milk-powder we are making it has to go to London, and they tell us what mistakes we are making. There is no one in New Zealand to appeal to. The depreciation of our butter and cheese is due largely to the want of care and attention in connection with the milking-machines. I do not think home separating has improved things, but the milking-machines are more to blame than anything else. We want inspectors to look after the milking-machines, but that, of course, means more expense to the Government. We get the best and the worst milk from the machines. If a man who understands the machine gives it good attention there is nothing to complain about. I strongly urge the inspection of farmers' milking-machines.

To the Chairman: I admit that farmers' dairy yards have greatly improved in recent years. I wish to add that all that Mr. Cuddie told the Committee in Wellington with regard to the yield of cows is correct. We ought to get double the income from our dairy herds with the same amount of capital and the same amount of labour. It is only a question of education again.

E. H. Crabb examined.

I have been asked to speak on afforestation. There is scarcely an industry that is not affected by the supply of timber, and if it becomes dear industries are handicapped in competition with outside industries. Timber is a raw material, or, in other words, is an absolute necessity for the carrying-on of nearly every industry in New Zealand, and the supply of it is one of the most important matters concerning industry. At present the best New Zealand experts state that thirty years will see the exhaustion of the native supplies of timber in the Dominion, and it is a certainty that unless the matter is taken in hand in a comprehensive way the amounts now being planted will not be sufficient to keep New Zealand going more than a year or two longer. The timber industry literature from America shows that they are afraid of the exhaustion of their supplies. The Oregon pine, which in the past has caused our sawmillers so much annoyance, is only a passing thing, and within ten or fifteen years its cost will go up very largely, and we will be dependent on the Manchurian forests for timber that we ought to grow ourselves. I wish to take up the question of the plantation of the sand-dunes running from Paekakariki in the south to Patea in the north, and embracing an area of 60,000 acres, approximately. Between the Rangitikei and the Manawatu there is a portion of these dunes let as small grazing-runs of about 11,000 acres. In addition to that there are large quantities of land of very little value from a grazing point of view which are available for the same purpose. Some thirty-two years ago the Government, for the purpose of stopping the sand-drift which was threatening the Palmerston–Foxton Railway, planted an area adjoining the road and the railway between Foxton and Himitangi, and at the present time this is covered with a growth of timber varying from 3 ft. in thickness downwards, though it has not been properly and scientifically treated. The timber from this area, if sold now, would bring in far greater sums than the total rent for the period would have been, and if proper care were given to all such plantations we could turn what is at present a waste into a national asset, and find employment for large numbers of men who are unfitted for the heavier rural and other industries. This is of great importance just now, when large numbers of such men have returned from the front. The trees planted there were pines. I believe they were of the variety of *Pinus insignis*. There is practically enough land there to employ a couple of thousand men for the next ten years in planting such areas, and there would then be constant employment for large numbers in the proper scientific treatment of the same.

To Mr. Hornsby: As to freeing from taxation lands with plantations of timber, I have this to say: This is a national system, and private doles to enable men to plant is only trifling with the question, and will be of no assistance whatever in solving the problem.

Witness: As to freights on coal and other things, coal of native origin is carried much cheaper on the railway than coal coming from outside the Dominion, and by this means an unfair discrimination is made in favour of the ports as against inland towns. A ton of coal of native origin from Wellington to Palmerston costs 9s. 6d.; from outside the Dominion the same coal costs 12s. 3d., plus two 10 per cents. in each case. If it is thought necessary that a protection should be given to the native-coal industry this should be given in a proper method by means of the Customs tariff, and not by means of the railway tariff in a way which discriminates between one portion of the population and another. The same remark applies to hardwood and other timbers, which bear a railway rate 50 per cent. greater than that of native timbers.

The Chairman: What do you think the tariff ought to be?—That is not my business: it is a matter for the Traffic Manager. My point is that it should be one plain rate for the whole Dominion for similar classes of traffic. I have also been asked to bring under the notice of the Committee the discrimination shown in the matter of motor-cars. £6 3s. 4d. is charged for a car in a case, whereas for a car on wheels, weighing precisely the same and taking up practically the same truck-space, the charge is £2 12s. 6d. Further, there is great need of electric power in the district. Nothing goes further to ensure the starting of new industries—and this is borne out by the experience of Christchurch with Lake Coleridge—than the provision of a prime power, which is available in small or large quantities at a cheap rate, and the futility of which renders it possible to distribute it in such a way that it can be used without wasting. This ideal power can only be supplied by means of large hydro-electric installations, such as the Government are at present contemplating, and in the judgment of my Chamber the Committee has no more important matter before it than the stressing of the need of such provision. This applies to every industry in the land, whether town, urban, or rural, and at the present time here in Palmerston there are numerous small industries which would be started and others which would be developed if cheap power were available. Especially have I been asked to stress this point with regard to the electric traction which is possible where such installations are available. Absolute evidence on our roads proves that the cost of running a 2-ton vehicle by electric power as against petrol results in a saving of over £100 a year, and members can see what a great help this would be to reduce costs, in the rural industries especially. Further, we are at present paying an economic tax, chiefly to America, of nearly £1,000,000 for petrol and petrol vehicles, a very great portion of which could be kept within the Dominion to form a further fund for the development and upbuilding of other industries, and to give employment to numbers of our citizens.

J. M. JOHNSTON examined.

I wish to draw the attention of the Committee to the fact that European flax is bringing an enormous price in the market, standing at £300 a ton, and yet there has been no endeavour, so far as the North Island is concerned, to cultivate hemp. In the South Island it has been done, I believe, and the fibre has been burnt. It is lamentable that such a thing should happen, because if it is worth £300 in the Irish market it could be put to advantage even if baled and sent Home dry. I think it should be the duty of the Government to make experiments to prove to the country whether it is advisable to grow European flax here for the fibre as well as for the seed. I believe some people make a good thing out of it in the South by making oil-cake and so forth. The land is so rich in the North Island that we would probably get, by growth and cultivation, a better class than can be got from any other part. There will not be any flax available from Riga and other flax districts in Europe for some years, and it is probable therefore that the article will continue to command a high price. Flax could be grown here and utilized here, and thus create another industry. A large amount of linen is imported into this country, and the manufacture of linen might be made a home industry. I wish now to refer to Palmerston North as a distributing centre, and to point out to the Committee the amount of good land round about that is not producing what it should produce if cut up into small areas and utilized for dairy purposes. I have a large map here to show the land in the district. [Map produced.] We are in the centre of seven termini, and there is no other distributing centre in New Zealand with the same area of rich land surrounding it. The Land Purchase Commissioner does not know the value of the land. There are estates here that will probably be cut up. Some land has been sold at £80 per acre, but the values are increasing, and for some of it £100 per acre is now being asked.

The Chairman: You say that the Land Purchase Board is not competent to assess the value of land in this district?—That is my opinion. The valuers ought to be practical men who know what the land is worth. Land in this district that can carry a cow to the acre will give an idea of what that land is worth, and what the country ought to be doing. Instead of breeding sheep it should be used for dairying.

In regard to the purchase of land, do you suggest that the Land Purchase Board should be strengthened?—I think there should be three practical men in each district to advise the Land Board. They should be reliable men who have had experience of the country, and are capable of giving advice to the Land Board. There should be no Land Purchase Board, but the Land Board should deal with it.

Witness: I think the Committee ought to recommend a geological survey of the whole of this district. A geologist from Melbourne came here about eight years ago because it was said there was platinum to be found in the locality. Some of the stone was crushed in Melbourne, and traces of platinum were found. The man came back and was on the hills for six months, but the stuff could not be found in payable quantities. I hope a thorough geological survey will be made not only of these lands, but of the whole Dominion where there is a prospect of getting minerals.

To Mr. Forbes: There is a good deal of aggregation going on, principally in the back country. There is plenty of land around here that ought to have been acquired for soldiers. The present prices are rather high. The Government might give up to £80 per acre, but beyond that it might not pay. If a man is capable of carrying on intense cultivation, and is a practical man, it might pay to give up to £100.

To Mr. Hornsby: As a practical man I believe it would be possible by statutory enactment to limit the area a man should hold. It could be done through the Land Registrar. I have not communicated with the Lands Department with regard to the cultivation of flax.

WELLINGTON.

WEDNESDAY, 21ST MAY, 1919.

W. M. SINGLETON, Assistant Director Dairy Division, Department of Agriculture, examined.

According to the last census of enumeration, 31st January, 1918, we had in the Dominion 793,215 dairy cows. It is difficult to obtain a satisfactory estimate of the average yield of the dairy cows during the last couple of seasons, principally through some of the produce remaining in various stores which were not used prior to the war. For the 1916–17 season we estimated an average of 161·8 lb. of butter-fat per cow. For the 1910–11 season the average was 142·1. We have had in those six years an increase in the production average per cow of 19·7 points of butter-fat. For the year 1916–17 it is estimated that that increased yield was worth to the Dominion in exports £1,276,000. Besides the increase in the exports stated there was the additional value to the Dominion in the way of by-products—whey and skimmed milk utilized to feed calves and pigs. We believe that, considering the fact that this country has not been breeding dairy stock for many decades, this improvement can be considered satisfactory when compared with other dairy countries. Factors in connection with this increased output of the Dominion from our dairy herds include not only this improvement in yield, but an improvement in the pastures, feeding, &c.; but these are items that do not come within the scope of the Dairy Division's work. We are devoting our attention to the improvement in the yield. In the earlier days of the Dominion the holdings were larger in many districts, and the beef-production was more dominant at that time. The Shorthorn was the predominant breed in those days, and, in fact, is the predominant breed to-day. The foundation of practically all the New Zealand dairy herds is the Shorthorn cow. In the earlier days the breeding was done on perhaps better lines by the station-holders. They were men who could afford to import good stock, and who recognized the efficiency of breeding. In decentralizing the work there come the smaller dairy-farmers, and it is more difficult to get them to recognize the necessity for special breeding. Some of the Shorthorn breeders are, however, recognizing that if the Shorthorn is to retain her position they must segregate the milk strains; and the Milking Shorthorn Association has been formed very largely for the purpose. In a comparison between the 1918 statistics and the 1908 statistics we find that there has been a considerable evolution going on in connection with our dairy cattle. The Shorthorn cow is to some extent giving way to the more "special purpose" dairy breeds. It is recognized that the "special purpose" dairy cow will produce butter-fat cheaper than will any other dairy cow; and some of the figures which were got out in the United States are applicable to that point. They find in the United States that the "special purpose" dairy cow will produce at a ratio of 6 as compared with milk and beef type at 7, beef and milk at 8, and beef at 9. So the dairy cow will produce butter-fat considerably cheaper than any other animal. In Taranaki to-day we have perhaps the greatest average production for the dairy cow as compared with any other land district in New Zealand. This may be partly due to the grass, but is also, I am convinced, partly due to the breeding. Taking the figures for the last ten years, we find that purebred Shorthorn bulls in the Taranaki District have decreased 90 per cent., and that purebred Jerseys, Ayrshires, and Friesians have increased 60 per cent. Taranaki is a district of high land-values; and statistics show that the "special purpose" breeds have a tendency to follow the districts of high land-values. In Ayrshire, Jersey, and Friesian purebred bulls Taranaki has 18 per cent. of her total; Wellington, 11 per cent.; Auckland, 5·6 per cent.; and Otago and Southland, 4 per cent.; and I believe that I shall be correct in saying that the yield of the average dairy cow will be in the same relation. As regards the different land districts, the figures for Jerseys, Friesians, and Ayrshires are—Auckland, 33; Otago and Southland, 31; Wellington, 64; and Taranaki, 134. When we consider that the Shorthorns are practically the foundation of our average dairy herd, you can see the trend of breeding in the various districts mentioned. My suggestion is this: that if work on the dairy farms is to be efficient it must be linked up with the "special purpose" dairy cow. I believe that the figures I have just given you are a fairly sound indication of the truth of that statement. The points which are usually brought forward in connection with the dual-purpose cow are: that the calves are worth more money for grazing purposes, and that the carcase of the cow when she has finished her life's work is worth more money. I have been looking into some figures in connection with feed for the maintenance of cattle, and authorities go to show that for every 100 lb. of live weight that the animal carries more than is necessary, the feed used to enable that weight to be carried is in the neighbourhood of that required for about 20 lb. of butter-fat; in fact, it would be more than that on certain kinds of feed—it will represent about 18 lb. to 20 lb. on proteins, and in the neighbourhood of 35 lb. for carbo-hydrates and fat. I contend that the estimate of 20 lb. is on the low side if anything. That is for the year. If you take butter-fat at 2s. a pound, that would be worth £2

sterling; and if a cow lives from eight to ten years there is £16 or £20, which would be more than her value for killing, even if you had to throw the "special purpose" dairy cow out for nothing. It seems to me that the great desideratum in connection with the improvement of dairying in New Zealand is the improvement of the breed. Only 13 per cent. of the bulls in New Zealand are purebred, and many of these bulls may be used for one or two years, and may be disposed of before they have proved themselves either good or otherwise—that is, before their progeny have proved themselves to be good for dairying. The discovery is made too late. There is also a difficulty in connection with the bull calves. There are too many bull calves—purebred bull calves—that are never reared. All good purebred calves of dairy strain should be saved for use in the Dominion. It is ten years since we started our association cow-testing to assist in the culling of the poorer class of dairy cows. That work is growing, but it has not made the development that we had hoped. In the year 1917–18 there were treated about 24,000 cows. Owing to the more stringent labour conditions last season only about 17,000 were tested, but we are anticipating an improvement in that respect next year. There are many figures now extant showing the benefit to be derived by testing the herds, and in conjunction with that, of course, the better breeding. I will just give you a couple of instances. One man improved the production of his herd from an average of 258 lb. of butter-fat per cow to 309 lb. per cow in four years. Another man improved the average production of his cows from 215 lb. to 282 lb. in six years. We could get more outstanding figures than those, but those figures illustrate the constructive work. Just the other day we had a letter from a dairyman, and his statement was to this effect that he can now produce more milk from twenty-five cows than he could formerly get from fifty-four cows. This association cow-testing is not only assisting the dairy-farmer in culling his poorer cows, but it creates an incentive to pure breeding. It has been found that the best method to adopt is to use purebred sires whose dams have butter-fat records and mate them with the better cows of the herd, and save as many of the heifer calves from them as possible. The work of the association has led up to a demand for butter-fat record bulls, and to meet that demand we have got into touch with the breeders of Friesians, Jerseys, and Ayrshires, and they have gladly co-operated with us in authenticating the records of the purebred stock. We have issued over a thousand certificates. This enables the dairy-farmer to buy over a bull that has a dam with a butter-fat record, and it gives the dairyman more assurance that the heifers which he has reared will develop into dairy heifers with a productive capacity that is nearer his ideal. This work of testing purebreds is going on very satisfactorily indeed, and I think it is safe to say that, like Tennyson's brook, it will go on for ever. During the 1917–18 season we had 118 breeders co-operating with us, and last season we had from 155 to 160 breeders on our list. I anticipate that there will be a very considerable increase next season. It seems to me that this work has proved its efficiency. We have figures which show that the daughters of bulls whose dams have some of these butter-fat records have produced in their very first season as much butter-fat as the dams did as mature cows. It is therefore reasonable to expect that those daughters will at maturity be 50 per cent. better than their dams. This work has also had another influence: it is assisting the breeders themselves in selecting their best strains, and it has brought home to some breeders that they were disposing of their best strains. We contend that the stud farm is the place for the best; we must keep the fountain-head as pure as possible. The importation of animals is blocked from Australia and the United States, and these are two sources from which we have hitherto been drawing. Under these circumstances it seems to me that we should develop our local strains of the best quality. I think I have pretty well covered the ground on which we are proceeding in our usual work.

To Mr. Luke: In some cases the price might be a bar to farmers purchasing the better class of bull, but I think there would be market for all these sires if you could only get the necessary information to the right class of farmers. The Department does not definitely help the small farmer in giving him information as to selecting a sire or a special class of cow, but we assist in authenticating the records. I think if the farmer uses the assistance which is available to him he will be in a position to make a wise selection in respect to his stock, &c. I do not think we are approaching such a state of things in connection with the dairy business of this country that the supply of milk to the towns and cities for local consumption is being jeopardized. So far as the export trade in butter and cheese is concerned it is a question of parity of price; the farmers will send their produce where it pays them best.

To Mr. Hudson: In some cases small agricultural shows in the country may assist in improving the breed of stock: some of the shows have classes for purebred cows with butter-fat records. It seems to me that the inducements offered now are bringing forth the best types of stock. Farmers in outlying districts can club together to buy good bulls. You can get bulls at a reasonable price; and these people are getting good prices for their produce, and there ought to be no difficulty in purchasing good bulls at a price within their range. The Department offers a certain number of bulls for sale every year. If the farmers wish to buy from local breeders there are the records available, and we can supply them with the names of the testing breeders in any district. If they accept the information now available to them they are on a fairly sure foundation.

To Mr. Craigie: In regard to the increased production per cow, I cannot give the figures as to how the returns here compare with Denmark. The more comfort you can give the cow in the winter or in bad weather the better the yield. It seems to me that what is needed in our dairying districts is perhaps more energy rather than more information. I am convinced that the reduction in the number of cows undergoing tests last season was very largely due to the labour shortage. In the future I anticipate an improvement in that respect. In many dairying districts, owing to the stringency of labour, farmers have been doing more work in recent years than what may be considered fair. If more labour of the right class were available it would result in increased production.

To Mr. Poland: As far as our own division of the Department is concerned, our special work lies in testing, in connection with crossbred herds, and in connection with the breeding of special strains of purebreds, with the object of making those strains more popular. There is no doubt the Government's action popularized the Friesian, but we have not imported any for some years. We are doing all the testing of the purebreds, co-operating with the breeders' associations on that line: our officers do the testing of the purebreds in the morning and evening, and do the work in connection with the associations' samples during the day. We started cow-testing associations in some districts, hoping that the farmers in those districts would keep them going; but it has been rather difficult to keep the interest in the work maintained. We have perhaps not been making that campaign as fierce as it might have been made during the last two years owing to the war and the labour conditions. We disliked asking the farmer to do more under the special circumstances; but we are aiming at getting an increased number of associations going for next year. It should pay for officers to personally explain to farmers the advantages of improving their dairy herds. The head of the Dairy Division and myself have been discussing the matter along the same line, and we have practically decided that we shall ask one of our officers to operate along that line in one of the backward districts as regards testing this season; but there does not seem to be the result that might have been expected from meeting the settlers at the annual meetings of dairy companies, &c. I think the best place to meet the farmer is on his farm. As regards the average production per cow, taking only the amount of produce graded last year as a criterion, the Auckland Province would run about 126 lb. butter-fat as against Taranaki's 166 lb. I believe that that is largely due to Taranaki having the "special purpose" cow; and, of course, some of it is due to the difference in feeding.

To Mr. Luke: We have trouble in dairy districts with abortion and mammitis. I cannot say whether the diseases are increasing; that is a question that comes under the Veterinary Division.

HERBERT A. HUGGINS, representing the Postal Department, examined.

The automatic stamping-machine was introduced on the 1st January, 1905. It is a machine which places on letters and telegrams, and also on receipts requiring a duty stamp, an impression which the Government, by Act, accepts in lieu of a stamp. It was originally authorized for a period of three years. That period has since been renewed from time to time in three-year periods, the last period expiring on the 31st December last.

Mr. Hornsby: Is that Mr. Gilby's machine?—Yes. It is a most ingenious contrivance. In regard to the machine the Department takes up a neutral position. It recognizes that the machine has been a convenience to the mercantile public, and therefore overlooks various defects that have from time to time arisen. From its inception the machine has been a continual source of trouble from a mechanical point of view, and the company, in order to meet the Department's requirements, has from time to time altered the construction of the machine—in fact, the present machine is about the fifth attempt of the company to meet the Department's requirements. There are approximately some 520 machines in use in New Zealand, according to the Department's records.

Is the machine now thoroughly efficient?—The latest form has been subjected to very severe tests by the Department's mechanical experts and by three officers specially acquainted with the machine and its requirements. With one slight exception, which the experts hold is not likely to be used against the Department, the machine has met with the Department's approval. I might say that when renewing the agreement three years ago the company, on account of the Department's objections to the older style of machine, entered into a bond to replace all then-existing machines at the rate of 140 in the first year and 100 each year thereafter, as the Department had advised the company that the licenses for the issue of the machines would not be granted unless they were replaced. Each machine has to be specially authorized by the Department before its installation.

Mr. Gilby claims that the machine is now, humanly speaking, perfect?—With the exception of one defect, of which the Department is aware and which it is not desirable to make public. We have discovered a slight defect, but I think the chances are about a million to one that it will be used. I say that in fairness to the company. From the Department's point of view the objections to the machine are these. Members of the Committee will realize that in dealing with letters posted there is no system which can equal the affixing of a postage-stamp. It obviates the necessity of accounts. Further, by the coloration of the stamp the clerk knows that the right amount is affixed. The absence of colour in the automatic machine is a considerable defect. In the large centres especially the clerks are working at a considerable rate, and they have not time to closely examine each of the black marks made by the automatic machine. The colour of the stamp, however, is seen at a glance. Then, almost the whole time of several clerks is occupied in going round making out accounts for the machines in use, in seeing that the accounts are paid, in accounting to Wellington for the money, and so forth. It is estimated that the extra wages involved on account of the machines being in use, in lieu of postage-stamps, approximate closely to £1,200 a year—that is to say, the Department is losing that sum. The Department, in taking up an attitude that is neither aggressive nor otherwise, is acting extremely fairly to the company. I personally have been associated with the relations between the company and the Department since the machine was initiated, and I am in a position to speak definitely on these matters.

Mr. Luke: What fee do you charge the different commercial houses?—The machines are not ours.

I thought you charged a fee. How do you get reimbursed for the £1,200 per annum?—That falls into our expenditure.

I suppose it would pay you better to sell the stamps?—Yes, but the Department always looks also at the point of public convenience. We realize that the machines are a great convenience to large firms.

Dr. A. K. Newman: Is it much of a convenience?—The firm which installs one of these machines has no real necessity to keep postage-accounts. If all letters and telegrams are put through the machine it automatically shows the amount expended on them. For a firm, it is also a check on fraud. I think the advantages are fairly considerable in a large commercial house. Some firms put from £20 to £25 per week through the machines.

Mr. Hudson: Would it not be fair to make a slight charge for the machines to meet the expenditure?—I am afraid we would have the public up in arms. We have them up in arms now because we do not allow them commission on the stamps put through the machines.

The Chairman: That is, at any rate, a slight saving you make?—Yes; it is a saving of commission.

Mr. Hornsby: Do you put that saving of commission against your loss of £1,200?—It does not affect our Department: it affects the State. Poundage is only allowed on the purchase of stamps when the amount is £20 or over, and there are few firms who purchase stamps to that amount. Only the banks and the larger commercial houses purchase at that rate.

Do you think the Department might see their way to take over the machines?—The Department has carefully avoided having any commercial relations with the holders of the machine. If anything goes wrong with a machine, or if any question arises, the Department says, "It is none of our business; you must look to the company." We refuse to interfere. In regard to taking over the machines, the company have replaced only 136 of the machines they had to replace, consequently there is still a large number of the machines that the Department cannot allow to exist for any great length of time. The Department could not think of taking over those machines under any circumstances. In fact, the agreement now being drawn up provides that if these machines are not replaced before the end of 1920 the licenses for them will be refused. It is within our knowledge that the machines are not such machines as should be licensed. Then, the Department has no desire to go into the business of the manufacture and sale of the machines, even of the latest type, with no benefit to itself. The present position is permissive. The Department has no objection to the company selling to merchants machines which will benefit the merchants. The other side of the question is that the Department does not wish to enter into a business which is in a way against its own interests, or to buy out a company which is in liquidation.

The benefit really accrues to the people who use the machine?—Exactly.

The Chairman: Has the Department had under consideration the matter of taking over the machines?—No. It was mentioned to me that that question was raised in Christchurch, but there has been no proposition to the Department to take over the machines.

If a proposition was made on business lines do you think it would be worth considering?—No, because the Department does not want the machines. If the machines went out of existence to-morrow the Department would carry on by affixing postage-stamps—a better way than by the use of the machine.

Have you read the statement of Mr. Wanklyn, of Christchurch? He states that stamps can be used more than once, and that you can hardly detect whether they have been used?—The stamps which are most in use have not been manipulated in that way. The only stamps manipulated by removing the marks are stamps of high value, and the Department has now taken measures to ensure that every stamp is perforated with a punch.

Does that apply to stamps on mercantile drafts?—No. I can only speak of the stamps which pass through the Post and Telegraph Department.

You know that the Government are concerned in connection with stamps on drafts and that the banks affix those stamps. What check have you that the same stamps are not used time after time?—As far as I am aware, the Government has no check. It does not concern our Department. I think, however, it is unlikely. Our Department is investigating the question of the reissue of stamps very closely.

What do you think of these stamps [photograph of stamps produced]?—I could not tell without photographing them. If each one was enlarged to the size of the card (4 in. by 3 in.) then, no matter how carefully they had been cleaned, you would see if they had been used.

Would they not pass muster with the ordinary official as unsued stamps?—These are all high-value stamps. I think there is only one of them that would pass muster with our officers.

Although they bear the evidence now, it is only the photographic reproduction that makes it visible?—There are marks on the surface of the stamps in this photograph that any of our officers would immediately challenge.

That is, they would challenge the photograph, but not the stamp itself?—I assume that the slight markings on the photograph are also on the stamps.

Dr. A. K. Newman: When stamps are marked by machines, is there not a great deal of leakage?—If high-value stamps are put on the machines there is greater danger of the Department being defrauded than there is by the cleaning of stamps. I may say that the cleaning of the stamps on the card was done in Germany.

You admit that a danger exists in using the machines?—In the last pattern of machine duplication or fraud in connection with the impression is negligible. I would not say that unless I was thoroughly convinced of it.

It has been suggested that there has been a good deal of fraud going on in connection with the machines?—I do not think that is the case. Of course, like every other mechanism, the machines get out of order. When a machine over-registers it is reported to the Department,

And what about the reverse case?—There are a few firms in New Zealand who are honourable enough to report when their machines are recording the other way, but whether there are firms who do not so report I cannot say.

The machines now in use may be subjecting the Government to considerable loss, then?—Possibly.

The Chairman: With regard to the postal returns of stamps used per head of the population, it is claimed by the people who control the machine that since its adoption the rate per head has increased very considerably?—That has nothing to do with the machines. I think they should substantiate such a claim.

In Canada the returns are 8s. per head, in America 10s. 6d., and in New Zealand 19s.?—New Zealand has always been higher than other countries in the matter of letters and telegrams per head of the population.

You object, from a departmental point of view, to the Government taking over the machines: what about the convenience to the users?—The Department has licensed machines that it does not think should remain on the market, and in that way, among others, it has studied the convenience of the users.

D. CUDDIE, Director of the Dairy Division, Department of Agriculture, examined.

The Chairman: We want some information in regard to casein. You know that the company in Wanganui claims the patent rights in the manufacture, and the Committee want to know if, in your opinion, those rights are absolute, or whether casein can be manufactured independently of those rights?—It is not for me to say whether the rights are valid or otherwise: that is a matter for the law. It is a pity the patent was ever granted, and it need not if steps had been taken in time.

Is it not a fact that the process is a German one and that the German owners were made to forego their rights, and the company then patented the same process?—I do not think that is correct. The process was evolved in Denmark, and was used there for some time. Subsequently a man named Neilsen came to New Zealand; he was a casein-merchant, and he patented the process. I do not think it is a German process. It is a simple process: it only means the souring of the milk. There are other ways in which casein can be manufactured apart from this particular method.

Mr. Hornsby: Did the Germans hold the patent rights before the war?—It was a German representative who took out the patent rights in New Zealand.

The Chairman: The same patent?—Yes, representing a German firm who were buying the casein.

The invention was a Danish one?—Yes.

The Germans collared the Danish patent, and now the New-Zealanders have collared it from the Germans?—I understand the firm now owning the works secured the patent rights from Mr. Neilsen.

Do you know that this company is claiming a royalty of £2 10s. per ton on manufactured casein, subject to that casein being sold through Messrs. Joseph Nathan and Co., and a royalty of £5 per ton if sold in the open market?—Yes, I understand those are the terms on which the present company will allow their process to be used.

Mr. Hornsby: Is not that in violation of the law as to interference with trade?—I think the whole thing will depend on the patent rights—whether they are sound or otherwise.

Mr. Craigie: If the Germans had the patent rights for New Zealand were not those rights quashed when the war was on?—At the time of the war the patent rights were owned in New Zealand by the New Zealand Casein Company.

Mr. Luke: Were not the German rights confiscated to the State and not to any firm?—I am not clear on that point.

Mr. Hornsby: My contention is that the company insist upon the stuff going through Messrs. Joseph Nathan and Co., and if it does not they put a penal rate on. It seems to me fairly clear it is a contravention of the law in regard to interference with trade?—When the patent rights were applied for we took the matter up in ample time, and brought it under the notice of the National Dairy Association, by personal interview and by letter, and I was assured that opposition would be lodged against the granting of the patent. Unfortunately that was not attended to. The patent has been in existence for seven years, but I do not know how long it has to run.

Dr. A. K. Newman: If any one wishes to make casein can it be done by another process?—Yes, but not so well. Not only is the next best process not so good, but it is more expensive.

Mr. Luke: For the freer development of such an important industry would it be desirable for the Government to acquire whatever interests there may be privately held and hold them for the State?—That would depend on the value of the industry. The total production of casein for the year was 486 tons.

Dr. A. K. Newman: What is it worth a ton?—The latest quotation, received some weeks ago, was £64 per ton in London.

The Chairman: The industry, of course, has been in its infancy. It has been under a cloud on account of the monopoly. It is a matter that the farmers in certain districts are taking up?—Yes. This year the output has increased by 100 tons.

In the evidence at Wanganui it was stated by Mr. Holst that "since the war the German rights have been extinguished, and we have the whole benefit of the rights." He said, "We hold the patent rights, but anybody can use them." We understood they could be used without payment, and now we find there is a heavy royalty?—I would like to explain that rennet casein can be manufactured free of any restriction whatever, but the demand for that particular class of

material is not very great. It is used mainly in the making of milkstone, combs, lead-pencils, knife-handles, and so on. Recently we sent Home a cable asking for inquiries to be made as to the demand for this class of casein, and it may help the people in Taranaki over their difficulty.

Mr. Luke: What is the name of the casein?—Lactic-acid casein. It can be made in another way by using sulphuric acid, but it is rather expensive.

Mr. Craigie: Have you any recommendation to make in regard to the development of the industry?—I do not think that anything better could be done than to make the process free to the people in some way. How that is to be done I do not know.

The Chairman: A royalty of £5 per ton on the finished product would almost kill anything?—It is practically prohibitive.

You have sent an expert to America in connection with the production of sugar of milk. Have you any information from him yet?—He is going away at the end of the month.

Mr. Luke: There ought to be no vested rights in the manufacture of casein?—It should be as free as the manufacture of butter and cheese, or any other dairy-product.

Now, on another subject, what is the position of the herds in New Zealand in regard to tuberculosis or other animal-disease: has that trouble been countered?—That matter could be better dealt with by the Live-stock Division than by us. Generally speaking, it is a well-known fact that the dairy stock of New Zealand are healthier than in any other country.

The feeling abroad is that there is a lot of tuberculosis in New Zealand?—It is generally understood that the percentage of animals suffering from that disease in New Zealand is small, and compares favourably with other countries. Dr. Reakes has in his possession statistics showing the percentage, and I know it is very small indeed.

Mr. Poland: Is it increasing?—I understand it is not increasing.

Mr. Luke: Is the domestic supply of milk in New Zealand likely to be jeopardized by the manufacture of special food products, taking the Glaxo industry as an instance?—I do not think that will be the case, because where these industries are carried on a large supply of milk is required at one centre. Generally speaking, the land near the big towns is not altogether suitable for that class of dairying.

Would you be surprised to know that the Wellington City Council has to go as far as Hawke's Bay to get milk for the purpose of the local supply?—It is a long way to go, and I was not aware of it.

The operations of the special-food concerns are coming closer to the towns?—It is a question, I take it, that will be settled by the price paid. If the dried-milk factories are paying more than the cities for the milk then the milk will go to the factories. The reverse would also be the case. As far as our experience has gone we think there is little likelihood of the factories being established near the towns.

Can you suggest conditions that might be set up to ensure the towns obtaining the necessary milk for their populations?—Do you mean on an ownership basis?

I refer to the matter of discrimination in favour of local requirements?—I take it that that gets back to the question of price.

Should a municipality not have the first claim on the milk obtained within a certain area of it, to make sure that that milk would not be sent overseas or even put into cheese?—Have a prior right to it?

Yes, it would be collected in the towns. Could it be worked?—It seems to me it presents a good many difficulties. It means compulsion.

You think that the discrimination would be unfair?—It would in some cases be unfair. Moreover, a farmer might be able to milk his cows for a factory supply and not be able to handle a town supply.

Is it not a fact that a municipality is prevented from drawing on farmers away back because they are not registered—because they do not conform to the regulations as to a town supply?—I do not think that is a big factor. The Department is not asking for any heavy expenditure on the part of the farmers who supply the towns. They only ask for reasonably good sanitary conditions—concrete floor, water-supply, and so forth. These are things that should be provided on every dairy farm.

If the farmers supplying milk or cream to cheese-factories were required to bring their farms up to a condition to allow their product to be used for domestic purposes, would it be an expensive thing to the individual farmer?—No, because what we ask for is not beyond the means of most farmers, at any rate. It would be a great help to us.

You would welcome it?—Yes, we would.

The Chairman: How long is the levy on butter to continue?—The terms of sale to the Imperial Government provide for the disposal of the produce to the end of the 1920 season.

What month will that be?—31st July, 1920.

The present arrangement continues until that time?—Yes; and the butter-factories have agreed to maintain the price of the butter for the local market at its present rate during that period.

You are aware that they are agitating against the continued imposition of the tax?—Yes. It has to be borne by the butter industry instead of, as before, by the cheese and butter combined.

Is it not a levy on the Glaxo and dried-milk factories?—No.

The butter-producer has really to supply butter for the local market at lower than the export rate?—Yes. The terms provide for an equal price to all producers, whether their butter is exported or sold in the Dominion.

The local price is lower than the export price?—It is the difference between 1s. 5d. at the factory-door and 1s. 7·44d. f.o.b.

Mr. Hornsby: Why was it that the Glaxo dried-milk people escaped from the first moment of the claim upon the dairy people?—Not only did the dried-milk factories escape, but the condensed-milk factories also escaped. I am not sure of the reason why the Board of Trade, which set up the butter-fat rate, cut out those interests. Of course, they were comparatively small interests at that time. The dried-milk industry has developed considerably in the last two years.

The Chairman: What effect is this restriction having on the output of butter?—There has been a reduction in the quantity of butter sent forward for export in the past season amounting to 8 or 9 per cent., I think.

Mr. Hudson: Do you consider that is the result of the tax?—I do not think it had much influence on the matter. We do not know of any butter-factories having closed down as a result of the arrangement.

The Chairman: Is there a wide feeling of dissatisfaction?—Well, where farmers can supply cheese-factories instead of butter-factories they would do so.

There is a large delegation in Wellington to-day to object to it, is there not?—Yes; it went before the Acting Prime Minister and the Minister of Agriculture last evening.

Mr. Poland: Although there has been a reduction in the production of butter, what has been the position in regard to cheese?—Cheese shows a slight increase—more than equal to the reduction in butter.

Mr. Craigie: Has the shortage of labour got anything to do with it?—Yes, the farmers have found it extremely difficult to get assistance since the war broke out, but it was more acute last season.

Mr. Veitch: Have you any suggestions to make as to how a more assured supply of milk could be got at a reasonable price for the city people?—So long as the farmers have the option of sending their milk to either cheese or butter factories—at present values, at any rate—there must be difficulties in regard to the town supply. In the case of the factory the suppliers are less bound down to supply at a given time, and at the end of the season of nine months they have a rest, whereas the city suppliers have to keep going all the year round.

There is more labour required in supplying to the city?—A great deal more.

The Chairman: Could the city not provide its own farm?—I am afraid that no municipality or public body would ever be able to run a farm to supply milk at present prices, because it would have to pay the regulation wages and incur other expenses that the farmer does not incur.

Overhead and other expenses?—Quite so.

Do you think that is the best solution of the difficulty?—It would ensure the quantity, but, in my opinion, it would increase the price—largely increase it.

R. W. DE MONTALK, Architect, examined.

I desire to impress upon the Committee that there is absolutely no doubt that houses can be erected in permanent materials at the same cost as those being erected at the present time in good timber, with only this reservation, that sufficient capital be provided to enable the foregoing result. If this be true—and it is—there can be no doubt that such building would be of immense value to the Dominion from the economic point of view, and would improve the appearance of the whole countryside. It would play an important part in town-planning, and be one of the greatest means of conserving our timber-supplies. My system of building is a good one. It is comprehensive in that it provides for every constructional part of the building; most other systems apply only to walls. But, since I do not ask you to believe that my method is the one and only one, I am not going to ask you to do anything particular for me. I therefore request your support in encouraging any feasible method whatever which will add permanence in building, and in certain cases will tend to the fireproofing of the same. To encourage private investors to invest in concerns such as suggested it is necessary to show that there will be demand for the wares; and it is in this that I think the Government can best assist. It will cost the Government nothing, because they build when they have to; and if they can build in permanent materials, and in many cases fireproof as well, at the same cost as by present methods, they will be but improving their own assets. Therefore, to create a demand, and thereby foster such industries, I suggest—(1.) That in future all Government buildings, including schools and suchlike, be built with walls of brick, stone, or concrete, and that general framing, floors, and roofs be in fireproof materials. (2.) That legislation be provided that in future all buildings erected out of Government loans, either by local bodies or private individuals (except in special cases in isolated places where freights may be prohibitive and like cases), be built as last described. (3.) That legislation be provided to compel the fireproofing of all new hospitals, boardinghouses, nursing-homes, and hotels, wherever situated in the Dominion, for the safety of the public, especially those invalided. (4.) That legislation be provided to compel the use of brick, stone, or concrete in the walls and partitions of all houses in future erected in the boroughs of New Zealand. (5.) That the Government advance to borrowers 15 to 20 per cent. additional to ordinary advances for the erection of homes when the building in the security is built wholly fireproof. The before-mentioned legislation will compel a demand for permanent material. This will encourage investors in works necessary for this purpose, and is all the Government need do. The legislation suggested will in no way increase the general cost of building, and will result in immense benefit to the people.

The Chairman: You say that the houses can be built in permanent materials, in your opinion, as cheaply as they can be built in wood?—I do not *think* so—I know it absolutely, and I can prove it right down to the letter. There is no doubt of it. It is a matter of merely providing sufficient money to get together the right plant. It is a small sum of money, really, but it has to be got, and with that there is absolutely no doubt.

Mr. Hudson: Irrespective of locality?—No, not exactly. Supposing a factory were erected somewhere in Wellington: that factory would be a central factory, and it would do the work, say, from Island Bay to the Hutt. In the whole of that district the work would be done in concrete—every bit, if the people desired—all the houses—so that they would be absolutely fire-proof. Those buildings could be put up, and a good profit left to the investors, at the same price as the present cost of good timber houses. There is no doubt of it. To go further afield, if one were doing work at, say, Palmerston North, a factory would have to be erected there to give the same results; and the same would have to be done in other towns. The only trouble in the case of isolated buildings is the question of freight, and that is very heavy; but where a number of houses could be erected in any one locality the position is as I have stated. I estimate the cost of erecting a plant in Wellington would be £6,000.

To Mr. Hornsby: I have made calculations as to the cost of erecting all sorts of different houses. A good four-roomed cottage—a nice comfortable cottage fitted up in the best way, with good appliances and sanitary conveniences—with, for instance, a twelve-guinea bath and other things in proportion, with electric light, &c.—such a four-roomed cottage could undoubtedly be put up for £550 or £600—probably for £500. I say that without any reservation whatever.

H. J. H. Blow, Under-Secretary, Mines Department, examined.

The Chairman: We want to get some information from you in regard to the carriage of coal from Greymouth to the main ports of New Zealand; also, whether the Department has had the question under consideration as to coal being carried in State-owned ships instead of in privately-owned ships?—Yes, that question has been considered. Perhaps you have seen the statement published in the Press that the Minister of Mines intends shortly to introduce into Parliament a very up-to-date Mining Bill. I think it was stated that he had intimated that it would be the most up-to-date Mining Bill introduced into any Legislature. Amongst other things it is to provide for the purchase of State-owned steamers and the running of the same.

At that rate, the matter has had some considerable attention?—Oh, yes; I think it may be taken as practically decided upon. This information is confidential at present.

Can you give the Committee any information as to the price the Department is paying at the present time for the carriage of coal?—Yes, I can give you the price that the Department is paying for the carriage of coal from Greymouth to various ports in New Zealand. The rates are as follows: Wellington, 9s. 7d.; Dunedin, 11s. 6d.; Timaru, 12s.; Napier, 14s.; Gisborne, 17s. 6d. (Gisborne is subject to a reduction if whole cargoes are taken); New Plymouth, 12s. 6d.; Lyttelton, 10s. 6d.; Oamaru, 12s.; Onehunga, 12s. 6d.; Bluff, 12s. 6d.; Auckland, 14s.

How long is this contract to exist?—It has already expired.

How do these rates compare with the rates payable by the public for the ordinary carriage of coal?—I have no knowledge at all.

How do the rates compare with the rates paid by gas companies and others?—I believe they get some from Paparoa; and I think the rates from Blackball are about the same, but I have no means of finding out their rates.

Mr. Hornsby: The rates you have quoted are the rates the Government pay for their services?—Yes.

Mr. Forbes: Do you deliver the coal to big consumers at those ports?—If the coal is required by the Wellington Gas Company it is taken to Miramar. The steamers get an extra rate for taking the coal to Miramar, which the Gas Company pays. If the coal is intended for the Wellington coal-depot, we pay for the carriage from the ship to the depot. In the case of coal for wholesale customers in Wellington, the coal is landed into trucks, and we pay whatever freight there is; we charge the different customers the amount, including the freight.

The Railway Department the same?—Yes.

The Chairman: Would you mind telling us the cost of the coal f.o.b. Greymouth? We know the cost in the truck at the pit. We were anxious to follow it up from the pit, and see what the coal does cost at Wellington?—If you have got the cost at the pit—that is, delivery into the truck at the mine—then you have only to add the railage and wharfage at Greymouth.

We have only got the price the miner gets for it?—The coal as mined contains 60 per cent. of slack, and the miner is paid on that, whereas we have either to put the slack away or sell it at a less rate than screened coal.

This coal question is very important. Perhaps you can give us some information in regard to it?—If you have got the cost of the coal delivered in the truck, then you have to add the freight and wharfage, and then you have to make allowance for the fact that only 40 per cent. of the output is screened coal.

Mr. Hornsby: What are you selling screened coal at per ton from the State coal-depot?—38s. in Wellington. The prices are various just now. The price we are charging for the State coal is 38s.; but we have a Coal Control Committee in office now, and they have the power to divert our cargoes into other peoples' yards and other peoples' cargoes into our yards. If you have not had Mr. Gunn, of the Coal Committee, before you, I should strongly advise you to send for him. He is Manager of the State coal-depot, but he is also executive officer of the Coal Committee.

The Chairman: Have the present freights been in existence for some time past?—The contract was a short one; it was dated 11th January, 1918.

Were the rates increased on that occasion very much?—Yes, they were increased, I think, approximately 2s. per ton all round.

Are the ships that carry the coal so constructed as to carry it economically?—They do fairly well. I think the Blackball ships are the most up-to-date coal-carriers on the coast of New Zealand,

but the Union Company's boats do fairly well. What is wanted is a large hatchway, so that the coal can be lowered into the hold without having to tip it out at the hatchway: tipping it out of the trucks and letting it drop into the hold causes the friable coal to break into smaller fragments. I do not think any part of the waterfront of Wellington Harbour could be secured where the coal could be discharged straight into a shed: there is a public road along the whole waterfront.

In regard to the scarcity of coal in Wellington to-day, what is the principal cause of the scarcity?—The lack of coal-miners. There is plenty of coal in New Zealand, but we have not got the men to mine it. Every coal-mine in New Zealand is short of men. In some of the mines the shortage is most acute. I think we could do with nearly a hundred additional men in the State mine.

To Mr. Hudson: I think it is much more economical to work on a large scale than on a small scale. In regard to small parties of men working independently, we have no power to close them down, nor do we desire to do so. In regard to the increased charge made to the Seddonville Co-operative party of miners for the hire of plant, a mistake was made in connection with the charge for rails at £4 per ton. It so happened that at that time we were on the market for rails at £20 a ton, so I corrected the valuation. I can give you an instance of tenders being called for second-hand rails in Otago and they fetched £23 a ton. We paid £18 a ton for rails quite recently. In any case the reduction in rent asked for by the Seddonville Co-operative party of miners would be only a matter of a few shillings a week.

To Mr. Forbes: I believe the report of the Coal Committee is now in the hands of the Minister. That Committee has gone into the coal question very exhaustively.

The Chairman: What reason has guided the Department in coming to the conclusion that it would be better for the State to own its own ships rather than pay freights?—We think it would be an economical measure, and it would give us a larger measure of control: the ships would be absolutely at our own disposal.

Is it not rather remarkable that it was not considered long ago?—It has been considered. Some time ago I was instructed to inquire as to the purchase or charter of ships, but it was found at the time to be impracticable. We made sundry attempts, but without avail.

Was the proposition to purchase ships for the carriage of coal turned down before the war?—It has never been turned down to my knowledge; but it has never been very fully considered until recently.

This coal question is the most troublesome matter that we have had all over the country. I may say that we have found mines with only one miner working in them?—That is owing to the shortage of labour.

They say in the case of the four Reefton companies that it is owing to shortage of rails?—We will sell the rails or hire them; we have not refused any application for the purchase or hire of rails.

Mr. Veitch: What they wanted was two miles and a half of rails to their mine?—And they wanted the Government to defray the whole expense, and they would pay a tonnage rate on the coal carried over the line.

To the Chairman: The Government does not construct branch lines or sidings to private coal-mines. I can give you numbers of instances where private people have constructed their private sidings themselves. If these people like to enlarge their share capital, and if the enterprise is sufficiently favourable, there is plenty of capital in the country. Legislation would be required to enable the Government to lend the money in such a case.

To Mr. Hornsby: Laying down this little branch railway will not increase the number of miners. The scarcity of miners is the main trouble, and the Government is doing its best just now to procure miners from outside—both from Great Britain and Australia—but it is very hard to get them. In regard to the conditions of employment, I may remark that the men at the State mine live in a very nice little township.

Mr. Hornsby: Runanga is all right, but the others are a disgrace to civilization. Burnett's Face is a reproach to New Zealand.

To the Chairman: We do not sell rails on terms. We have not declined any application for the hire of rails, but in such a case as that referred to it would pay them better to buy them right out if they wanted the rails permanently. The price per ton for rails at the present time would be about £22. I think the percentage charge at which they are hired out is 10 per cent. per annum. Then we have to stand the racket of the loss in wear; when they are given up or abandoned they are so-much the worse for wear, of course.

To Mr. Hudson: I admire the men in the Seddonville Mine party. They must be large-hearted fellows, because the Government lost £20,000 over that mine and then abandoned it. It is a pity that the original mistake was made in connection with the amount that was charged for the rails.

To the Chairman: In regard to the increase in the charge, I may say that the Department wants rails badly, and we will be glad to have them back. We have had to send out of the country and buy rails, because we could not get them here: we would be glad if the men could return them. In regard to the point involved in this case, it is so small a matter that I am surprised at a Committee like this wasting time over it. As to the tubs in connection with the Seddonville party, I may say that we want tubs very badly at Point Elizabeth. These tubs were all but shipped to Greymouth—in fact, they were down on the wharf.

To Mr. Luke: We find that coal-mining is a hereditary kind of business. Very few new men embark in coal-mining. The position is usually this: the original miner brings his son, and he is employed at first on work above-ground, and as he grows older and stronger he is employed as a hewer. It is very seldom that new men are recruited. During the past few years

coal-mining was an exempted industry, and perhaps for that reason some men engaged in the work who had never previously been employed in it. It seems surprising that more men do not engage in it, because the rates of wages are very favourable.

To Dr. A. K. Newman: There has been a decrease this year, I think, in both gold and coal mining, but the decrease has been more marked in gold-mining.

To Mr. Veitch: I think the only way to induce more people to go in for coal-mining would be to make the wages more generally known—the liberal rates of the earnings of the men: that might induce others to go in for it. Of course, a man cannot begin as a coal-miner: he must begin as a trucker or in some subordinate capacity, and he must have had three years' experience in mining before he can take charge of work at the face. The truckers do not get quite such high wages—they get 10s. 6d. a day, plus 30 per cent. bonus, or about 13s. 8d. per day. It seems to me that the conditions at present ought to be sufficiently attractive. A trucker on wages gets about 13s. 8d. per day, and if he is on contract work the average wages would be from 18s. to £1 a day; and that for work that does not require any special skill is surely liberal payment. The living-conditions in some cases are first class. Take the State coal-mines, for example, where special provisions of various kinds are made for the men. The conditions under which the men live at the State coal-mine are superior to those of the average private coal-mine. We are short of about a hundred men at the State mine, and could give employment to that additional number. I may state that New Zealand never has produced enough coal to support itself. We have always relied largely on importations from outside. As long as we could get the necessary coal from outside there was no shortage, but when the shortage of ships began, then we began to feel the pinch. As I have said, a trucker on contract earns from 18s. to £1 a day: would you suggest an increase on that? A trucker might be eighteen years of age, and from that to twenty-five or thirty.

To the Chairman: In regard to the Reefton mine application, the Minister of Mines brought the matter before Cabinet, and Cabinet came to the conclusion that the application for a loan could not be entertained.

H. C. GIBBONS, representing the Seed Trade, examined.

We had a communication from Messrs. Arthur Yates and Co., seed and manure merchants, of Auckland, which probably you have before you.

The Chairman: We have a copy of it. [See Appendix.]

I am here chiefly to support Messrs. Yates and Co.'s position, and the gentlemen who are with me also support it. In addition to what Messrs. Yates and Co. state in clause 1 of their letter, I may say that a great many firms have their printing done here at about three times the cost of what it can be done for in Great Britain and other countries. This means a very big handicap to start with. The catalogues printed outside come in duty free. The trade has had this matter before it for many years, and various ways have been tried to get over the difficulty—that is, to place ourselves more on an equality with competitors abroad. The business done through the post with foreign countries is fairly large and is constantly growing, and it is almost entirely on the catalogue that it is done. The handicap is a serious one. Our company has not tried but other companies have tried to get catalogues printed at Home by the companies that print the Home catalogues. This answered very well for a few years, but the Customs Department got on to it, stopped the catalogues in Wellington, and gave certain firms in New Zealand notice that the duty must be paid before a single catalogue was distributed. The Government then collected the duty. That again gave the outside firms an advantage. Of course, all the time the outside firms had the advantage over the people who were getting the whole of their printing done here. In regard to the second clause of the letter, I desire to say that before the war we were confronted with fairly large importations of seeds in packets, which were sold as low as 1d. per packet. It was impossible for the New Zealand seedsmen to compete with that, although they made an effort to do so. Since the war the British firms have dropped the penny packets, but now that war conditions are over we are looking for keen competition, and we believe that those penny packets will again be imported and circulated through the country stores. They will be imported both from America and Great Britain. We consider that all the packets that reach the New Zealand field should pay a duty, at any rate on the stationery. If they do not pay on the value of the seed they should pay on the stationery, but just on account of being filled they come in free at present. In regard to bird-seed, which is dealt with in clause 3, it is a big industry in New Zealand, and we have to compete with the imported article.

F. R. COOPER, representing the Seed Trade, examined.

I endorse what Messrs. Yates and Co. and Mr. Gibbons have stated. With a view to encouraging the seed-growing industry within the Dominion there are a few matters which we would like to bring before your notice. New Zealand is well adapted for the growing of many seeds, and we believe that it can be considerably developed in the near future. The high cost of labour in this country is, of course, one thing that makes it most difficult for us to compete with the imported article, and we consider we have a just claim to a little Customs protection in this direction. To overcome the difficulties under which we are at present labouring we suggest the following: (1.) That a duty of, say, 25 per cent. be placed on all retail catalogues sent into the Dominion to solicit retail orders, whether sent direct or through agents. (2.) That a duty of at least 25 per cent., with an extra 10 per cent. preferential, be placed on all retail packets of seeds entering the Dominion. A "retail packet" is defined as a packet of seeds ready put up to sell retail. (3.) That in future the preferential duty as now charged be taken off all bird-

seed in bulk, or, as an alternative, that a heavier duty than at present be charged on all bird-seeds entering the Dominion already packeted. I was in England prior to the war, and a seed-grower told me he was paying 12s. per week to a man who worked ten hours per day, with six days in the week. We were then paying 12s. per day of eight hours for harvesting; now we are paying 20s. per day for the same work. It costs them in England 4d. per bushel for hand-picking peas, and it costs us 2s. 6d. per bushel for the same work. Not only do they send in seeds free to New Zealand, but they send in packets free. The packet with the seed comes in free, while we pay big sums for duty on packets.

To Mr. Luke: Seed that comes out in cartons and packets is, generally speaking, very reliable. In most cases it is good seed.

To the Chairman: The penny packets have been done away with since the war.

To Mr. Hudson: If our request were given effect to the market-gardener would not be affected. He buys in bulk, and he gets his goods at bulk prices.

To Mr. Forbes: I could not say the value of the penny packets imported annually.

To Dr. A. K. Newman: A little bird-seed is grown in New Zealand. Bird rape-seed and linseed are grown here, and sometimes pumpkin and canary seed. Perhaps 20 per cent. of the quantity sold is grown here.

THURSDAY, 22ND MAY, 1919.

P. G. MORGAN, Director Geological Survey, examined.

Coal Resources of New Zealand.

In 1890 Sir James Hector estimated the workable coal in New Zealand at 443,000,000 tons. He based this estimate on data showing that the coal in the ground was 886,000,000 tons. In 1910 Professor James Park estimated the amount of workable coal in New Zealand at 1,082,089,000 tons. In 1911 I estimated the proved coal in New Zealand at 1,001,000,000 tons, and the probable coal at an additional 2,385,000,000 tons. These estimates were based on ordinary mining and geological conventions, it being assumed that seams of bituminous coal over 1 ft. thick and semi-bituminous seams over 2 ft. thick could be worked to a depth of 4,000 ft., that brown-coal seams over 3 ft. thick could be worked to a depth of 2,000 ft., and that lignite seams over 4 ft. thick could be worked to a depth of 1,000 ft. The assumptions are too optimistic for New Zealand conditions, but it was necessary to adopt them in order to make coal estimates fairly comparable with those of other countries. As I pointed out in 1913, calculations based on them need to be heavily discounted. I have now tentatively recast my estimates, reducing them, as I believe, to bed-rock. The results, unfortunately, are by no means reassuring. They are embodied in the following table:—

COAL IN WORKABLE SEAMS.

Class of Coal.	Proved and highly probable.	Probable.	Possible.
Anthracite	Very little	Very little	Small.
Bituminous	187,000,000 tons	477,000,000 tons	Moderate.
Semi-bituminous	68,000,000 ,,	196,000,000 ,,	Moderate.
Brown	194,000,000 ,,	728,000,000 ,,	Large.
Lignite	161,000,000 ,,	420,000,000 ,,	Large.
Totals	610,000,000 tons	1,821,000,000 tons	Large.

The present yearly production of coal in New Zealand is about 2,000,000 tons, but had it not been for the war it would probably have exceeded 2,500,000 tons in 1918. If we assume that henceforward the production will increase at the rate of 5 per cent. per annum (thus doubling itself every fifteen years or thereabouts), until half the proved coal is exhausted, and will then decrease in the same ratio until all the coal is worked, the date of exhaustion may be mathematically calculated. If no coal is lost in mining, then on the assumptions made half the proved coal will be mined in 44½ years and all in 89 years. If all probable coal actually exists, and can be mined, half the coal-supply will last a little over 77 years, but all will be exhausted in 155 years. These figures show that the known coal-supply of New Zealand is inadequate for future generations. In reality the situation is even worse than might be supposed from the data already set out. More than half the coal in the ground cannot be mined under present conditions. There is some unavoidable loss in mining coal even under the best conditions. Most New Zealand coals are prone to spontaneous combustion, and the loss, direct and indirect, caused by fire is very great. Where the seams are thick the percentage of loss in mining is considerable. In the brown-coal and lignite districts from 2 ft. to 4 ft. of coal usually has to be left to form a secure roof. The slack from brown-coal and lignite mines cannot be sold at a price sufficient to cover the cost of mining, and even friable bituminous coal could not be mined at a profit prior to the war. Where coal has to be extracted from moderate depths under water, and where a water-logged stratum overlies the coal, pillars cannot be extracted. The coal-seams in many localities are sharply or

irregularly folded, crushed, and faulted. Thin coal-seams, especially those that contain stone bands, are not at present workable. For these various reasons barely one-third of the higher-grade coals and less than one-third of the lower grade can be regarded as certainly extractable. The following figures therefore represent mineable coal:—

	Tons.
Bituminous and semi-bituminous	85,000,000
Brown coal and lignite	100,000,000
Total	185,000,000

On the same assumptions as before, this quantity of coal will supply the full needs of the Dominion for less than twenty-five years, and will be exhausted in less than fifty years. As a matter of fact, our coal-mines will not be exhausted in half a century, because the increasing price of coal will enable improved methods of extraction to be used, and at least 60 per cent. of the coal will be won. Moreover, I am confident that ultimately a much larger amount of coal than the 1,821,000,000 tons at present classed as probable coal will be found to exist. Nevertheless, it is a fact that the coal in sight is barely sufficient for the needs of the present generation, and therefore a vigorous prospecting policy is necessary if we are to build up industry in this country. The chief method of prospecting required is detailed geological survey followed by extensive boring. Who is to do this work? Clearly it must be done by Government. The cost would suitably be met by a levy on coal produced—1d. per ton would probably be ample. Where coal is proved the cost of prospecting ought to be refunded by the owner of the coal, but in the case of private lands many difficulties would arise. Much unproved coal is buried in such land, and it might well be argued that the coal is the property of the nation. The undesirability of systematically prospecting privately owned land at the public expense, and especially the natural unwillingness of the public to be so exploited, have forced me, as a geologist employed by the State, to the conclusion that all coal ought to become the property of the Crown. Socialistic theory leads to the same conclusion. There is, however, apart from socialist ideals, a very substantial and practical reason for State nationalization of coal-mines. The root of this reason lies in the fact that our coal resources are small, and can be worked to the best advantage for this and future generations only by a monopoly. Even a State monopoly cannot be wholly trusted to do this, but it is certain in the first place that the evils under such a system would be less than those of private ownership, and in the second place that the people of this country would not tolerate any other than a State monopoly. I believe that the great majority of those who possess an adequate knowledge of the Dominion's coalfields agree with me in favouring the nationalization of the ownership of the coal-mines. Whether the mines should be worked directly by the Crown, or leased to private persons under suitable restrictions, is a question that I leave open.

Coal royalties: In my opinion legislation is necessary to prevent those persons who are fortunate enough to own coal-bearing land from exacting exorbitant royalties. In Great Britain, where all coal-land is privately owned, royalties average 6d. per ton. In some localities they are as low as 3d. per ton. In Derbyshire the average coal royalty is 4d. per ton.

Mr. Luke: As to your revised estimate of the amount of coal in New Zealand, is that revised estimate a result of a more critical examination of the whole question, or is it on account of any new opinion that you have formed as a scientist?—The real reason is that the geologist's estimate of coal in the ground and the mining engineer's estimate vary. The mining engineer looks at the amount of coal that can be mined, and the geologist looks rather at the amount of coal that actually exists. No matter whether it is friable coal or faulted, no matter whether the seams are small or not, it is still coal and is in the ground. It may be very difficult to get the coal out in the case of thin seams or if it is badly faulted.

Taking virgin country, what would be the indication that coal is likely to be under the surface—I mean, apart from outcrops? What are the indications that a geologist or scientist would regard as indicating coal-bearing country?—We know that coal is to be found in certain rocks. We know that partly by the character of those rocks, but more particularly by the fossils they contain. Therefore a study of fossils is necessary, and also there must be a general knowledge of the character of coal-bearing rocks. The great difficulty is that the coal in New Zealand underneath the coal-bearing rocks is not continuous, but is in patches. It is quite different to what occurs in England. In England if you get coal-measures you are practically certain to have coal; at any rate, if you get an outcrop of coal it is practically certain that the coal-seam will continue for miles and miles, as long as the overlying rocks continue. In New Zealand that is not so.

You remember the Dominions Commission that came out here—I think you gave evidence before that Commission: that Commission reported that New Zealand was a highly mineralized country, but that it was not a country that possessed great mineral resources. Do you agree with that, or have you reason to think otherwise?—I was asked that question by Sir Rider Haggard. Some one seems to have put him up to the form of the question. I simply replied "Yes" to the question. New Zealand is highly mineralized, but does not possess great mineral resources—that is, with reference to metals, but not with regard to coal. The reference was to other metallic minerals—copper, lead, zinc, and suchlike; gold ought also to be left out of the question. We have considerable gold resources.

You recognize the importance of the development of hydro-electric power?—Yes; we are fortunate in possessing great water-power resources.

Mr. Hornsby: Have you calculated the bearing of the introduction of electric energy upon the saving that would be effected in the coal-measures?—It is impossible to calculate the effect of that. One can only say in general terms that the coal will last longer.

When these powers are linked up in New Zealand, what effect would it have on the conservation of coal—have you arrived at any conclusion on that matter?—My opinion is that so long as coal is available the production of coal will not decrease. The introduction of hydro-electric energy will not harm the coal industry. We cannot install electric energy everywhere; so that coal will be required for household fires, for example, and coal will be required in isolated districts where the population is small.

But in large centres of industry, the saving there would be very large so far as coal is concerned, would it not?—Of course, the saving of coal would be large, but I do not think the saving of money would be large: hydro-electric power, I think, would probably be more costly than coal has been in the past.

Mr. Parry does not think so. But, anyhow, have you investigated the whole of the measures of brown coal in the North Island—the coal in the Mokau district?—Lately a geological survey has been made in the Mokau district, and of a portion of the Huntly district; but there is still a very large area to be geologically surveyed.

The Chairman: Are those reports available?—No; the reports are now being written by Dr. Henderson and Mr. Ongley, Assistant Geologist, who did most of the work.

Mr. Hornsby: The reason why I ask you that question is because of a statement by Professor David, of Sydney, which appeared in the Australian papers—the statement was with reference to the brown coal in Germany. I do not know whether you saw it?—Yes, I saw it.

A witness in Taranaki suggested the utilization of brown coal for the generation of electric energy for that part of New Zealand. He said that brown coal existed in millions of tons, and he thought that was the best way of making use of it?—I would like to say, first of all, that I am always thinking of the practical side of the case. I was brought up as a mining engineer; and I do not believe in pure science unless it has a practical end. Many years ago it was suggested that brown coal should be used for generating electricity. I believe that to be a practical proposition. If you come to compare our brown coal with that of Germany, I may say that the Mokau coal is of better quality than that of Germany, but unfortunately there is not nearly as much of it. Germany has immense coal resources—both bituminous and brown coal. It has larger coal resources than Great Britain. We have not the chemists in New Zealand to deal with a question like that, and the reason we have not the chemists is because there is no encouragement given to chemists in the way of remuneration so as to enable them to live.

Dr. A. K. Newman: Do you not really think if we harnessed a million horse-power it would have some effect on the saving of coal?—I cannot give you the figures. Mr. Parry has given some figures showing how many thousand tons of coal have already been saved by the Lake Coleridge scheme.

Is not that going to have a great effect on the future development of our coal-deposits?—Certainly.

We have evidence that in the districts extending from the Stratford end of the railway there are large outcrops of coal which have never been reported upon by the Geological Department?—The coal-measures in that district were reported upon nearly thirty years ago by Professor Park, but it was a very general report.

The Chairman: We applied to the Department for information and there was none available?—The report was made some thirty years ago.

Dr. A. K. Newman: We have some evidence which shows that there are outcrops of coal from the end of the Stratford line towards the Main trunk line: has the Department any knowledge of that?—The knowledge we have is that there are fairly numerous outcrops of coal in that district, but that the seams of coal are rather thin. I do not know that there is an outcrop more than 4 ft. thick. Of course, there are numerous reports of thick seams. If a coal-seam is standing on its edge an inexperienced person may very easily mistake the thickness.

The Department has not minutely surveyed it?—No.

Have you information as to coal-measures in the neighbourhood of the Tangarakau Stream?—Dr. Henderson has seen some of those outcrops, but he has not made any report on them. The thickest outcrop seen by him was 4 ft.

Is there any coal between the Wanganui River and the Retaruke Stream? There are outcrops of coal in various places: does the Department know anything about them?—Yes, there are outcrops there.

And near Raetihi?—We have information concerning the outcrops in the Retaruke district. Dr. Bell reported upon them some years ago. I believe there are outcrops of coal in another locality to the south, but I do not know anything about those outcrops.

There is an outcrop at Moawhanga?—I have no information about coal in that district.

That is inland from Patea?—I do not know that district at all.

That district has not been surveyed by the Department?—No.

Then this large area of country containing considerable quantities of coal is unknown to the Department?—I have recommended that a detailed geological survey of that district be made.

In view of the number of outcrops in that large area of country and in the neighbourhood of Tangarakau, do you know whether the Government intend to retain that land?—I am sure it is the policy of the Government to retain the coal. It always has been.

Mr. Veitch: As you are aware, there are two phases of the coal problem: there is the present coal famine, and there is the fact that you have stated clearly that our coal-supply will not last for many years?—I said, the "known" coal-supply.

Can you give us any suggestions that would help to get over the difficulty of the present coal famine?—The causes of the present coal famine are, first, the shortage of labour; and, second, the shortage of shipping. Of course, something might have been done to obviate the shortage of shipping if the State had owned the colliers.

Do you know anything about the causes of the shortage of labour in the mines: is it entirely due to the war, or did it exist before the war?—It was inclined to exist before the war. Coal-mining is not an attractive occupation. I have been a coal-miner myself; I know a good deal about the nature of the miner's work.

Would you consider it a wise provision on the part of the State to offer some special attractions to young men to take up the occupation of coal-mining?—In some districts the housing accommodation might be improved. The housing conditions are certainly bad: that applies to mining districts generally. There is generally very poor provision made for the accommodation of workmen in mining districts. Coal-mining companies do not care to go in for a large expenditure because, in the first place, the coal-seams may run out, and, in the second place, some of them have not the money.

At what age do they begin the work of a miner?—Boys thirteen or fourteen years of age are often employed on the surface; they are engaged on that work for a year or two, and as soon as they get big enough and strong enough they are engaged as truckers.

By increasing the rates of pay and improving the labour conditions, would not the employers be able in time to build up a better staff of men for that work?—I think it simply depends upon the rate of wages. If the wages are high enough you will get the men.

It is just a matter of wages?—Yes.

And probably the conditions as well?—If a man is sufficiently well paid he can afford to build a comfortable house.

It has been suggested that the development of hydro-electric power will greatly reduce the quantity of coal consumed?—If the population doubles the consumption of coal will double. The consumption of coal in New Zealand is roughly 2 tons per head of the population; in England it is at least 6 tons; and in the eastern States of America it must be still greater. If we were in the same industrial state as England we would be producing at least three times as much coal. I am sure the coal industry will go on notwithstanding hydro-electric power.

The point would be this: that we must not rely on hydro-electric power to take the place of coal-mining—we must try to develop coal-mining also?—That is my opinion.

Mr. Sidey: Do you suggest as a practical proposition that the State should immediately nationalize all the coal?—I have thought a great deal over the subject, and that is the only conclusion I can come to—that the State should own or at least control every ton of coal in the country.

Have you estimated what it would cost the State to do that?—I do not think it would cost a great deal if it were done fairly, because most of the coal in this country is really unproved. I do not see why the owner of the surface over unproved coal should receive compensation for the coal. He does not know that he has got it.

The land is sold with all the minerals in it?—I know that some land has been sold in that way; some land has been sold in the Waikato with coal in it at 10s. an acre.

Your proposition would include also proved coal?—I would pay compensation for proved coal.

Have you estimated the amount of compensation?—Prior to the war there was very little profit in coal-mining—not 1s. per ton profit. In many mines there was a loss. Latterly there must have been considerable profit; but under pre-war conditions it would not cost very much to buy out all the coal-mines in New Zealand.

How much do you suggest?—It is a question of bargaining. I do not know what the share value was; but I think that the sum required to buy out all existing coal-mines on a pre-war status would not exceed £3,000,000. Profit on 2,200,000 tons of coal, the annual output, probably did not exceed 1s. per ton—£110,000.

You think that might be adopted as a basis as a practical proposition right away?—I am in favour of it myself.

Is there much of this country that has not been geologically surveyed?—Yes; you might say that four-fifths of it has not been geologically surveyed. Nearly the whole of the country has been run over by geologists, but that is not a geological survey.

When you speak of geological survey, you mean a survey for all kinds of minerals?—Yes; but principally exact mapping. We have a difficulty at present with mapping; we have to make our own maps to a great extent. In the rough country where there is not close settlement we have to do a great deal of topographical work. I think we should take stock of our mineral resources as soon as possible.

What do you suggest the State should do in order to get the work done as soon as possible?—Strengthen the Geological Survey Department, and provide a boring department—a prospecting department. The Mines Department has already got its own prospecting-drills, but several drillers—well-trained men—should be appointed. New drilling plants should be provided, and I think they should be put under the direction of the Geological Survey. I do not think that any Department except the Geological Survey could properly supervise the drilling.

Have we got the men in the country with the necessary qualifications to do this work?—We have not got the geologists in the country at the present time, but there are men who can be trained. We have the raw material—good raw material.

You are of opinion that the State should own the mines and also the ships to carry the coal?—Yes, I think it would be better—in fact, it is almost essential to own the ships.

The Chairman: With respect to prospecting, you say that the cost would suitably be met by a levy on coal produced—1d. per ton would probably be ample?—Yes; if coal is found on private land the landowner should assist in paying for the cost of prospecting. A penny per ton would amply cover the cost of the geological survey for all minerals.

Would that be a fair proposition—that established mines should contribute towards the cost of prospecting for new mines that are to compete against them in business—the Westport Coal

Company, for example?—It certainly would be a fair proposition for the Westport Coal Company, for their land was prospected in 1873, and they reaped the benefit of the prospecting done by Messrs. Cooper, Denniston, and Cox, of the Geological Survey.

Have you calculated what 1d. per ton would amount to on the output of coal to-day?—It would be £9,000 a year.

On several occasions the Committee has had brought before it the suggestion that coal-slack might be distilled and that valuable products would thus be derived from it?—That is rather a question for a chemist. I know that from brown coal distilled at a low temperature considerable quantities of oil can be obtained. It is a matter for research to find out what the amount of oil will be, and its value.

Dr. A. K. Newman: Is that now being done profitably?—I think the Germans are distilling brown coal now. I think it can be done profitably with some coals.

The Chairman: Have you ever reported on the four coal-mines near Reefton—the Waitahu, Morris and Learmont's, &c.?—I know one of those mines; the others I have not reported upon.

Are there no official figures in regard to the quantity of coal available in those mines?—There are no official figures. A geological survey has been made of that district by Dr. Henderson, but he did not give an estimate of the amount of coal. I may state that the estimated amount of proved coal in the Reefton district is under 5,000,000 tons, but there is probably a large coalfield under the Inangahua Valley.

Do you refer to the Buller Gorge as well as to the Inangahua Valley?—Yes, it is really part of the same coalfield. I know the Buller Gorge outcrops: I made a geological survey of that district myself. There are under 5,000,000 tons in the Reefton district—that is, known coal. The estimate of probable coal in the Inangahua Valley is from 50,000,000 to 100,000,000 tons of coal.

It is quite evident that the information in the possession of the Department is not sufficient to enable you to come to a definite conclusion?—No; it would require extensive boring all over the Inangahua Valley.

Mr. Hudson: Do you know the present position with regard to the Puponga Mine?—I think that mine is closed down.

Yes; but from what you do know do you think it advisable that the Government should take up that mine and continue to work it?—I do not think so, from what I remember. I remember a proposition coming before the Government some time ago—when I was Under-Secretary—and it did not then seem advisable to take over the working of the mine. As far as I remember, there was only a small block of coal to be won without opening a new mine altogether. There was a certain amount of coal in the pillars, and not very much outside of that.

We have been asked to recommend the Government to take over the working of the mine: could you support that recommendation?—Not with my present knowledge.

Would you go so far as to recommend or support the idea of investigating the position further?—I think a survey should be made of the Collingwood coalfield.

There is a shortage of coal, and the coal there could be easily got at?—I do not know whether it would be advisable to take those pillars out or not. At present the mine is flooded. I do not know how much it would cost to pump out the water. Pumps would have to be procured, of course. The shortage is not due to the want of coal at the present moment, but to the want of miners. You could get more coal from the Westport mines than you could from the Puponga Mine with the same number of men.

The closing-down of Puponga appeared to have an immediate effect upon the neighbouring settlements?—I dare say; that coal was useful for local requirements.

The Chairman: In your opinion would it be better to concentrate on a few mines or give attention to the opening-up of mines in the undeveloped parts of the country?—It would perhaps be better at present to give more attention to some of the existing mines where the seams are thickest, and where the output of coal per man would be largest; but looking to the future it would be advisable to open up more mines in different parts of New Zealand. It would probably save cost of transportation by opening up mines in suitable places.

Mr. Luke: Would you favour the generating of electricity adjacent to the pit-mouth for distribution of the power?—I would favour the generation of electricity in the Waikato for distribution to Auckland on the one side and Hamilton on the other, also to other inland towns.

The distances are not too great?—No.

It would be an economical solution of the question?—Electricity can be produced very cheaply if the coal is cheap.

Do you favour the scheme generally: it is evidently being carried out in other parts of the world—in the Old Country, for instance—generating electric power at the pit-mouth and distributing it?—Personally, I would favour it, but if Mr. Parry opposed it I would not oppose his opinion, it being that of an authority. I know there are some difficulties from Mr. Parry's point of view.

Iron-ore of New Zealand.

Witness: The largest iron-ore deposits in New Zealand are the limonite of the Parapara district, and the ironsand on and near the coast of Taranaki. At Parapara the Washbourn Block contains at least 22,700,000 tons of iron-ore, having an iron content between 45 and 51 per cent. The Tukurua Block, according to Dr. J. M. Bell, contains about 11,000,000 tons of iron-ore, most of which is equal in quality to that of Washbourn Block. The Onakaka Block, according to a rough estimate by Dr. J. M. Bell, contains 30,000,000 metric tons (about 29,500,000 English tons). The average iron content, as deduced from numerous analyses of surface samples, is 45 per cent. The Parapara district thus contains at least 63,000,000 tons of iron-ore, probably averaging

about 45 per cent. of metallic iron. The ore is therefore of medium grade. It has the defect of containing phosphorus in excess of the minimum required in ores from which acid hearth or converter steel is to be made. It is perhaps unfortunate that the phosphorus is under one-seventh of 1 per cent., because this percentage is far too small to give the slag made by the basic process any value for agricultural purposes. Probably, when fully developed, the Parapara deposits will be found to contain a much larger tonnage of iron-ore than that stated above.

The most extensive deposits of ironsand in New Zealand are near Patea. According to estimates made by W. Gibson, of the Geological Survey, at least 5,374,000 tons of high-grade sand exist in this locality. In addition there is an enormous amount of low-grade material that could easily be concentrated, both here and elsewhere. No estimate of the amount of ironsand near New Plymouth has been made. There is much low-grade sand on or near the beach between Moturoa and Urenui. Taranaki ironsand will probably make iron and steel of high quality. It has two main drawbacks—(1) its finely divided condition, and (2) its content of titanium dioxide. Exact analyses show that the phosphorus content is somewhat too high for the manufacture of steel by the acid hearth process.

Other New Zealand localities for iron-ore are Kerr Point and Waitangi River, North Auckland; Raglan-Kawhia district; Mount Peel, Nelson; Mount Royal, near Palmerston South; Table Hill, near Milton; Lake Wakatipu; Mount Cook district (Westland side). At Kerr Point the deposit of iron-ore consists of limonite. The ore is scattered over many acres of ground, but all told is probably not more than 100,000 tons. The iron-ore near the head of the Waitangi River is limonite, of excellent quality. The quantity, however, is less than 100,000 tons. The material occurs in small patches, with a total area of about 8 acres. The thickness does not exceed 4 ft. or 5 ft. The deposit or deposits of iron-ore in the Kawhia-Raglan district so far as known are not large. They consist of limonite. Little authentic information concerning the iron-ore at Mount Peel (Nelson) can be obtained. The deposit is reported to be large, but this is doubtful, and in any case difficulties of transport render the deposit of no present value. The amount of iron-ore at Mount Royal, near Palmerston South, is not known. The material is known to be low grade. The Table Hill deposit consists of limonite. Probably it has no great extent.

Lake Wakatipu district: According to S. H. Cox, hæmatite occurs in a discontinuous band extending from the upper part of Moke Creek through Benmore and thence in the direction of Mount Gilbert. A 6 ft. vein occurs at Maori Point, Shotover River.

Mount Cook district: Large quantities of magnetite are disseminated through chlorite schist on the Westland side of Mount Cook. In places it forms beds 6 in. to 8 in. thick.

Mr. Luke: Was any geological information of value obtained when the Otira Tunnel was made?—No, I do not think so. The rocks in the tunnel may be seen on the surface. There was nothing of a valuable character discovered in the tunnel.

Did geologists anticipate obtaining valuable information in the work of piering the tunnel?—No, not in respect to minerals. It was thought that we might obtain information about underground temperatures, and the flow of water, and things of that kind; but as the tunnel is nowhere very deep below the surface not much information was obtained; in fact, the temperatures obtained in the tunnel were not high, and were very irregular owing to the amount of water coming from the surface that entered the tunnel.

As a practical proposition, what deposit of iron in this Dominion do you favour being first exploited?—I would try Parapara first. There is a large deposit of ore there, and pig iron can be made from it—not at a low cost, but much more easily and cheaply than from Taranaki ironsand.

Would you favour the smelting of iron at Parapara, or would you take it to the coal resources and smelt it there—say, to Westport?—I think it would be better to bring the coal to Parapara, or rather the coke. For the making of pig iron that would be certainly better. It takes 2 tons of the Parapara ore to make 1 ton of pig iron, and it would require about $1\frac{1}{7}$ ton of coke.

Are you an enthusiastic supporter of the early development of Parapara ore?—If you asked me the question privately I would say that I am not an enthusiastic supporter.

Mr. Hudson: You evidently believe that Parapara as a proposition is worth considering?—Oh, yes, certainly; but I do not think the time has yet arrived when it could be worked at a profit. Of course, you would have to make pig iron on a large scale—500 tons a day, or something like that; and New Zealand at the present time only requires about 30 or 40 tons a day. The making of pig iron into steel is a very expensive proposition, and I do not think we could start the steel industry here for a few years to come. Possibly we could export pig iron.

You think the difficulties are more in connection with the demand?—The difficulty is the production of marketable grades of steel, and then there is the question of demand. New Zealand requires a large quantity of steel for rails, &c., but I am afraid if manufactured here it would be very costly steel.

Your opinion is that the present demand does not justify starting works?—Not at present. The New Zealand demand for pig iron is not large enough, nor would Australia take the surplus. Ironworks have been started in New South Wales at Newcastle and also at Lithgow. The Lithgow ironworks are not producing very extensively. The Newcastle works can produce iron, or at least steel, more cheaply than Parapara, because they are close to a coalfield, and there is an abundant supply of coking-coal.

Do you consider it would be a workable proposition to work Taranaki ironsand together with Parapara ore—through one smelting-works?—I think Taranaki ironsand might be mixed with Parapara iron-ore, but I do not know whether economically it would be any advantage to do so.

Having one works instead of two?—We could not support two ironworks in New Zealand.

Mr. Sidey: You recently made a report to the Government on the iron question?—I furnished a report to the Government on the smelting-works at New Plymouth. I have never reported on Parapara.

Did you not report in conjunction with some other officers?—I gave evidence before a Commission—Messrs. Ferguson, Miles, and Morton.

You gave evidence similar to that which you are giving to us?—Yes; I gave further evidence, as a matter of fact.

Are you aware that some of the reports furnished to private companies seem to conflict with the evidence you have given to us?——

The Chairman: You said 45 per cent., and some of the others said over 50 per cent.?—Samples taken from the Washbourn Block averaged over 51 per cent., but the reason I say 45 per cent. is because several drives were put into the two hills of iron-ore at Parapara and these drives average only 45 per cent. of iron.

Mr. Sidey: There has also been a difference of opinion so far as the available coal is concerned, and as to its suitability. Can you say anything about the coal in the vicinity of Parapara—as to its suitability for smelting iron?—I do not think coke has been made from the coal in the Collingwood district. There is some coking-coal there, but the coal-seams near Collingwood have not been developed. Pakawau coal would not make a hard coke. Mount Burnett coal, I believe, would make a fairly good coke, but we do not know what quantity of coal there is of that particular character.

Can you say anything with regard to the proportion of sulphur in the coal in the vicinity of Parapara?—I think the sulphur is fairly low; there is not sufficient sulphur to prevent the coal being made into coke for iron-smelting.

One witness said that Dr. Bell sent in a report to the Government in which he estimated that the cost of the production of pig iron at Parapara would be £2 1s. 9d. per ton: have you seen that report?—I may have seen it. I think I remember the figure he gave—£2 1s. 9d. That report has not been published.

Does not that seem to conflict with the evidence you have given?—I have not given any evidence with regard to the cost of producing pig iron.

The Chairman: I think you mentioned the high cost?—I said that it would take about 1½ ton of coke to produce a ton of pig iron, and at the present time one could not get that amount of coke for less than £2, so that it is very evident one could not produce pig iron now for £2 1s. 9d. a ton. The fuel alone—the coke—would come to that.

Mr. Sidey: That was in 1909: are the conditions very different to-day?—Coal and coke are considerably dearer to-day.

It would not make such a difference as to put it on an unpayable basis?—My own estimate of the cost of the production of pig iron at Parapara on a large scale is £3 per ton. That estimate is not given as authoritative in any way.

The Chairman: That seems to be a very low price?—If pig iron were made on a small scale the cost would be about £4 per ton.

Mr. Sidey: Did you say that in your opinion pig iron can be produced at Parapara at £4 per ton to-day?—If it were worked on a large scale it can be produced, in my opinion, at between £3 and £4 per ton.

Do you know the cost of imported pig iron to-day?—It is very high.

What was the pre-war cost?——

Mr. Luke: The pre-war cost was about £4 or £4 2s. 6d. a ton. We had contracts with Lithgow at less than that, but there was an appreciable rise going on even before the war?—I know that Scotch pig iron years ago cost about £2 per ton.

Mr. Sidey: Do you not think your figures come so close to what might be regarded as a payable proposition that the Government ought to go into this thing very closely?—Yes, I would advocate that—that the Government should consider the matter of producing iron in New Zealand.

And in your opinion Parapara offers the best prospects?—Yes.

What steps do you think should be taken: do you think we should send Home to England to get an expert mineralogist or iron expert to report and advise us on the subject?—I think it would be advisable to engage an expert for a period of a year or more to report and advise on the whole subject of iron-smelting.

From England or America?—Yes—or from Australia; but I am afraid that a man from Australia might be interested in some Australian enterprise, and therefore one could not be sure of an unbiased report.

The Chairman: The best available man?—Yes.

Mr. Hornsby: Do you not think it would be wise on the part of the Government to resume Parapara? The leases have expired or are just about to expire. Would it not be a wise thing on the part of the Government to resume the whole of that property?—Yes; the property is under protection, but that protection expires towards the end of this year, and unless the syndicate holding the lease can fulfil the conditions I think it would be well to terminate the lease.

Dr. A. K. Newman: As regards Taranaki ironsand: is there any information of a process by which the oxide of titanium could be extracted?—Attempts have been made to separate it magnetically, but without much success.

Has it succeeded anywhere else?—I do not think it can be done magnetically; it would have to be done chemically, and any chemical process would be too expensive.

The Chairman: In the event of the iron industry being developed, do you suggest that it should be done by private enterprise, or by Government enterprise, or by a combination of both, or by a method of assistance given to private people?—I think if it were left to private enterprise the Government would be asked to give a very heavy subsidy; in fact, I am sure of that. In that

case I think it would be better for the Government to develop the iron industry. While the Government is about it it might as well pay the whole cost and have its own ironworks. A proposal was made a few years ago that the Government should guarantee the interest on £600,000 capital for thirty years. Under such a condition the Government might as well own the ironworks as pay the interest for thirty years. Might I reply further to Dr. Newman's question about the separation of titanium from Taranaki ironsand. I believe it is possible to discover a successful method of smelting titaniferous iron-ores. It has been done to some extent in the United States. There is, however, no method known at present that would be successful in the case of titaniferous ironsand, except at great cost.

You look upon it that the Taranaki ironsand will be a valuable asset some day?—Yes, it will be valuable some day. It is a fairly high-grade iron-ore, and some day science will discover a means of smelting that ore.

In regard to the Taranaki experiment, were you there when the iron was being run off?—Yes, I saw some of the iron run out.

You reported to the Government?—Yes, regarding the pig iron produced. It was largely white iron, which is the poorest quality of pig iron; but they have made some grey iron.

With regard to the production of coke, what is the present method of producing coke in New Zealand: is it up to date or is it a wasteful method?—It is wasteful, because the coke is produced in a way that allows the gas to go off into the atmosphere.

Should that be allowed to continue, or could it be stopped?—In the places where there are coke-ovens there is no demand for the gas. It would be valuable if the ovens were, say, in Wellington. It would be better at the present time to make the coke in Wellington—to bring the coal here and make the coke here.

Mr. Luke: That is a new proposition: that is something like producing electric power at the pit-mouth?—Yes; the gas cannot be used where it is produced to any extent.

Petroleum.

Witness: You intimated that you wished to ask me some questions with regard to petroleum.

The Chairman: We want to try and come to some conclusion as to how the matter should be dealt with?—Personally, I am confident that oil will ultimately be discovered in New Zealand in quantity, but in each of the districts in which oil indications have been found there are difficulties.

At present the prospecting or boring is done by private enterprise with some State assistance?—That is so.

I would like to ask if in your opinion it would not be better for the Government to go in for a comprehensive system of boring so as to determine once for all whether the oil is here or not?—There is so much hazard in oil-boring that I would not like to advise the Government to take the risk.

We are sending about a million sterling annually out of New Zealand at present for oil. It is a matter in regard to which some risk might be taken?—Yes.

Perhaps you would make a statement as to the position?—The present position is that a small quantity of oil is being produced at Moturoa, near New Plymouth, and also a very small quantity at Kotuku, near Lake Brunner, in the Greymouth district: it is hardly worth mentioning.

The Government are assisting at New Plymouth, are they not?—Yes, the Government is assisting a good deal at New Plymouth: it gives fairly large subsidies.

Individually you are not prepared to recommend the Government to experiment by boring. Are you prepared to recommend that subsidies be given to those who have capital and skill?—Yes, I am prepared to recommend that subsidies be given to any approved bore.

With regard to the discovery of natural gas at Kaikoura, have you had any information as to what is likely to transpire there?—I suspected it was simply surface gas. I wrote to the County Clerk at Kaikoura, asking him for particulars. He informed me that a bore was being sunk about a mile north of Kaikoura, near the beach. This bore passed through 40 ft. of shingle and 20 ft. of blue clay, and then this gas was struck. It was ignited, I presume, accidentally. It burned for a number of hours, and ultimately the blow-out of gas ceased.

That is not correct. They have had very great difficulty in putting it out and securing the top of the pipe?—My correspondent states that there was no sign of oil: the gas was the only indication.

That gas-explosion would be a favourable indication of the existence of oil underneath?—We consider that the existence of gas in large quantities is a very favourable indication, but the question is whether this gas was not merely a pocket of marsh-gas.

Nothing has been done to test it in any way?—We have no report on it.

What about the seepage of oil in the Marlborough District?—Dr. Thomson has lately made a geological survey of that district. He has not yet reported to me, but I understand that he does not think the prospects are very great: the district is highly faulted.

Dr. A. K. Newman: Are there not a number of districts which have been looked upon as favourable but which have been disappointing?—So far there has been more or less disappointment everywhere. There are quite a number of places where small seepages of oil occur. In some places we know that there is no quantity of oil, and in other places it is uncertain.

Do you anticipate that in some places in New Zealand there will be found large supplies of natural gas, as in Canada and the United States?—I think it is very likely that in time to come there will be developed a considerable quantity of natural gas.

In quantities that will be useful industrially?—Yes; but there is always the hazard that natural gas will give out suddenly. That was proved in a very special manner in one case in Queensland, where a town was reticulated with natural gas and the supply suddenly ceased.

The Chairman: You said that you would recommend that the Government should subsidize approved bores for oil?—Yes.

On the contrary, would you prevent boring in places not approved of, in order to prevent waste of money or speculation?—That opens up a very wide question. I would not like to be responsible for the refusal of an application, because I am sure the people refused would be highly aggrieved.

Is the oil at New Plymouth of good quality?—Yes, very good quality on the whole, I think. It is good-quality oil so far as the analyses go.

Has your Department ever had communications from an Anglo-Persian company in regard to the proposed boring for oil in Taranaki?—I have never heard of such a communication.

The Committee has had a communication from the Anglo-Persian people—we have had representations made to us that they are prepared to go into a scheme jointly with the Government?—I have not heard of it.

In regard to Orepuki, what are the prospects there of obtaining oil by treating the shale?—The oil-shale from Orepuki is of good grade, but it contains a somewhat large percentage of sulphur, which makes the refining of the oil troublesome and expensive. I believe also that the mining of the shale is rather expensive. I do not know whether that difficulty can be overcome or not.

Have you ever reported on the Orepuki field?—No; I have reported on a small area of oil-shale at Waikaia. I think a copy of my report was furnished to the prospecting syndicate.

I think we were told that they had never had it?—I never supplied a copy, but I think the Mines Department did.

Could you give the Committee a copy?—Yes, I can supply the Committee with a copy of that report.

Mr. Luke: Are you aware that buildings near Gisborne were lighted with natural gas as far back as forty years ago?—I know there was a building at Makaraka lighted with natural gas many years ago.

Did it "peter out," or was it continuous?—In that case I think the pipes rusted through owing to the corrosive effect of the mineral water. I do not know the depth from which the gas came, but it was obtained near the surface.

Take the Kaikoura natural gas: would that possibly come from a coal-measure or must it necessarily come from oil?—It may have come from buried vegetation. It may have been marsh-gas formed from comparatively modern vegetation, buried 50ft. or 60ft. deep.

You are in favour of joint prospecting by the Government and private owners for any further development of oil-measures?—I said I preferred subsidies. As to joint prospecting, I am rather afraid to recommend it, the risk of failure is so great.

Asbestos.

Witness: Regarding asbestos, the only place in New Zealand where it occurs in quantity is in the Takaka Valley. There is a considerable area there of serpentine, which contains asbestos veins, in the same way as it occurs in the large Canadian deposits. A report by the Inspector of Mines (Mr. T. O. Bishop) is unfavourable. It was made three or four years ago. Mr. Marcuse, a Canadian expert, went there and came away disappointed, but he was looking for a very high-grade asbestos fibre—so-called "crude asbestos."

The Chairman: The Committee have seen samples of the fibre found there, and have been told it is in almost unlimited quantity in low grade—sufficient for house-slates, fireproof material, and so on?—There is some very good asbestos there. The term "crude asbestos," strange to say, means the highest quality. It is good asbestos that is found in the district, but my information is that the veins are too far apart in the serpentine. At the present time there is a bridle-track to the locality. It is twenty-four miles from Takaka, of which distance twelve miles is bridle-track. I do not know the track, but I have been told it could be easily widened, as it is on a good grade.

Mr. Hornsby: The manager of the mine produced samples to us, and told us it was there to the extent of thousands of tons?—There may be thousands of tons, but perhaps it is scattered in millions of tons of rock.

The Chairman: This is portion of a report to the company on the Takaka asbestos deposits: "It is astonishing to realize that so little is known by the New Zealand Government Mines Department about asbestos and these New Zealand deposits, which form a great national asset. An Inspector was sent to report by the Hon. R. McKenzie some years ago, but, there being no one to conduct him over the various prospecting cuts and openings, and to make him conversant with the varying uses and forms of asbestos, his report (if such were ever made) can be of little use"?—Mr. Bishop has been there since that report was made.

Mr. Hornsby: You have not seen the deposit yourself?—No. I have seen a number of small deposits in Westland, but they are not worth consideration.

Might I suggest that it is worth while, seeing there is a conflict of evidence, to send an officer there at an early date to get a reliable report of the existing state of things?—Of course, I consider Mr. Bishop's report is reliable.

That is three or four years ago?—There is nothing more to be seen now than there was then, as far as I know.

Could we get a copy of that report?—Yes; the Under-Secretary can give you a copy of it. It is not in my hands.

Mr. Hudson: Do you know that at present capital is being expended there by a syndicate? I believe something is being done.

An expert is residing on the spot and has the help of several men, capital is being put in, and the only thing blocking the progress of the work is the condition of the road. An application

has been put in through the Takaka County Council, and by the County Council itself, for a grant for opening up the road. Would you support that grant?—If the present Inspector of Mines were to visit the locality I would rely on his report. It is really a question of how cheaply the serpentine carrying the asbestos can be mined.

Would you advise that another report should be obtained in addition to the ones now available? It is contended that the men who previously visited the place did not go thoroughly into the matter. They did not know the country sufficiently, and did not go fully into the position and prospects?—Is work going on now and likely to go on through the winter?

Yes, as far as I know?—Then it would be advisable to have another report, provided there is a hut where a man could stay for a few days, so that he could have a good look round. The usual way of reporting on a prospect in a locality difficult of access is that a man rushes up on a horse or on foot, looks round for a couple of hours, and then gets away again before dark.

The Chairman: They talk of putting out 5,000 tons per annum: that is no inconsiderable quantity?—That is so. A description of the asbestos-deposit was written by Mr. Charles H. Holland, who was at one time in charge of the works. That description was published in an Australian journal.

Mr. Luke: Are the asbestos-seams closely related to the serpentine?—Yes. As a rule, asbestos occurs in serpentine. The Canadian asbestos is of the same composition as serpentine. It is a highly fibrous serpentine or chrysotile.

I have never known of asbestos being found at the Lizard at Home in the serpentine rock?—I cannot say positively whether asbestos has ever been found or not in the Cornish serpentine.

Out here it is closely allied to the serpentine?—We have a different type to the Lizard serpentine.

What do you use asbestos here for largely?—Largely for heat-insulation purposes and the making of roofing-materials. Asbestos mats are also made.

The Chairman: If the Committee make a request for a further report, will you favourably consider it?—Yes, now that I understand that development is actively going on.

Mr. Hudson: They have an order for 3,000 tons if they can supply it?—They would need a road to enable them to do that.

Oil from Peat.

Witness: I can give some general information as to other mineral occurrences in New Zealand. I think you have had evidence concerning oil made from peat, especially from peat in the North of Auckland containing kauri-gum. I really do not know much about the peat swamps, but I am inclined to think that some exaggerated statements have been made.

The Chairman: It has been suggested that an average of 30 gallons of oil could be obtained from a ton of peat, and other representations have been made as to the extraction of oil from waste kauri-gum. The suggestion was that the Government should offer a bonus of 1s. per gallon for the production of the first 10,000 gallons, and of 6d. per gallon for the second 10,000 gallons, and so on?—I think the peat in kauri-gum districts could be utilized for the making of oil, but it must be remembered that peat in its ordinary state contains 80 or 90 per cent. of water. Even if the land was drained before the peat was dug it would contain over 75 per cent. of water, and you would have to dig 4 tons of wet peat to get 1 ton of dry peat. The statements that have been made do not distinguish between wet peat and dry peat. You would probably get over 30 gallons of oil from a ton of dry peat.

It was further stated, "There is enough value in the oils in the Government swamp lands to pay off the whole of the war debt"?—I wish it were true.

They want proper research to be made by the Government?—The people interested in the matter seem to be dealing with two Departments—the Department of Agriculture, Industries, and Commerce, and the Mines Department. They would get on better if they stuck to either one Department or the other.

Has any detailed investigation been made of these swamps by the Government?—Mr. R. P. Greville, now Commissioner of Crown Lands for North Auckland, has made an investigation of the swamps, and Dr. Maclaurin, of Wellington, has done a certain amount of research work. The latter has made some analyses of the peat, and invented a process for recovering kauri-gum from it. It would be highly advisable to provide for more research in the same direction.

Mr. Hornsby: You are of opinion that the Government should spend more money in research?—Yes; the Government ought certainly to encourage research. A scientist cannot live on air.

Besides, you are losing men of good calibre, because there is no hope of their carrying on?—That is so. There is no career in New Zealand for a scientist. There are very few openings.

The Chairman: It was alleged that there is opposition shown by the Department: do you know anything of that?—I do not think there is any opposition. The Mines Department simply wishes for information and to know the prospects of successfully extracting oil from peat before committing itself to expenditure.

I think a loan was asked for?—Yes. The people were asking for a loan or assistance both from the Department of Agriculture and the Mines Department. That did not improve their prospects of getting the money.

You believe there are possibilities in this industry?—Yes.

It has also been suggested that the Government charge 2½ per cent. on the net value of the product and also a rental of 3d. per acre on the swamp lands. It is complained that it is not fair to charge for both the land and the product?—I think that could be arranged—that the rental should merge in the royalty. On coal leases as soon as sufficient production begins the rent ceases.

And that would be a fair method in regard to oil-extraction?—It might be advisable to reduce the royalty of 2½ per cent. or to remit it altogether for some years.

Clays.

Witness: There are one or two other things I might refer to. As to clays in New Zealand, we have large resources of various kinds. We have very good fireclays, and very large quantities of ordinary brick and tile clays. We have clays suitable for the manufacture of chinaware, but these are not known to exist in large quantity. I think there are methods by which the quality of the ordinary clay can be purified, and I consider that in the future the prospects of establishing the pottery industry in New Zealand are good. We have clays suitable for fullers' earth in various places. There are glass sands at the Malvern Hills in Canterbury and in North Auckland: they are in large quantity. Of course, the question of quality arises, and careful chemical analyses are necessary to show whether they are suitable for the manufacture of high-grade glass. For optical glass the sand needs to be very pure, and must not contain more than the merest trace of iron. We have no analyses of the necessary grade of refinement.

Mr. Luke: Is the china-clay comparable with the china-clay of the Old Country?—We have not the same amount of china-clay. There are small quantities near New Plymouth and elsewhere.

In eliminating some of the base products, is it done mechanically or chemically?—Partly mechanically and partly in other ways. Allowing the clay to weather in some cases helps to get rid of the iron, which is generally the most objectionable impurity.

You are aware that the Wellington clays make first-rate ordinary pottery, such as teapots and vases?—I did not know they were made in Wellington. I know the Milton pottery-works, where such ware was made many years ago. Some of the clay at Glentunnel, in Canterbury, is suitable for that class of potteryware. There is a good clay at Kakahu, in South Canterbury.

The Chairman: An analysis of the clay at New Plymouth has been made by Dr. Maclaurin, which shows it is very suitable?—Yes, but it is only in small quantity.

It was reported of the works, "No. 3 level is 6 ft. by 6 ft., and is driven 108 ft. There is nothing to be seen on either wall or the roof but pure white kaolin of the highest grade." That indicates a high quality, does it not?—Yes.

Further: "No. 2—same dimensions as No. 3; driven 88 ft. Here also walls, roof, and floor are white kaolin. Here a shaft has been sunk 25 ft., and the quality of the kaolin improves with each foot sunk." That indicates a fairly large deposit?—Yes.

These are descriptions from a newspaper report, but, at any rate, Dr. Maclaurin has reported that the quality is good?—Yes; his analysis was made on a sample taken by the Geological Survey. That, however, is no guarantee of the quality right through. The best deposit known at present is probably that at Glenmassey, near Ngaruawahia.

The firebricks made in New Zealand are of first-class quality?—Yes. First-class firebricks are made in Invercargill from clay from the Hokonui district.

Marble, &c.

Mr. Hudson: Regarding the production of marble, is it a matter the Government might subsidize in any way to bring it more into use in buildings in order to give the industry a start?—The Government made part of the tram-line from Sandy Bay to the quarry to supply the marble for the Parliamentary Buildings.

That was for a particular company. But in a general way might the Government not subsidize the production of marble per foot for a limited period or for a limited quantity?—There are so many places in New Zealand where building-stone occurs that a great many people would want to start a quarry. If you do it for marble, then to be fair you would have to do it for every other class of building-stone.

Mr. Hornsby: Have you any information about the porphyry and other material of the kind at the Red Rocks, near Island Bay? We have never got any reliable information as to the extent of it?—There is more or less jasperoid rock there, in some places veined with white. You can get attractive specimens, but I think the stone is very much broken. You could not get large pieces, as far as I know, and it would be very expensive to cut and polish. It is very hard. There is a slaty rock there that would make good stone for basements, but it is rather dark for a whole building.

Do you think the ornamental rock is procurable in large quantity?—I do not think so. I do not care to express a decided opinion about it, because there are private interests that might object to my expressing any unfavourable view. I myself am not in favour of these decorative stones, on account of the expense of cutting and polishing.

The Chairman: It was claimed that this stuff would be saleable abroad?—I have no information that it would pay to export it.

Mr. Veitch: Have you any information which is the result of direct investigation as to the quantity?—A young man named F. K. Broadgate wrote a University thesis on the Red Rocks, but he said very little about the jasperoid rock. He made a geological exploration of the district, but evidently saw very little of it. I have been there and seen very little jasperoid rock suitable for decorative purposes.

There has been no definite prospecting of the country about there?—Only by people interested in the matter. They have done most of the prospecting.

Mr. Luke: It is said that it is a good building-stone?—Yes, it is.

The Wellington City Council is going to look into the matter as soon as weather conditions permit?—As far as I can see, it is a good stone for building purposes. There is also a red-and-green rock of good appearance.

Dr. A. K. Newman: Has not good marble been found about Alfredton or Eketahuna and that locality?—A marble occurs there. It is of good grade as far as composition goes, but it is known only in rather thin bands. So far as my information goes, a large quarry could not be established there. It might be possible to establish a small quarry.

J. H. ROBSON, Sawmiller, Stratford, examined.

I have invented a package to contain butter and cheese for export. [Sample produced.] It is made out of three-ply white-pine, and the one I produce will carry approximately 56 lb. of butter. The same package will do for cheese. It is half the weight of the ordinary box, containing 1 ft. 9 in. of timber. I claim that it is 25 per cent. stronger than the ordinary package, because though it is made out of three-ply white-pine it is circular in shape. This will take up a little more ship-space, certainly, but as the cost of construction is half the present price, and as it will conserve the white-pine by 600 per cent., the butter people can well afford to pay a little more for the extra space. [Drawing of 9 in. log produced.] Out of a log of this size you can get 224 ft. of board suitable for packages. I have been in the milling trade all my life. I am aware that we are up against a shortage of white-pine, and with this process we will conserve the white-pine. A cheese-package can be made as well as a butter-package.

To Mr. Luke: By this process you eliminate sawdust and shavings, and waste nothing. The bigger the log the bigger is the percentage in the saving.

To Mr. Veitch: It is really a saving of more than 600 per cent., seeing we save everything. I based the 600 per cent. saving on the use made of a 9 in. log.

To Mr. Luke: I consider that tawa timber could be used for cheese-crates with a veneer of white-pine inside.

To Mr. Hornsby: The butter people have no objection to the shape. It is not possible to make it square.

To the Chairman: It is possible to perforate my package to provide ventilation for the carriage of cheese. If this package can be made for 1s., as against the present price of the butter-box of nearly 2s. and of the cheese-crate of 3s., and you at the same time conserve the white-pine, it is a business proposition. I wish the Committee to bring the matter under the notice of the Department of Agriculture.

To Mr. Hudson: The packages could be sent in the flat to butter-factories and made up there.

To Mr. Hornsby: I have not submitted the package to the Farmers' Union people, but I have shown it to some factory-managers, who see no objection to it.

To Dr. A. K. Newman: Approximately 56 lb. of butter will go into the package, but any other size may be made.

To Mr. Hudson: It would be possible to make rough packages for fruit. I do not know what the fruit-cases cost now, but with this process cases could be made much cheaper than the sawn article. Two-ply could be used for fruit-packages, and a case to hold about a bushel would cost 1s. In naming this sum I am not talking of profit to the mill on it.

To Dr. A. K. Newman: I have not worked out how much more room it will take up than the ordinary box, but I do not think it would be anything like 10 per cent. The thickness of the three-ply is $\frac{3}{16}$ in., and the ordinary box is about 1 in. thick.

To Mr. Hornsby: The packages could be ventilated for fruit, and it would not increase the cost.

To Mr. Hudson: In a square package there would be a certain amount of sagging. If you go away from the round you lose in strength.

To Mr. Veitch: I consider that the circular package will take up more ship-space than the present boxes. If, as Mr. Veitch says, they will really take up less space I shall be pleased. I have not figured it out.

ROBERT NAIRN, of Christchurch, President of the New Zealand Association of Nurserymen (Incorporated), examined.

We have not a grievance: we are in a difficulty. Before the war the New Zealand Government stressed the value of the fruit industry, and in consequence the Horticultural Division of the Department of Agriculture made a request to nurserymen to meet the demand for fruit-trees in the Dominion. The nurserymen have met that demand. The demand for fruit-trees fell off, however, when the war had been on for a year or two, and in consequence many of the nurserymen who grew for commercial purposes have been landed with enormous stocks of apple-trees which they have not the slightest chance of getting rid of with any satisfaction to themselves or to anybody else. These trees are valuable to the community, yet they will have to be dealt with, perhaps by fire. That, however, would be the last thing to think of, because they are an asset to the community and ought not to be destroyed. We want to know whether it is possible for the Committee to help us to find a market outside, or to stress the value of planting for returned soldiers and so extend the fruit industry. Firstly, we wish the Government to push the industry in relation to the repatriation of our soldiers. There is no industry that would be more beneficial to them. It is a healthy outdoor occupation, and if the men are prepared to go in for family life there is no industry that would more solidify the community. Secondly, the Government should consider the matter of finding a market outside. In the past there has been considerable inquiry in South America for fruit-trees. They do not raise trees there as we do here, and if the Government would make inquiries there it might be possible to place a large quantity in that country. Something might also be done in regard to placing apples in the same market at a profit. This could only be done with assistance from the Government in the way of a subsidy, and we ask the Committee to impress on the Government the importance of finding a market there and of giving a subsidy to the shipping.

GEORGE A. GREEN, of Auckland, Secretary of the New Zealand Association of Nurserymen (Incorporated), examined.

When I return to Auckland I shall have completed 4,000 miles of travel after visiting nurseries from one end of New Zealand to the other. As a result of my trip I can say that

as regards apple-trees alone there are in the Dominion about a million trees over and above the present demand. The present demand is purely a demand for home-orchard planting. The bottom has been knocked out of commercial tree-planting, not, as has been stated in the Press, because the bottom has fallen out of the market, but because we have not had the men here to plant, due to the war. The men who would have planted, and who have been here, have not felt that things were sufficiently stable to warrant planting. The calling-up of the Second Division was the final touch which stopped commercial planting. As the president has said, the large quantity of trees we grew was grown at the request of the Minister of Agriculture and the Orchard Division, who said, "Here is a great market, and it will continue, and we recommend you to supply a first-class article such as New Zealand produces, so that it will be free from disease such as comes in from overseas." This we have done, and we are now in a difficult position. The value of the present stock is £50,000 at reasonable market rates. This falls very heavily on those who laid themselves out to grow trees in this branch of nursery work. With regard to the repatriation scheme and fruit-tree planting, there has been a scheme before the Government which has been more or less favourably reported on, so that, at any rate, the basis has been laid for a scheme which would call for a large amount of planting, which would be an asset to the nation, and which would give a tremendous impetus to the Dominion by increasing our exports very largely. Nothing has been done effectively, however, and we consider the time is past ripe—in fact, almost too late for the best results. Even yet, however, there is the opportunity. Recently I had the privilege of a conversation with a gentleman who had been instructing in England, France, and other places, and he had a class of fifty young fellows who wished to take up fruit-farms, and who would have done so if a Government scheme had been open to them. I am satisfied there is a big future for the fruit industry in this country, and many of our returned soldiers are only awaiting the opportunity to take it on. It would provide us with an outlet that would assist the soldiers and also assist the nation. There is also the overseas market. A number of our nurserymen were developing an overseas market for fruit-trees, but the ships were taken off. The South American markets that were taking our apples were also commencing to take our apple-trees. In the first year of the war a firm in New Zealand turned down an order for £5,000 worth of apple-trees. It is evident, therefore, that if that market were opened there would be a great demand. Another firm showed me orders for 23,000 trees. Therefore, as we know that a market exists in South America for the fruit, as we have the fruit, as our fruit has won a name for itself there, as the people will pay a higher price for it than for fruit from anywhere else, and as there is a market for fruit-trees, we suggest that the Government should subsidize two or three late autumn steamers to go round the Horn instead of through the Panama Canal.

The Chairman: In what months do you suggest the ships should go?—In May and June of 1920.

If you sell many trees to South America the growers there may compete against you later on?—The principal nurserymen in New Zealand are among the largest growers, and they would not be likely to do anything that would have such an effect. Our idea is that the fruit industry is an industry that is being developed. The Government has stated that it will be the fourth industry in importance in the Dominion, and as such it is surely worthy of assistance to carry it on. As to cutting our own throats by selling trees to South America, it is a fact that up to the present there has been no great quantity of fruit grown there, whether from climatic conditions or some other cause I cannot say. They are wanting to try our trees to see if they will grow better than the trees they have been getting from other places.

Mr. Hudson: In connection with the subsidizing of the steamers, it appears to be unfortunate that when you want to get the apples away you would not want to get the trees away, and *vice versa?*—Speaking for Auckland, our experience is that the apples the South American market wants are those we commence to pick in the last week of April. As to the trees, we could not ship trees until the last week in April or the first week in May.

A. W. Buxton, of Christchurch, examined

I wish to emphasize the necessity of getting to work at once. There are so many thousands of trees in the country that will have to be dealt with that it is absolutely necessary to waste no time. Many trees will have to be burnt if something is not done. If the Government do not make a move without delay it will be too late to get the trees planted this season.

A. W. Hamilton, Secretary of Thomas Horton (Limited), examined.

It was stated that by sending apple-trees to South America we were acting against our own interests. I wish to say that five years ago my firm had an order from South America for 200,000 cases of fruit per annum for five years, and similar representations were made to other firms. A merchant in South America was asked, "In making sales of trees to South America is New Zealand not prejudicing its market there?" and his answer was in the negative. He added that the fruit-trees in South America would grow only for a certain time and had then to be cut out. It seems that fifteen or twenty years is the life of the trees. It is also worthy of mention that in Buenos Aires there is a population of two and a half millions of people, and South America does not supply sufficient fruit to meet the wants of a hundredth of that number. There is a tremendous market in South America for New Zealand fruit.

FRIDAY, 23RD MAY, 1919.

Dr. J. S. MACLAURIN, Dominion Analyst, examined.

Industrial Alcohol.

The pre-war wholesale price of petrol in Wellington was about 1s. 8d. per gallon One gallon of petrol is equal to approximately 1 gallon of absolute alcohol, when each is used in an engine designed for that class of fuel. To compete with petrol as a fuel for motors, &c., alcohol would therefore require to be sold at not more than, say, 1s. 3d. to 1s. 6d. per gallon. The principal materials from which alcohol may be produced on a commercial scale are starch, sugar, wood, and calcium carbide. Of starch-bearing substances the most largely grown in New Zealand are wheat, barley, maize, and potatoes. A bushel of wheat should produce rather more than 2 gallons of alcohol, and if obtained at 4s. per bushel, which was approximately the price in 1912 and 1913, the alcohol made from it would cost at least 2s. 6d. per gallon, allowing 6d. per gallon for manufacture, or double the price at which it could compete with petrol.

Turning now to potatoes as a possible source of alcohol, 1 ton of potatoes should produce approximately 27 gallons of alcohol at a cost of about 6d. per gallon for manufacture. Therefore to compete with petrol the potatoes would require to be bought at not more than £1 7s. per ton; but the selling-price of potatoes in 1913–14 was about £3 to £5 per ton f.o.b Lyttelton, and they would probably be worth at least £2 to £4 on the farm.

Sugar: Refined sugar is, of course, out of the question for this purpose, but molasses is a very cheap form of sugar largely used for the production of alcohol. The amount of molasses imported into New Zealand of late years has been about 1,300 tons per year, and the amount produced here about 100 tons. The price is £3 5s. per ton. These molasses contain approximately 52 per cent. of total sugars. One ton would yield approximately 62 gallons of absolute alcohol, at a cost of about 1s. per gallon for materials, and 3d. to 5d. for manufacture, bringing the total cost per gallon to 1s. 3d. or 1s. 5d. Considerable quantities of alcohol are produced from this source in Queensland—*e.g.*, 648,000 gallons were distilled in 1914 and 442,000 in 1915.

Wood: Of late years a large amount of experimental work has been done, especially in the United States, on the production of alcohol from sawdust and other waste wood. In 1914 the Dupont de Nemours Power Company, of Georgetown, U.S.A., were said to be producing about 450,000 gallons of alcohol per annum. The yield of alcohol varies considerably with the kind of wood used, but it may be taken as averaging from 16 to 20 gallons per ton.

Calcium carbide: On treating calcium carbide with water acetylene is formed, and this gas can be converted into alcohol by suitable treatment. It is said that the Lonza Electric Company, Switzerland, intend to spend £450,000 on works for the production of alcohol in this manner.

From the foregoing information it is evident that wheat is out of the question as a source of alcohol. Potatoes are in a somewhat better position, but are still too dear for the purpose. Damaged grain, damaged fruit, and inferior potatoes would no doubt be available in considerable quantities, but the cost of transport would be prohibitive except for products grown within a comparatively short distance of a factory.

As already stated, alcohol could no doubt be prepared in New Zealand from molasses at a comparatively small cost, but the amount of molasses produced here is far too small to be used as the main source of commercial alcohol. The imported molasses need not be considered in this connection, since it would no doubt be far cheaper to prepare the alcohol in the country in which the molasses is produced. This is evident when we consider that the yield of alcohol is only from one-fifth to a quarter of the weight of the molasses used. The production of alcohol from waste wood in New Zealand is well worthy of consideration, but until a thorough investigation of the quantities and suitability of the various timbers available is made no reliable opinion can be formed on the subject. With regard to the production of alcohol on a commercial scale from calcium carbide, it would, I think, be a mistake to investigate this question in New Zealand until larger countries have proved the process.

The manufacture of industrial alcohol from wood: The two principal methods by which alcohol is manufactured from wood are—(*a*) Fermentation of the waste liquors from the sulphite process of the wood-pulp manufacture; (*b*) direct treatment of sawdust or other waste wood with dilute sulphuric acid. The first of these processes need be considered only in the event of the establishment of wood-pulping in New Zealand being contemplated. The process is said to be a commercial success in Sweden and in the United States. The second process consists in heating sawdust or wood chips with dilute sulphuric acid under about 85 lb. pressure, leaching out the sugars, neutralizing the acid, converting the sugars into alcohol by fermentation, and recovering the alcohol by distilling. In 1916 this process was reported as being successfully carried out on a commercial scale at Georgetown, South Carolina, by the Dupont Power Company, and in the *American Lumberman* of the 4th August, 1917, it is stated that the Forest Products Laboratory of Madison estimated that a properly constructed plant designed to produce from 2,500 to 3,000 gallons a day can make ethyl alcohol at a cost of from 14 to 20 cents a gallon including all overhead expenses (= 17 to 24 cents per imperial gallon). The process yields about 16 to 20 gallons of alcohol per ton of dry wood. Assuming the selling-price of alcohol to be 1s. 3d. per gallon, these yields would be equivalent to £1 to £1 5s. per ton of wood. In New Zealand, with sulphuric acid at the pre-war price of £10 per ton, the cost of acid per ton of dry wood treated would be about 4s., which would leave 16s. to £1 1s. per ton for cost of wood, labour, and power. This appears to be a sufficient margin to warrant investigation of the question. As different timbers yield varying amounts of fermentable sugars by this process, one of the most important points to be determined is the suitability of our timbers for such treatment. Useful information on this point might be obtained by forwarding samples of the timber to one of the experimental stations in the States—such, for instance, as the Forest Products Laboratory at Madison, Wis-

consin; but in my opinion it would be preferable to have the preliminary tests at any rate made in New Zealand, as this would encourage research and help in producing men capable of successfully dealing with such problems. The total quantity of sawdust and waste wood produced annually in the Dominion is estimated by the Lands and Survey Department as about 15,000,000 cubic feet of wood, of which not more than 2,000,000 cubic feet are used as fuel. The remaining 13,000,000 cubic feet are equivalent to about 200,000 tons, and should be capable of producing at least 2,000,000 gallons of alcohol, provided that our timbers are suitable for the purpose.

Mr. Hudson: Would the alcohol so produced be as useful as petrol for power purposes?—Yes, for motor-engines and so on; but the motor-engines would have to be altered to give the best results. The present engines are designed for petrol.

With that alteration would it be as efficient as petrol?—Yes, so it is said.

If timber were used for this purpose, would it unduly deplete the forests?—I think not, from the statement of the Lands and Survey Department. The amount of waste timber is very large—sawdust and waste timber.

Would sufficient sawdust be available in different localities without having transportation?—That point I have not gone into; that is a question that needs investigation.

Would all classes of timber do for the purpose?—Some timbers are very much better than others for the purpose—they produce much more alcohol.

Would the timber thus used be suitable for other uses?—I cannot say without investigation. Some timbers give a large amount of sugar, a proportion of which is not fermentable.

It would be a great advantage if the timber could also be used for other purposes?—Yes. The Americans have been working mainly on sawdust, I understand.

Mr. Sidey: Do I understand you to say that in one preparation wood-pulping is required?—Yes; that is in the use of the waste liquors of wood-pulping.

Did you assume in that case that there would be wood-pulp for papermaking carried on?—I have not gone into that side of the question, but if that were the case it would be an additional advantage.

The conclusion you have come to is that the investigations in this matter are not sufficiently complete to warrant us in trying to draw exact conclusions?—Yes.

The question is, what steps ought we to take in order to determine this question?—I think the best way is to send samples of our timbers out of the country to be investigated by the Forests Products Laboratory, or to have preliminary investigations made here.

Who would undertake the preliminary investigations here?—We could undertake a certain amount of the work, and the University colleges might also undertake some.

That raises the question of scientific research?—Yes; I have that subject down for consideration, and I will deal with it later on.

The Chairman: It has been suggested to the Committee that there are large quantities of waste material in flax-milling that might be used?—Yes.

Have you any knowledge whether that material would be suitable?—I have not done any work in connection with that. I understand that Professor Easterfield is engaged in that work.

I understand that he is doing it in a private capacity, and the result of his investigations may not be published?—I have not done any work on it myself, but undoubtedly a certain amount of alcohol could be produced from it. The question is whether it would be payable. I have no information on that point.

Do you know if any license has been issued yet under last year's Act for the production of alcohol?—I do not know.

As far as you know, is the necessary plant free from patent rights?—I cannot say that. This Dupont Power Company has been for a number of years experimenting on the matter. It is quite possible that they have patented certain processes used by them; but the process itself in outline is a very simple one. There does not appear to be any very serious difficulty in its application.

You based your calculations upon the fact that motor-spirit cost wholesale before the war 13s. 4d. per case: would it not alter your calculations considerably if we could assume that that article would not be sold here for less than £1 a case after this?—Oh, yes; that would improve the conditions for manufacturing alcohol if the price were going to last at that.

It is becoming increasingly scarce all over the world, and the demands are becoming greater and greater every year, so that one can hardly think there is much chance of its becoming as cheap as it was before the war?—It is not likely.

Mr. Hornsby: Not when the Baku wells are going again?—That will help to keep the price down.

The Chairman: It has been suggested to the Committee that the production of alcohol should be a State monopoly with the view of preventing any abuse of the article?—It will be necessary to have the alcohol bonded. Provision would need to be made to prevent illicit sale. That is done wherever it is manufactured in that way—in Germany or in the United States.

I suppose means could be adopted whereby any abuse could be prevented?—It is done in other countries—I do not know how successfully.

Can you tell the Committee the present cost of this article—the present market price of the alcohol?—I have only the information which I gave you just now—it is the latest information I could get on it—from 17 to 24 cents per imperial gallon.

What is the New Zealand price at the present time?—Unfortunately I have not that. It is very high.

It has been selling during the war period at from 8s. to 12s. a gallon. The present price, I believe, is 8s. a gallon—that is the price of industrial alcohol wholesale?—Of course, that would include the duty.

I understand that what we import here is mostly made in Queensland?—Yes, made from molasses.

What is industrial alcohol?—If it is methylated it is, of course, duty-free.

It seems, according to the price, that New Zealand has been paying pretty smartly during the last few years for this article?—Yes.

Mr. Hudson: Do you think it is worth while fruitgrowers looking to the production of alcohol as an outlet for waste fruit?—I do not think so, on account of the transport difficulty.

Not even with the big centres?—In Germany, which is the home of that kind of industry, the great bulk of alcohol is made from potatoes; only a very small proportion is made from waste fruit.

The Chairman: I think the potato used is a very large coarse potato—specially grown for the purpose?—Yes; I think the potato crop has special State assistance.

The whole subject is well worthy of investigation?—Yes.

Mr. Craigie: Would you favour an expert from Europe being appointed to come out here to report to the Government, or what should be done?—If you catch the right man it might be all right; but I do not know that it would be necessary to do that: we could send samples away to be tested.

You consider that there is a great waste going on at our sawmills?—Undoubtedly there is a lot of sawdust going to waste, and there is a lot of other timber being wasted.

Iron-smelting.

With regard to iron-smelting in New Zealand, the principal ores that might be smelted are the Parapara iron-ore and the Taranaki ironsand. An analysis of the Parapara iron-ore gave: Iron (Onekaka) 45 per cent., (Washburn) 50 per cent.; phosphorus, 0·3 per cent.; sulphur, 0·2 per cent. Taranaki ironsand: Iron, 35 per cent. (capable of conc. to 50 or 60 per cent.); phosphorus, 0·2 per cent.; sulphur, nil to 0·03 per cent. Unfortunately the percentage of phosphorus in each of these is too great to permit of the ores being treated by the acid Bessemer process for the manufacture of steel. They could be treated by the basic Bessemer process, but for this treatment they are at a decided disadvantage as compared with ores containing larger amounts of phosphorus. Both the Parapara and Taranaki ores would give pig iron containing about 0·4 to 0·6 per cent. of phosphorus, but in the basic Bessemer process it has been found that the best results are obtained with pig iron containing about 2·5 to 3 per cent. of phosphorus. Pig iron containing much less phosphorus than this has been frequently employed, but it does not give satisfactory results. Moreover, the basic slag produced by such irons is low in phosphoric acid, and consequently of comparatively little value for agricultural purposes. In my opinion we could not profitably compete with imported iron and steel, owing to the high cost of coal and labour, to the variety of irons and steels used, which would necessitate different methods of production; and to the comparatively small output required to supply any one of these. To export pig iron or steel is, of course, quite out of the question. As there is every probability of iron-ores becoming more valuable in the near future, it will be to the advantage of the country to postpone their development until the population has sufficiently increased to ensure the profitable utilization of such deposits. In 1916 15,000 tons of titaniferous iron-ore was smelted in the United States of America with very good results—good pig and economy of fuel.

The Chairman: What would be the effect of coal on the cost here?—Our coal is very much higher in cost than either American or British coal.

What would be the cost of the pig iron you have referred to?—I am basing these views on the relatively high cost of coal and labour as compared with costs in other countries.

You have to consider freight and charges?—Yes, there is the freight to be taken into account. It seems very doubtful whether that would cover the extra cost. Then there is the very small output: that would prevent the full use of the furnace. A furnace on a small scale is not profitable. In my opinion these iron-ores should be reserved for future years, when there will be a very much larger population here and larger requirements for iron and steel. It would pay better to use them then.

Parapara is under lease at the present time?—Yes, so I believe.

When you say that the supplies of ore should be reserved, do you mean that the leases should be taken over by the Government and the area be reserved until later on?—Yes; I mean that it is not advisable to spend money on attempts to produce iron at the present time.

Mr. Hudson: In your statement that the cost of production would be too high to compete with imported pig iron, you make that statement without having gone into the details?—I have not gone fully into the details. I am only speaking generally on that subject.

Mr. Sidey: Have you analysed the coals in that vicinity?—Yes, I have analysed a great many coals.

Would local coals be available for the purpose?—I believe there is a coal not very far away. That is a geological question, however. Mr. Morgan could give the Committee information on that point. There is a coal in the locality, but it is not first class.

Mr. Hudson: As to Mount Burnett?—I have not an analysis of that coal here.

Mr. Sidey: In making your calculation which coal do you assume would be used?—Westport coal.

Your estimate was based on the assumption that the coal required would be taken from Greymouth?—Yes.

If it were found that the local coal would do, the whole basis of your computation would have to be altered?—If the local coal were first class; but very few of our coals are really first class for smelting purposes—Paparoa and some of the better bituminous coals would do.

Are you aware that other reports seem to be in conflict with the evidence which you now give as to the probable payability of this work—reports which have been submitted to the Government?—Yes, I have heard something of them.

You know that the private companies have obtained reports from time to time?—Yes.

The Committee were informed that Dr. Bell in 1909 estimated that pig iron could be produced from the ore at a cost of £2 1s. 9d. per ton?—Yes.

In view of that conflict of opinion, what course do you suggest should be adopted?—I think it would be necessary, if it is thought worth while going into the question at all, to get out some one who is thoroughly up in iron-smelting.

You recommend getting an expert from England or America?—If you think it is worth while going into the question at the present time, that would be the best course to follow.

Have you formed any opinion as to whether the State ought to run this thing?—I have not gone into that aspect of the question.

The Chairman: Have you been at New Plymouth during any of the trials?—No.

Mr. Sidey: One witness suggested that we should concentrate upon Parapara, and utilize the Taranaki ironsand for the production of titanium: what do you think of that?—It might be possible to do that on a payable basis, but I have not gone into that question. It is quite possible to smelt iron-ore containing a large amount of titanium. I think there has been some idea that it is not possible; but in 1916 15,000 tons of highly titaniferous iron-ore was smelted in the United States, and produced very good pig iron, with an economy of fuel. But the main point I want to emphasize is that Taranaki ironsand is not as good as is generally supposed. It cannot produce first-class steel without going through the usual basic process; it is not suitable for the acid process.

The Chairman: We have had a considerable amount of evidence in connection with this iron. It has been suggested to the Committee that a comprehensive report should be obtained from the very best available men—either from America or Great Britain: I suppose you would agree with that?—Yes.

It is a matter that ought to have further consideration, I presume?—Yes.

Shale.

Witness: May I now say something in regard to a report by Boverton Redwood on a parcel of New Zealand shale received from the New Zealand Coal and Oil Company (Limited). The report was made to the company in 1906. I will give the Committee a copy of that report. I will read a few points out of it that may be of interest. There were 57 tons of shale sent to the Old Country, to the works at Pumpherston. The report states: "Before the test was commenced 5 tons 17 cwt. 7 lb. of the shale was put through the retort. During the test 50 tons 7 cwt. 1 qr. was distilled, and 16 cwt. 3 qr. 7 lb. was left over at the close. The test extended over twenty days, and, excluding the first two days, the average yield of oil was at the rate of 38·41 gallons to the ton, whilst the average yield of sulphate of ammonia was 19·12 lb. per ton. More than sufficient gas was produced for firing the retort, and by scrubbing this gas with oil at least a gallon and a half of spirit could be obtained to the ton of shale." The report gives full particulars in regard to the refining of the oil, about which the Committee will not be particularly interested. Then Boverton Redwood goes on to say, "It is evident from the results of the comprehensive practical test which has been carried out that the shale in question is of high value, and that its commercial working may be carried out most profitably. It is common knowledge that paraffin wax is by far the most valuable of the products obtained in the distillation of shale, and the exceptionally large proportion of this substance yielded by your shale is a feature the importance of which does not need to be emphasized. No Scottish shale yields anything like so large a percentage. The various oils are evidently all of good merchantable quality; but, of course, if desired the heavy oils could be marketed in bulk as liquid fuel instead of fractionating them in the usual way." I have a report on somewhat similar shales from Waikaia, Southland. The analysis was made by us in June last year. There were eight samples forwarded. On distillation there was obtained—crude oil, equivalent to 38 gallons per ton of shale; ammonium sulphate, equivalent to 8 lb. per ton; gas, equivalent to 4,000 cubic feet per ton; evaporative power per pound, in pounds of water at 212° F.—Waikaia shale, crude, 17·67; Orepuki shale-oil, crude, 19·29; Taranaki petroleum, crude, 19·98. So that the Waikaia crude oil was not very far behind the crude petroleum in calorific value. The total sulphur per cent. was—Waikaia, crude, 1·80; Orepuki shale-oil, crude, 1·79; Taranaki petroleum, crude, 0·21. A good fuel-oil should not contain more than 0·5 per cent. of sulphur. Boverton Redwood's report states that there was no special difficulty due to the sulphur in the oil, but the percentage of sulphur is undoubtedly high, and I believe that was one of the reasons why the works were stopped. The large amount of sulphur rendered the work of treating disagreeable, but methods are now being devised for reducing the amount of sulphur in such oils, and it is quite possible that in a few years oils containing less than 0·5 per cent. of sulphur may be made from shales such as the Orepuki and Waikaia.

The Chairman: What do you suggest to thoroughly test the thing to-day: we have had a request from the Rakaia people for a bounty on production?—Yes, that would probably be the best form in which assistance could be given. Something of that sort was done in the case of Taranaki oil—a bonus was given on production of so-many thousand gallons of oil.

The deposits, in your opinion, are valuable, and should be made use of?—Yes.

Mr. Sidey: Was that the chief reason why Orepuki was not gone on with?—I have not heard the full particulars as to why the works were closed down, but I understand that that was one of the important reasons.

It seems strange, in view of the success of the test, that the work has not been gone on with?—This report should be regarded as quite satisfactory. Boverton Redwood is a widely known

man, and a great authority in his particular sphere of work. The experiments seem to have been carried out carefully, but I think the report is perhaps a little overoptimistic.

Coal.

Witness: Most New Zealand brown coals are fairly soft and readily broken when handled: the consequence is that large amounts of fine coal or slack are formed in mining and transport. Prior to the war a large proportion of this fine coal was thrown away as being worthless, but of late the unfortunate householder who cannot get anything better makes some attempt to burn it. In other countries, and more particularly in Germany, such coals are briquetted and a really good household fuel produced. An alternative method of treating these waste coals would be to carbonize them at a low temperature. This would produce oils and tar and give a residue of semi-coke. The oils would be of considerable value, and the residue could probably be made into a good fuel by mixing with a portion of the tar, and possibly with other binders, and then briquetting. The whole question, however, requires thorough scientific investigation.

The Chairman: We have had that matter brought before us at Westport?—The coals we have in New Zealand are unusually friable; they will not stand knocking about at all.

It is an important question now, in view of the shortage, to prevent any waste in coal or waste of any kind?—Yes.

Was there not some attempt made to make these briquettes?—Yes; I do not know why it was stopped. The reason I heard was that the workmen objected to using the pitch; they said it affected their eyes.

The Committee was told at Westport that they can be made without pitch?—Yes; in Germany briquettes are now made without pitch. Certain classes of coal can be made into briquettes without any binding at all—pressure is sufficient. If any particular coal is not suitable by itself it might be possible to make it suitable by mixing it with others.

Peat.

Witness: Of late years considerable attention has been given to the distillation of peat, mainly on account of the ammonia recovered from it. No systematic examination of New Zealand peats has been made, but in 1913 we analysed ten samples of peat forwarded by the Commissioner of Crown Lands on behalf of the Dominion Royal Commission. The samples were taken from three swamps in Southland with an aggregate area of about 2,700 acres. The average amount of nitrogen in these samples, calculated on the dry peat, was 1·43 per cent. This amount, although not so high as is found in some of the European peat bogs, is greater than the amount present in some of the peats said to have been worked successfully. In New Zealand, however, owing to the very high price of sulphuric acid, which is necessary for the formation of ammonium sulphate, it is improbable that it would pay at the present time or in the near future to distil such peats for their ammonia.

Kauri peat: With regard to kauri peat, however, owing to the larger amounts of oils produced, the position is somewhat different. I am strongly of the opinion that in working kauri-peat swamps it will pay to recover as much of the kauri-gum as possible before submitting the peat to distillation. This becomes self-evident when it is realized that the most valuable of the oils produced is of very much less value than the gum itself, and that a considerable percentage of gum is destroyed in the process of distillation. Should the Government decide to assist the kauri-peat industry a preliminary survey of the more important swamps should be made and a comprehensive series of samples taken for analysis.

Comparison of Oils distilled from Shale and Kauri Peat.

	Shale.	Kauri Peat.
Ammonium sulphate (pounds per ton)	8	14
Gas (cubic feet)	4,000	4,300
Crude oil (gallons)	38	29
Charcoal (hundredweights)	...	7·2
Distillation range—		
Below 200° C.	7·0	8·8
200–250° C.	11·5	12·4
250–300° C.	14·0	12·7
300–350° C.	18·0	31·9
Above 350° C.	41·0	25·5
Residue (coke)	6·0	8·7
Loss	2·5	...
	100·0	100·0
Paraffin (pounds per ton)	22	13
	Orepuki Shale.	Kauri Peat.
Sulphur in oil (per cent.)	1·79	0·5
Evaporation power of crude oil per pound in pounds of water (per cent.)	19·29	18·19

The Chairman: We have had a good deal of evidence about the production of oil from peat, but we are not sure about its quality?—Yes, that is the main difficulty.

Kauri peat is rich in oil?—Yes. I submit to the Committee the analyses of four samples. Unfortunately these were taken from one place only in the swamp. They were taken in the presence of Professor Worley. Each sample was divided in the field into two equal portions, one of which was analysed by Professor Worley, and the other by my staff. The two sets of analyses agreed very closely, and are quite satisfactory so far as those particular samples go; but to prove the swamp, sampling would require to be carried out on a much more extensive scale.

Mr. Sidey: Do you suggest that those interested in these peats as private owners should be given something in the way of a bonus to encourage them?—Something might be done in that way, but a certain amount of caution, I think, would require to be exercised.

You do not suggest anything of that kind before scientific investigation has been made?—I think the commercial value of the peats has not been sufficiently proved.

Mr. Hudson: We had evidence in Auckland that these peats produced 75 gallons per ton?—Yes, I know that has been stated in connection with the Parengarenga fields. I think that must have been from a selected stratum or from selected strata in the swamps. I do not think that is the average at all.

You think it is too high a figure to take?—I should think so, but I cannot speak authoritatively on that point.

They represented to us that you were rather in conflict with them?—Pessimistic?

Oh, no; that there was a patent of yours conflicting with them?—No; mine has nothing to do with kauri peat: it deals with low-grade gum. Perhaps we are in conflict in this way: they say, instead of recovering the low-grade gums it would pay better to distil the whole layer of peat.

Is there anything in their statement that the fact of your having invented some processes is standing in their way?—Oh, dear, no; mine is for treating gum that has been removed from the ground. I have told them that it would pay them far better to remove most of the gum first and treat the residue by their distillation process. To distil kauri-gum is like distilling butter to make a lubricating-oil: that is about the position.

Mr. Veitch: Do you say there is nothing in the objection raised?—My process deals with low-grade kauri-gum: it does not conflict with the other process. In any case, there is plenty of room for both processes.

Mr. Hudson: There is evidently a serious misunderstanding in the minds of these people?—I do not think so.

Mr. Veitch: The sum total of your evidence is that in your opinion much more minute investigation is required?—Yes, that is so.

In the way of prospecting?—Yes, that is the first step; and then there is the question of having a sufficient number of samples taken and analysed. I recommended that more than ten years ago.

The Chairman: You recommend a thorough investigation of the whole of the swamps and that thorough tests be made?—Yes; I have recommended that if the Government wish to settle the question in regard to this industry thorough tests of a large number of samples properly taken should be made.

Research.

Witness: To any one who has given the matter serious consideration it must be evident that much greater activity in scientific research is necessary to ensure our present industries being carried on to the best advantage, and to secure the establishment of new ones on a sound basis. I would support the scheme recommended by the National Efficiency Board as a means of attaining these objects, but whether it be adopted or not by the Government I would strongly recommend that the principle laid down in clause 7A be carried out—*i.e.*, that Government assistance be given to those already engaged in research or capable of undertaking it satisfactorily. This appears to be the best method of proceeding at first, even if the intention be to adopt the full scheme at a later date. A fact not fully recognized by the general public, nor perhaps by Parliament itself, is that there are a number of men in the various scientific branches of the Government service who are capable of exceedingly useful research. In the Dominion Laboratory we have carried out a certain amount of research work on coal, clays, ironsands, radio-activity of thermal springs, &c., and a process has been devised for the treatment of low-grade kauri-gum. Prior to the war about 3,000 tons of such gum, containing an average of about 33 per cent. of dirt, was exported annually. By the new process, which is now being worked successfully on a commercial scale, practically the whole of this dirt can be removed at a comparatively small cost. It is evident that the saving in freight alone will be very considerable. Our researches on coals and clays would have been in a much more advanced state but for the impossibility of obtaining assistance while the war was on. During the last year or two I have frequently discussed the matter with our Minister, the Hon. Mr. Russell, who is very favourably disposed towards more extensive research being carried out by my Department, and has promised to secure for us as soon as possible increased accommodation and staff. If this be done we should be able to carry out a considerable amount of industrial research quite satisfactorily.

Mr. Veitch: Do you think an expansion of your Department would be sufficient to enable scientific research to be carried out satisfactorily?—I do not mean to infer that.

You think it would be necessary to go in for scientific investigation outside of that?—Yes.

The Chairman: The proposal of the National Efficiency Board sets up a complete Department?—I recommend that scheme.

Mr. Veitch: You recommend that in addition to the strengthening of your Department?—In that scheme they say that all Government bodies, University colleges, and private persons carrying

out research work satisfactorily should receive assistance. I was simply emphasizing that point, and showing what we could do as one of the bodies referred to.

What is the reason why you believe it is necessary to carry out scientific research outside of your Department?—I do not think we have a sufficient staff, and no matter what the size of the Department may be I feel very opposed to the suggestion that all the research work should be carried out under my direction.

The Chairman: Under the scheme suggested various bodies are to be represented—the Farmers' Union, Industrial Corporation, the United Federation of Labour—all co-ordinating?—Those bodies would be represented on the Council controlling scientific research. It is also suggested that our Department, the University colleges, and any private people doing reasonable research work should be assisted to carry on that work.

Mr. Veitch: Can you give us any special reason why the whole of the work should not be done under one organization?—If that organization were made sufficiently strong it could be done; but there are some objections to that. It would mean centralization. The other parts of the country would feel left out of it. There are local questions that come up. One part of the country is interested in one kind of industry and another part in another industry. And there is that feeling about it to which I have referred, and some justification for it too, I think.

Mr. Sidey: Do I understand when you suggest your adherence to this clause under which Government assistance should be given to those already engaged in research work that you include the professors of the four University colleges?—Yes, certainly.

A good deal of evidence has been given to us on behalf of the universities asking that the Government should provide assistance in the way of salaries of £500 a year for assistance to the professors, which would free the professors who are interested in the work of research and enable them to carry on such work. Do you approve of that proposal?—Yes, I think some assistance of that nature should be given.

Do you suggest that the provision of the assistants to the professors ought to come through the Board?—Oh, yes; the Board is to control the whole thing. The Board would say, for instance, to a professor, "You are engaged in certain research work: we would like you to continue it"; and provision would be made accordingly.

You are opposed to the suggestion that the Government should directly assist the professors in the way suggested?—Oh dear, no. If the Government adopts this scheme it would assist the professors through the Board, I take it.

Do you recommend that the Government should earmark a certain proportion of the grant for the professors of the various University colleges?—I think it could be done quite easily.

Do you think that is a practical suggestion to make?—I have no doubt the Board would do that, no matter whether it was instructed or not. The whole matter needs to be very carefully considered, and it would be far more satisfactorily considered by such a Board than by myself or any one else. I have not given this phase of the question much consideration. The whole matter needs to be gone into very carefully. In regard to the suggestion that there might be overlapping, the Board was so constituted and the scheme so framed with the view of preventing that as far as possible. I may add that I think the professors will be well represented on the Board. I helped to draw up that report.

Do you not think if there had been an independent body—a body that has not to consider the exigencies of party politics—that things would have been done much more quickly?—I quite agree with that.

Is not that one of the chief reasons for suggesting the Board?—Yes.

There is another suggestion which has been made to us, and that is with regard to inventions. You recognize that it is very important to the country that new ideas in the way of inventions should be tested?—Yes.

Do you think it would be possible to combine this Board of Industries and Science with a department which would carry out tests of inventions?—No doubt that should be done. A little of it is done at the present time. I am occasionally asked to report on certain inventions.

Do you think it is desirable to co-ordinate the two?—Yes, I think that would come. I think it would come naturally under the Board's functions. As far as I understand the position in regard to the patent law in New Zealand at the present time, a patent is granted unless it is manifestly evident that it is on the same lines as a patent previously granted. The patentee has to fight it out with any one else who may dispute his right.

Mr. Craigie: Do you not think it would be better for a young country like this to help and subsidize the different universities in the direction that has been suggested?—I am inclined to think, as I have already said, that those are the right lines on which to start—to help those who are already doing research work. To my mind, the only doubtful point in the scheme recommended by the Efficiency Board is as to whether the country is prepared to expend the amount of money suggested. The scheme is a very good one, I think, if it is not too ambitious.

Mr. Veitch: Which do you consider the best method of approaching the problem—to concentrate on the training of men for scientific work, or go straight into the work of scientific research with the men we have got? Have we got enough scientists now available?—We have not at present, but we could have in a few years.

Would you say that the greatest immediate necessity is the training of men in scientific research?—Yes, that is so.

That would support your own suggestion that we should do our best to make it possible for the men we have got to get a thorough scientific training, and that there are a considerable number of such men in our existing educational institutions?—Yes, that is so.

Mr. Luke: Is the new treatment of kauri-gum a mechanical treatment?—It is carried out by a vacuum process.

It is not the sand blast?—No.

You are familiar with that treatment?—Yes.

Is your suggestion superior to it?—The two processes are used for different purposes. The sand blast deals with fairly large pieces of kauri-gum and removes the outer layer and adhering dirt. It is a substitute for the old hand-scraping process. My process deals with small gum, say, the size of peas or less, which may be mixed with large amounts of dirt. In the present method of recovering on the gumfields, the workmen work up the low-grade material with water and pass it through sieves, and anything retained by the sieve is shipped as low-grade gum. My process purifies this material.

Have you seen the sand-blast process?—I have not seen the process working, but I have seen the gum that has been treated by it.

How do you deal with the small gum?—It is put into a vacuum-chamber with a salt solution; the air is exhausted, and the gum rises to the top of the solution, while the dirt sinks to the bottom.

By your process you reclaim the whole of the gum, no matter how small?—Yes.

The Chairman: In connection with the scheme put forward by the National Efficiency Board, do you approve of it as it stands absolutely?—I approve of its general principles.

Have you any suggestions to make to improve it?—Not further than those I have mentioned.

What is the meaning of subclause (*f*)?—It was thought it would be only fair that the industries should pay for some of the researches made on their behalf.

Mr. Luke: Is there provision in the scheme of the Efficiency Board to recognize individual research that may not be associated with the colleges?—Yes. I think "private persons engaged in research" are the words used.

F. W. FURKERT, Inspecting Engineer, Public Works Department, examined.

The Chairman: The Committee wishes to make some inquiries in regard to the question of light railways for outlying districts. It was suggested by Captain Worley, of Nelson, that some of the discarded railway material in France might be purchased. We understand you made a report to the Government in connection with railways some time ago?—The report was published as a parliamentary paper in 1914.

Will you make a statement in regard to the question of light railways generally—as to the advisability of the use of light railways for certain districts?—Light railways have their proper sphere, and in certain places they would be justified. A great deal turns on what you call a light railway.

The gauge mentioned was 2 ft., for use on the side of existing roads to act as feeders?—The roads in New Zealand are so badly laid out that it would be impossible to run railways by the side of them. Even for the 2 ft. gauge railways special formations had frequently to be made even in the flat country in the north of France. The 2 ft. gauge would be too small to adopt. Of course, there have been 2 ft. gauge railways running for the last thirty years all over the world, but they would not be built if the promoters were starting again on the job. The 2 ft. 6 in. gauge is not so bad, but when you get down to 2 ft. it is more like a toy railway. In France they carried 6 in. guns on the 2 ft. railways, but you would not carry heavy weights as a commercial proposition.

In some districts road-metal is not available, and it was thought these railways might be used there?—Yes, I quite believe in that. There are places where there is no metal and never will be any, because the country is not of that nature. Steel is the cheapest metal in the long-run. As to the suggestion to purchase discarded war material, we tried to get some of it as soon as the war was over, but have not been able to get any. We have cabled Home to Engineers of our own Department who are at the front to try to pick up something, but they cannot get anything.

Mr. Luke: The man on the spot will probably get it?—These men of our own are on the spot. I think the fact is that there is so much destruction in the war zone that everything there will be required there. With regard to the vehicles, the War Office had an arrangement with the sellers that the markets were not to be flooded with them when the war was over, but that they were to be returned to the people who sold them originally.

Has your Department tried to obtain rails from France and failed?—Yes.

For what purpose did you intend to use them?—Construction works.

For transit?—For making cuttings, and for temporary lines that are used in connection with permanent works.

What weight of rail did you desire?—Anything up to 40 lb.

The Chairman: Would you take a 20 lb. rail?—It is so light that although it might be used in war-time you would not use it as a commercial proposition.

So far it has not been the policy of the Government to construct light lines?—They have constructed light lines. The line first made from Stratford to Toko was a light line. It had 40 lb. rails, and the bridges were made to carry a 7 ton axle load.

It took a long time to build?—I think not. It was started on the 2nd April, and the train ran into Toko before Christmas. The distance was six miles and a quarter. However, no sooner was this line handed over to the Railway Department than the line was improved. The 80 ft. spans on the bridges were reduced in order to carry heavy traffic, and the ballasting was increased, and the 40 lb. rails were taken up and 55 lb. substituted.

That line could hardly be called suitable for a light railway: it is really a main line?—When we were building the North Island Main Trunk line we made light lines to connect certain points. We had one railway on a 1 in 22 grade.

Mr. Veitch: How much would an engine haul up that grade—about half its own weight?—An L engine weighing 17 tons would take about 40 tons up that grade.

The Chairman: In Nelson we got this evidence: "I could mention many places where light railways could be constructed with advantage, but I might state in regard to this district that a light railway from Stanley Brook down the Motueka Valley to Tasman and Appleby, with feeders to Motueka, Riwaka, and other valleys, would link the whole district up with the present system." The north of Waitara is another district where roads are very costly?—The trouble is that if a railway is made light the Railway management will want to bring it up to the same standard as the other lines. If the Railway Regulations are to be enforced you must have the same standard of railway to work on. If a light railway is made you have to waive many rules and many requirements that are necessary on fast and heavy lines. On a light railway where you run ten or fifteen miles an hour you can waive a great deal.

You want separate management for the light railway?—It would have to be managed differently. If it was under the same management there would be a tendency to bring it up to the one standard.

Mr. Hudson: The lines to which the Chairman referred were meant to run at eight miles per hour, with a view to saving wear-and-tear on the road and to meet the convenience of the fruitgrowers. It was contended that the trucks would carry 4 or 5 tons of fruit, though they would be capable of carrying more. If the light rails were procurable, would that be a good scheme?—Yes, provided the traffic was there. The whole thing has to be investigated from a commercial standpoint.

The Chairman: The trouble is that we get no railway at all now?—If a railway costing £4,000 will pay, no doubt the district wanting it should get it. If a district can show that a railway costing £8,000 will pay it should have that better class of railway.

Up to the present has not the tendency been to either construct a standard railway or no railway at all?—That is a matter of Government policy.

But that is the policy, is it not?—That has been the policy in the past. Legislation now on the statute-book enables people to have railway facilities in their districts.

By paying for them themselves?—Yes, that is so.

Mr. Hudson: Are you prepared to say that the scheme to which I have referred is worth considering?—Yes. I would consider anything that is feasible. Of course, a light railway does not mean a light rail. The light rail is only a small part of it. A light railway has nothing to do with the weight of the rails.

If it were decided to adopt this scheme, do you say that rails are not procurable?—They may be procurable in the next six months, but you cannot get them at present.

You made efforts to procure them but you were unsuccessful?—That is so. We are buying new rails that are being rolled in England now, and they are to be delivered on the ship this month.

Do you think that old rails might be available later on?—Yes, they may be.

Mr. Hornsby: There are districts in the King-country where it will be impossible to make a good metalled road?—Yes, except at high cost by bringing metal from somewhere else.

Do you not think it would be a good policy on the part of the country to give all the back-blocks settlers light railways on their road-lines?—I do not know about "on their road-lines." If a man went out to lay off a light railway he would follow the best route possible. Of course, if the road was the best he would adopt it.

Seeing that the roads are all on a fairly decent grade?—I cannot agree with that.

At any rate, I can point to many roads that would carry a reasonably good light line?—Immediately you build a light line on a road you encroach very much upon it. The County Council has a road, say, 16 ft. wide, and if you put a railway on it it takes 10 ft. off the road, and the Council will want you to give them 10 ft. out of the hill—and it is only a reasonable request.

I contend that the light railway on the backblocks road would take the place of all the vehicular traffic?—We tried it in the Catlin's district, where metal is very hard to get and there is a wet climate. As there is a lot of timber available we put down wooden tramways, and the settlers said, "That is what we want, and when the rails begin to wear out we will bring metal along." At considerable expense we laid down miles of wooden tramway, and no sooner had it appeared than a man who was at loggerheads with his neighbour said, "I won't use it. I want a cart." If you put anything like a railway on a road-line you may be sure that some people will want a road alongside of it.

Do you think the problem could be solved by widening the present roads?—Yes, in some places; but it might be more costly than the making of an independent line.

Dr. A. K. Newman: Is not the tendency of modern days to extend the use of motor-lorries rather than light railways? Is not the light railway a thing of the past?—For short distances the tendency is to increase the motor-vehicle transport, but not for long distances.

Within, say, fifty miles of a city is not the motor beating the light railway out of sight?—It is the case for short distances, but not for fifty miles.

Is it not a fact that it is cheaper to put a motor on the main roads in New Zealand than to build a light railway?—No. By the time you make a road strong enough for motor traffic it has cost as much as a light railway.

What is the cost of a light railway?—£3,000 per mile. It all depends, of course, on the type of construction. Light railways have been made for £1,200.

Does the £3,000 include compensation for going on private land, and for the cost of bridges, stations, and cuttings?—Yes; but it all depends on the class of country.

That is the bedrock minimum?—No. In Queensland they have been made for as low as £1,200.

In Canada, Australia, and other places is not the tendency towards motor traffic and not light railways?—No. Each has its proper sphere of usefulness, and each has to be considered on its merits.

Is it not a fact that in England they are developing the country almost by motor traffic and not by light railways?—Possibly that is the case, but I do not think you can apply the standards of England to New Zealand.

To Mr. Veitch: A light railway would have more grade and sharper curves than a heavy railway, as well as lighter rolling-stock, lighter bridges, lighter rails, and so on. The lighter the bridges and the sharper the curves the smaller the locomotive would be. This all means an increase in the working-expenses.

To the Chairman: The Sandon tram is the only real instance we have in New Zealand of a light railway. A light railway ought to be dissociated from the standard railway, because if it is handed over to the management of the standard railway that management would say, "We must bring it up to the standard, so that the regulations as to safety of the public and so on may be carried out." If the railway is to be carried on for the convenience of the people of a district it must be under local management. If the gauge is not the same as the standard railway it means transhipment at the junction, and that is one of the greatest objections.

To Mr. Craigie: I believe that all necessary facilities for transport should be given for the development of New Zealand. At present there are many places where there are neither lines nor roads, and at the present rate of expenditure on branch lines it will be many years before we can open up parts of the country. Wherever it can be shown that it will pay to make a railway the Government ought to make it. If there is only traffic for a £4,000 line that is the line they ought to make. I believe in both light and heavy railways, according to their individual spheres. If there is business to keep a light railway going it ought to be built rather than wait twenty years for the heavy railway.

To Mr. Sidey: The light railway on a separate gauge should be under local management, if possible. That is the system in Belgium. The Government there take half the shares in all cases, and when the line is made and everything is satisfactory they call for tenders for the running of it. Of course, although they are under local control their general upkeep is subject to inspection by Government officials to see that they do not fall into disrepair. It may not be a local authority that is in charge: it may be a private individual. If the Government had parted with the possession of forest land where there was no means of bringing the timber to market, I take it that, if there was sufficient timber to market, the man who owned it would make a line to take the timber out. If he had no capital the Government would no doubt advance him money if he could show the thing was going to pay. When the Government passed the Local Railways Act they did not follow to any great extent the lines I recommended in my report of 1914. They may have taken certain ideas out of it, but they did not follow the whole thing. The Government should have power to advance money to the promoters of a railway if they are satisfied it will pay. When the formation of the Clyde–Cromwell Railway was commenced it was to be a light railway, but it is gradually creeping up to the permanent standard.

To Mr. Forbes: A light railway cannot take the place of a road. You must have the road in addition. Transport on a motor-lorry is dearer than transport on a railway.

To Mr. Sidey: It is since Christmas that we applied for the war material at Home. It was a request for any kind of rail from 30 lb. to 40 lb.

J. HUTCHESON, of Hutcheson, Wilson, and Co. (Limited), further examined.

When I had the privilege of appearing before the Committee previously I made no request that the industry I am interested in should be protected. Since then I have learned that while New Zealand has been sending Commissions round the country to find out what industries should be encouraged, Australia has put on a tariff of 30 per cent. against British-manufactured asbestos slates and of 35 per cent. against all others. It is 35 per cent. against New Zealand, as we are not included in the British category. The protection in Australia has induced three large companies to establish in a large way with imported plant and imported experts. They have not only met the demand within the Commonwealth, but they have a surplus which they are sending to New Zealand. About a month ago I had quotations from a friend on the other side. The companies were then selling at £44 per thousand slates in Sydney. A provincial agency in New Zealand that had been doing good business in our line wrote to us to say that he could not handle our slates, as he had quotations from a firm in Australia to put slates f.o.b. in Australia at £26 per thousand. That changes our whole attitude to the question of protection. We must have something to offset the danger, and the actual fact, of dumping from Australia. I saw the Minister of Customs on the matter. He was interested and sympathetic, but I saw in a newspaper later on he said there was no chance of the Customs tariff being altered during the life of this Parliament. That means another eighteen months, and in the meantime my company may have to go out of existence.

The Chairman: An anti-dumping law would stop that?—It is a most difficult matter to make good a case of dumping.

It was done in Canada?—At any rate, we have quotations to prove it. We were told by the agency I have referred to that they could no longer handle our goods as they had cheaper quotations from Sydney—£26 per thousand. That brings it down to about our manufacturing cost, and it is therefore only a matter of time before we must say that another local industry has gone wrong.

Can you get any written evidence of the quotations?—A gentleman in Wanganui sent the quotations to us. I shall ask our people in Wanganui for the original Sydney quotation.

D. CUDDIE, Director of the Dairy Division, Department of Agriculture, examined.

The Chairman: We want your opinion about a butter-package submitted to us yesterday by Mr. Robson [package produced]?—Before I could express an opinion on the utility of the package it would require to be tested for strength.

We were thinking also of the saving of white-pine and the utilization of other timber in the making of the package?—There are many reasons why we should adhere to the oblong box. It is known on the Home market as the New Zealand package, and only recently the Government brought in regulations standardizing the size of the box that may be used for New Zealand butter. Another reason is that the round package, like the one produced, does not stack so well. I do not say you cannot get the same butter into the same space, but it would not stack so well in the store as the oblong box, which packs closer.

The principle of this package might be adopted for cheese?—Yes, that is so. The Canadians put their cheese into a package like this, but larger. I do not see any objection to the package except that it is not the regulation style, provided it is strong enough.

How could you get a test of its strength?—Packing and handing at the store, and a reasonable amount of handling such as would occur in shipping.

Witness: I would like to show the Committee a sample of three-ply wood made on the box principle. We have packages we are going to fill with butter and test in a few days. I have a lid of a box made of three-ply. It has two veneerings of white-pine and one veneering of another wood which is more plentiful. [Article produced.]

The Chairman: How do you test a box?—We have boxes sent to a factory and packed under the supervision of one of our men. They are then taken to the store and handled there as if they were being shipped. If we have a sufficient number we put them in a sling.

You cannot accept Mr. Robson's box because it is not the regulation box?—That is so. Of course, a trial shipment could be made. I think, however, it would be a mistake to alter the design of the package at present.

Those objections would not apply to cheese?—No.

Dr. A. K. Newman: Is this three-ply cheaper than ordinary wood?—It is about the same price, but it would conserve timber. If the Committee desire it we can test several packages of the design submitted by Mr. Robson. High-class glue is used in the making of the box. I think they use casein glue.

CARTERTON.

SATURDAY, 24TH MAY, 1919.

S. DAVIES examined.

The Carterton Tradesmen's Association, whom I have the honour of representing, forwarded to the Committee a resolution in support of the encouragement and extension of New Zealand industries. We would like to draw your attention to the following facts: (1.) That many lines of New-Zealand-manufactured goods compare more than favourably with imported goods both as to quality and price. (2.) That there was a prejudice against many New-Zealand-made goods which arose from the fact that years ago our manufacturers were not equipped with up-to-date plant, nor were the workmen sufficiently trained to give of their best. We now confidently state that the majority of New-Zealand-made goods are more than equal to similar imported ones. (3.) We would also suggest that the Committee should at every possible opportunity interview the large employers to see what could be done to train up disabled returned soldiers so as to enable them to follow good employment. (4.) We would also suggest that the Government should enter upon a publicity compaign with the idea of making known to the general public the goods and articles of New Zealand manufacture by the following means, viz.: (*a*) Advertising; (*b*) holding a "New Zealand week" throughout the Dominion, when all retail business places would be asked to display nothing but New-Zealand-made goods; (*c*) that full advantage be taken by propaganda work through the public schools, and also that special articles bearing on various New Zealand industries be inserted in the school journals. As I have stated, in former years there existed a prejudice against New-Zealand-manufactured goods, and at that time the complaint and prejudice were justified. But since then the New Zealand manufacturers have risen to the occasion and have imported standard machinery, and to-day their workmen are trained and turn out as good an article as the imported. In speaking in reference to this prejudice I would like to refer particularly to the business in which I am specially interested—the boot and shoe business. Customers come into the shop and ask for an English or American boot—why, I do not know. As you are no doubt aware, the machinery now used is up-to-date machinery—is standard machinery. New Zealand leather is now second to none, and I think you will admit that New Zealand workers should be equal to any others. In view of these facts I think you will agree with me that our goods should be equal to any others. There is one point that I would like to bring before you, and that is the difficulty of getting apprentices to learn trades. I submit to the Committee for inspection and comparison samples of New Zealand and imported goods, including leather, boots, hose, tweed, and wool yarns [samples shown]. I am confident that New Zealand leather at the present time is the best leather in the world. English leather suffered during the war, and I do not think it will come back to its pre-war position.

To Mr. Hudson: I think the New Zealand-made boots shown to the Committee, and which is sold at £2 2s. 6d., is as good as the English-made boot exhibited, which is sold at £2 12s. 6d. New Zealand leather has been improving all the time. We have not suffered to the same extent as the Mother-country, and our leather now is reaching the top market, and I do not see any

cause that will bring it down again. We can get New Zealand leather for all needs so far as sole-leather is concerned. We use 90 per cent. of New Zealand leather.

To Mr. Hornsby: I cannot say whether it would be a wise thing to adopt the Australian tariff system.

To Mr. Luke: Chemically tanned sole-leather is better than oak-tanned leather for wear, but not in regard to waterproof qualities. It is a splendid thing for a summer boot; it is dainty and light, and wears better than the other, but water soaks through it. The New-Zealand-made boot is equal to the imported.

To Mr. Craigie: We buy boots direct from the factory; in the boot trade we can buy direct from the manufacturers.

To the Chairman: The rises in the boot trade have been less than those in nearly every other trade. The working class generally buy the cheapest article, and the result is that they are always buying; I suppose they have not the means of buying the better-class article. If you get standardized boots you will not get the variety. There have been standardized boots in England for some years. My people are in the boot trade at Home, and they tell me that the system has made very little difference in the sales of ordinary articles.

W. HOWARD BOOTH examined.

Railways: Industries and the progress of the Wairarapa depend very largely on quick transit to and from its nearest seaport—Wellington. We especially wish to revert to the old pre-war time-table, with some improvements. For business people not nearly sufficient time is allowed at present between the arrival and departure of trains in Wellington. The early morning train in pre-war days suited very well. This train carried mails and arrived here at 9 o'clock —early enough for business people to transact business with firms or their clients, and have sufficient time to reply to letters by the afternoon mail to Wellington of the same day. The afternoon train from Wellington to Carterton takes four hours to complete the journey of fifty-five miles. If a non-stop run was made by the two passenger-trains to and from Wellington between the stations Lambton and Upper Hutt, the time occupied (notwithstanding the Rimutaka Hill) on the journey would be considerably lessened. Wairarapa people travelling north by the 6 o'clock train from Masterton to Palmerston can only return as far as Masterton the same night. If this train started in the morning from Featherston and returned to Featherston the same night, business people would be enabled to travel to Palmerston (and stations *en route*) and return to their homes the same day.

Main arterial roads: Main arterial roads play a very important part in carrying on the industries not only of the Wairarapa, but of the whole of the Dominion. The question of cost of upkeep of the present roads and the laying-down of future permanent highways is a problem taxing the brains of engineers and others interested in this country at the present time. The question of main arterial roads should be tackled by the Government, and not by the various County Councils and boroughs through which these main roads traverse. The smaller boroughs, even if the roads were laid down for them by the County Councils, could not possibly stand the cost. Some bold scheme should be launched by the Government so that the main roads of the Dominion would be put in first-class condition, and not be experimented with as they are at present.

Maize and wheat: To prevent wheat and maize being distributed throughout New Zealand affected with weevil, which is imported from Australia, there should be some system by which an inspection could be made, as the weevil cannot be detected without a minute examination. It is probably three to four weeks before the weevil is actively developed. It makes its way out through the sacks, and all other grains or cereals stored in the shed become contaminated. This has been the experience of produce-merchants in the Wairarapa, and it is therefore seriously impressed upon this Commission that something in the way suggested should be adopted to cope with this very serious trouble now exercising the minds of those dealing in wheat and maize that is imported from Australia.

South Island produce: There is a certain amount of Californian thistle found among South Island chaff and oats. This is a very serious thing for North Island farmers. Complaints have been made of the presence of this noxious weed in chaff and oats that have come from the South Island. There should also be some system adopted to avoid the spread of Californian thistle by means of chaff and oats coming from the South. Inspection also is suggested. This could be done before leaving southern ports. As before stated, evidence has been adduced proving conclusively that Californian thistle is found among produce from the South Island.

To Mr. Hudson: I have not heard of weevil in other districts.

To Mr. Craigie: I think the definition of arterial and main roads could be fairly well given in respect to many districts, but in certain districts there might be some trouble.

To Mr. Luke: I think those who have taken any great interest in the question of the railway-deviation would be prepared to leave it to the Engineers to say which is the best route. There have been some differences of opinion here. I think there is an agitation going on now from the other end of the valley that the southernmost route should be the established route. If the Government decided on a certain route and it was announced, I do not think there would be any complaint to speak of from any district.

To the Chairman: We consider that County Councils are better able to grapple with a big matter such as putting the main roads in order; they have a far bigger scope to work on; they have a much greater population, and a greater extent of country over which their rates are spread, than have the smaller boroughs.

To Mr. Luke: I think there is traffic enough between Wellington and Napier to warrant non-stop runs and long distances; our trains are nearly always crowded.

J. MONCRIEFF examined.

The quantity of cheese manufactured in this immediate neighbourhood is about 1,500 tons, the milk being supplied by 215 farmers from 6,700 cows. The quantity of cheese could be considerably increased by the farmers adopting a proper system of testing their herds and better treatment of cows during the winter months. The Government has given valuable assistance in the manufacture of the cheese by the appointment of capable instructors who visit the factories periodically, but in order that the output of the Dominion may be more uniform in manufacture it will be necessary to make further appointments to enable more frequent visits to be made during the summer months, when the milk requires more careful handling. Still further improvement could be made by the appointment of suitable persons to inspect the farm properties occasionally, and instruct the farmers in the necessity of keeping their yards and buildings in a proper sanitary condition, thereby enabling the milk to be delivered at the factory as near to normal as possible. In January, 1897, the Dalefield Company appointed an inspector for this particular purpose, with very good results until a few of the knowing suppliers ascertained that the inspector had no legal power to enforce his recommendations, after which the appointment was cancelled. All engaged in the industry know that it was impossible to obtain the services of qualified men during the war period, but now that matters are approaching to normal it is hoped something will be done in the direction suggested. The matter of the preservation of white-pine for cheese-cases, &c., has been so often and so forcibly brought under the notice of the Government in recent times that it almost appears unnecessary to refer to it. As the industry so largely depends on a supply of suitable timber for the purpose mentioned, it is hoped the necessary steps will be taken to ensure a sufficient supply. One important item requiring immediate attention is an improvement in railway transit of cheese to Wellington, more especially during the summer months. On some occasions the cheese has been allowed to stand in trucks in the railway-yards for two days in the broiling sun before being lifted, the reason given for such delay being that the trains were fully loaded on their arrival here. It is only right that live-stock should get first consideration during transit, but perishable goods in the way of foodstuffs should receive more consideration. On account of the shortage of railway-wagons the Department has not always been able to supply the wagons on the date ordered, with the result that the cheese may not arrive at the port until the Saturday, and as the weekly half-holiday is observed on that day the cheese has to stand in the trucks until the following Monday or Tuesday, to the detriment of the cheese. We know that the Department is not always to blame for this delay. These matters are mentioned hoping that an endeavour will be made in the future to obviate the delays and their consequences in the future. Another matter relating to the industry is the increased rate of freight on imported coal. As a rule settlers in the country districts have sufficient disadvantages to overcome without being penalized by freights on imported coal and Australia hardwood. It is considered that any extra charges should be made at the port, thereby giving settlers in the backblocks similar advantages in this respect to those who are fortunate enough to live nearer the port.

To the Chairman: One Inspector could be appointed for the whole of the Wairarapa—a Government Inspector. The Government did appoint some Inspectors: some were pretty good, and others were failures. Good work was done in some places. I think if the Government appointed Inspectors with full powers to enforce their recommendations, very much good would be done in respect to the industry. With reference to a laboratory and experimental farm for dairy purposes, that matter has been frequently brought before the Government, but unfortunately the question of site always stopped the proposal being given effect to. The Greytown School has a well-equipped laboratory; the headmaster takes a pride in it. If that could be done in the case of other high schools it would be a good thing for the farmers of the Dominion. Very good work has been done in Greytown, and I think it might be copied with advantage in other districts. I think the dairy companies would subscribe to their equipment. With regard to the much-discussed question of the equalization scheme of the Government in connection with butter, that does not affect us; but I object to the principle of one section of the community being taxed for the benefit of another.

H. M. B. TRAPP examined.

The bulk of the local bodies in the Dominion up to the present do not seem to have realized the powers conferred on them by the Legislature in the direction of erecting accommodation for the people in the districts under their control. It is only since the insistent demand for more and better houses has been made that any serious thought has been devoted to the question by members of local governing authorities. In my opinion the root of the question lies in the absence of assured finance for local bodies who wish to do something in the way of municipal house-building. If the provisions of the Municipal Corporations Act which relate to this matter are interpreted by the Government in the generous way in which the Legislature by the wording of the sections evidently intended, I am convinced that local bodies will use every endeavour to carry out a scheme of house-building in their respective areas which will be in keeping with the intention of the Act. In asking the Government to provide money for this purpose the local bodies are not asking any favour—rather the contrary: the Government is under some obligation to them for carrying out the policy as expressed in an Act of Parliament. If the Government will set aside a certain sum of money for this purpose, and will fix a rate of interest for long enough to enable all preliminary work to be done, a municipal building scheme is possible; but if the rate of interest is subject to fluctuations it will be impossible for any commitments to be made in advance with tenants, and the scheme will be wrecked at the outset. Five dwellings were erected in this town under the Workers' Dwellings Act in response to some twenty applications, but owing to delays and the uncertainty of the final cost all but four applicants backed out. I mention this to show

that the authority erecting a dwelling must be able to say definitely what the cost will be, and without assured finance this would be quite impossible.

To the Chairman: There is an absolute shortage of houses in the Carterton district, and the Borough Council is contemplating a proposal of the sort alluded to, but they want an assured finance in order to make their arrangements.

To Mr. Craigie: Under the circumstances mentioned the municipality would demand some more substantial material than wood—probably some system of concrete-construction. Of course, concrete-construction is in its infancy so far.

J. A. Dudson examined.

One of the most important questions agitating the minds of the people of Wairarapa at the present time is that of the Rimutaka deviation.

The Chairman: This is a very important matter, but it is somewhat beyond the scope of the inquiry of this Committee.

Witness: This is a matter affecting the industries in the Wairarapa. I have a plan here of the suggested routes of the railway; it was prepared by the Government Engineers some years ago. [Witness explained the several suggested deviations on the plan.]

The Chairman: The information you have given to the Committee will be valuable to us chiefly as members of Parliament; but we have been rather chary of going into the question of railway-construction. As far as the members of the Committee are concerned, they are very sympathetic with your difficulties in connection with the railway. There is not the slightest doubt about the disadvantages you are suffering under.

W. J. O'Meara examined.

With regard to the black flat-tailed weevils coming into New Zealand, that is a very serious thing. It is coming into New Zealand mostly from Queensland in maize, and from other parts of Australia in wheat. There is a difficulty in tracing it when it first comes in. The weevil bores a very small hole in the grain, and thus conceals itself for a month or six weeks. The grain on arrival is put away in stores, and then the weevil develops very rapidly indeed. Our chief trouble is this: that it not only destroys the grain in which it is, but it goes through nearly all the other cereals, such as oats, also flour, bran, pollard, &c. It renders the grain unfit for human consumption. We have great trouble in our warehouses in connection with it. Everything has to be taken out of the warehouse and the place disinfected; but even then it lives in the rafters and crevices. Even in the mills there is great difficulty in getting rid of it. On two occasions in the last twelve months we have had to burn stuff coming in. There is one solution of the difficulty, I believe, and that is by freezing it.

To the Chairman: The only other suggestion is that the grading should be more rigid, and that the grain should be inspected on arrival in New Zealand, and in the event of it being found infected it should be destroyed. The merchant should see that the grain is all right before it leaves his warehouse.

To Mr. Craigie: There should be more rigid inspection in Australia as well as here.

GREYTOWN.

Saturday, 24th May, 1919.

D. P. Loasby examined.

Fruitgrowing: The land at the north end of Greytown and to the north-west is well adapted for growing small-fruits, such as black currants, red currants, gooseberries, and raspberries, while at the southern end there are thousands of acres of land that would grow apples and pears —especially apples, as is proved by the fruit produced by the Greytown Fruitgrowing Company. This land can be procured at a very reasonable price, and would be suitable for Government to buy and settle returned soldiers upon. I would suggest that the Committee pay a visit to the Greytown Fruitgrowing Company's orchard and other orchards to see for themselves. The Government should also meet any association of fruitgrowers by giving a subsidy to them if they build a cool store. Also, a much larger sum than is now provided for the purpose—viz., £40,000 per annum—should be at the disposal of the Government. The carriage of fruit (especially small-fruit such as currants, raspberries, cherries, and gooseberries) should have provision made for quick transit, the more perishable to have every facility to be taken on by mail-trains. Apples should, where the quantity warrants it, be carried in covered-in trucks, and in no case should they be carried in open trucks. Quick transit is the real essence of getting the fruit in good condition to the market. Instances have been known of fruit taking five and six days going to Wellington. The same conditions apply to perishable vegetables. It is now essential, owing to the number of pests to be contended with, that the Government should appoint a qualified chemist to inspect the various blight-sprays offered to the public, and all sprays to have Government certificate attached to each package. One of the greatest disadvantages the orchardists of this district have to contend against is the great number of neglected small orchards about the district. I consider the time has arrived when an Orchard Inspector should be appointed for this district, with his headquarters in Greytown, Greytown being the largest producer of apples in the Wairarapa, there being over 200 acres now in apples. The difficulty at present of many orchardists is the want of capital, and the Government could assist the orchardists and those wishing to go

in for planting by appointing an officer with experience of orchards as a valuer, who should take into consideration the value of the trees planted, reserving the right of strict inspection or even supervision of such orchards if in the opinion of the officer appointed to make the inspection proper care was not being given to the orchard. Another industry that might be assisted is the development of the making of bricks, drainpipes, &c. If Government was prepared to advance sums of money to companies formed to carry out these works at a low rate of interest many such industries no doubt would be started, and now the timber is becoming so dear more brick buildings will very soon be in demand. I have no doubt if Government was to offer such inducement a company would be formed here to carry on such work, there being an almost unlimited supply of clay of the very best quality within a short distance of the railway-station.

To Mr. Hornsby: Our fruit has been submitted to tests, and has been given the highest number of marks in grade. Our land is very stony, but it has proved excellent for fruitgrowing.

To Mr. Hudson: Our fruit has been carried to Wellington in open trucks. We do not think that should be done at any time. The office of the Inspector for the district is at Palmerston North. He visits here perhaps once in six months or twelve months; he comes one day and goes away the next. We have approached the Department in connection with the inadequate inspection of orchards. If an officer came here and got a list of the orchards about here it would take him a month to go through them. The trouble is in connection with the small orchard—the back-garden orchard, with one or two isolated trees, which are not attended to. A cool store would be an advantage to the district.

To Mr. Luke: We grow cherries, and a great number of raspberries are grown in small patches.

To Mr. Forbes: The area of commercial orchards is about 240 acres; our company has 113 acres. Our orchard has been planted about eight or nine years; it has not got to the paying-point yet, but we hope that this year it will be payable.

To Mr. Hornsby: Good crops of wheat and oats have been grown on the land.

JAMES F. THOMPSON examined.

I have heard the evidence given by Mr. D. P. Loasby, chairman of directors of the Greytown Fruitgrowing Company, and I desire to strongly support what he has said. I consider that the land in Greytown and in the vicinity has been proved beyond doubt to be eminently suitable for fruitgrowing. There is a very large tract of country lying between Greytown and Featherston and the Tararua Ranges and the Greytown–Martinborough Road which is specially adapted for apple-growing. The area of this land is approximately 24,000 acres, and with the exception of 120 acres, the property of the Greytown Fruitgrowing Company, it is used for grazing and agricultural purposes. The land is stony with no great depth of soil. Surrounding that block of country the nature of the land is heavy dairy and agricultural land. The value of this block of plain country is low, and in recent times the land has been sold at prices varying from £6 to £20 per acre. The evidence supplied by Mr. Loasby has proved the suitability of the land, and it remains only for the industry to be strongly encouraged, and this, in my opinion, can only be done by extra inducements by the Government in the direction of encouraging fruit-farmers to take up the land. More liberal advances should be available under the Fruit-preserving Industry Act, 1913, and amendments, and there should be provisions whereby an orchardist can be advanced much larger sums by the State than are at present obtainable. Valuers of fruit-farming land should take into consideration the value of the orchard, and the Crown in taking securities over fruit-farms could be amply protected by the insertion of proper fruit-farming clauses in their securities. It is obvious that the fruit-farmer needs considerable assistance in the first few years by reason of the fact that his income is very small. With increased railway facilities and the provision of rapid transit, fruit equal to the best in New Zealand could be landed in Wellington in three or four hours from the time of picking.

Jam-factories, dried fruit, &c., industries: Very large quantities of small-fruit—raspberries, currants, gooseberries, and poorer classes of apples—go to waste in the district each year. The same remark applies to pears, peaches, plums, nectarines, &c. It is highly desirable that these products, also the very large quantity of spare vegetables which go to waste each year, should be saved, and jam-factories, canning-works, and dried-fruit plants should be installed.

Clay-deposits for pipe-works: There exists at Papawai, some two miles from Greytown, an unlimited supply of clay which lends itself admirably to the manufacture of pipes, bricks, and similar articles. Much of the best land in the Wairarapa requires pipe-draining, but farmers are considerably hampered by the price of pipes. In the South Wairarapa there are pipe-works only at Carterton, where there is difficulty in supplying the demand. Near the clay-deposit at Papawai there are very large supplies of sand and shingle in the Ruamahanga River, and a complementary industry in the manufacturing of concrete pipes, fencing-posts, battens, and similar articles might be undertaken. Timber for the supplies of fencing-posts and battens is becoming scarcer each day, and it is a necessity that something should be done to remedy the present difficulties in that respect. Timber for building purposes comes largely to the Wairarapa from the King-country, and brickworks at Papawai would supply a large source of brick and materials for building purposes.

Deviation: On behalf of the Greytown Chamber of Commerce I desire, in common with representatives of other towns in the Wairarapa, to urge on the Commission the claims for the immediate deviation of the Rimutaka incline. I would like to say on their behalf that we consider whichever route is favoured by the expert opinion of Engineers should be selected. The importance to the City of Wellington of a rapid service with the rich district of Wairarapa needs no urging, and as the distance to Greytown from Wellington is only fifty miles by road there should be no reason why a service occupying two or three hours from Wellington should not be possible, even allowing for heavy gradients on the railway-line.

City expansion to the country: I consider a very important reason in favour of a deviation is the fact that Wellington City, rapidly expanding and growing, must very shortly find an outlet for its growth farther afield. It is submitted that the Wairarapa Plains in the vicinity of Greytown and Woodside afford excellent scope for such expansion. The two or three hours' journey from the City of Wellington by train if the line were brought through the Tauherenikau Gorge or neighbouring engineering routes would enable the Wairarapa Plains to be reached at Woodside. The ground there is stony and porous, slightly sloping, and eminently suitable for healthy residential areas. The vicinity of Woodside and Greytown would provide sites for railway-works, factories, meat-works, scouring-works, and other industrial concerns, and immediately alongside is the Waiohine River, declared by expert electrical engineers to be a large source of electrical supply. The Tauherenikau River, emerging some three or four miles farther south from the mountains, would also supply a large quantity of power, so that all the essentials of an industrial area exist at a spot not more than two and a half hours' railway journey from Wellington.

To Mr. Hudson: Except equinoxial gales we get very little wind or hail here. In six years I think we have had only two hail-storms.

Mr. Loasby: In nine years we have had only one severe hail-storm on our fruit.

Mr. Hudson (to Mr. Thompson): You mentioned raspberries being wasted. Within the last year or two has that occurred?—Yes. As to jam-factories making arrangements to pulp the fruit, there are very many small orchards here. People living in town have perhaps an acre to spare and they grow some small-fruit, and in some cases a good deal of it goes to waste; and a similar remark may be made with regard to vegetables. The crop in many cases is not large enough to send away in any quantity. During the time the camp was in the district we did consider the question of establishing a jam-factory, but nothing was done. Pulping-works would meet the position better than a jam-factory.

To Mr. Luke: I think that only a small quantity of the vegetables grown here goes to Wellington; perhaps the question of transit may be said to be the chief reason. Efforts have been made to get the Railway Department to assist us.

To Mr. Poland: As to the large area of land suitable for fruit-culture, I think the suggestion is an excellent one that the Government should take over a part of that land and plant it with fruit-trees, and when the trees are bearing cut up the land and sell it for fruit-farms.

A. L. Webster examined.

The Greytown-Wairarapa Co-operative Dairy Company (Limited) exported last year per rail dairy-produce amounting to 314 tons, and the inwards tonnage amounted to 175 tons, for which freight was paid amounting to £319. It is estimated that this quantity will be exceeded this year as far as the outwards tonnage is concerned, and everything points to the steady increase being further exceeded next season because of the closer settlement that is now taking place. The main point which this company wishes to lay before the Committee is the question of better facilities for transport on the railways, more particularly the time that lapses between the trucking of the produce and the time that it reaches the port. The shrinkage of dairy-produce is well known to be very great during the time that it is not stored. Therefore the shorter the time between leaving the factory and arrival at the grading-stores the better for the industry. This company has suffered materially in the direction of shrinkage because of the long journey—or, rather, the time taken for this journey—and they wish to join with other industries in strongly urging the necessity for the Rimutaka deviation as early as possible. Everything points to the increase of dairy factories in this district, and therefore to foster the industry in an indirect way is to ensure quicker transport from factory to port. Reference has been made by Mr. Loasby to the delay that sometimes occurs in the conveyance of fruit to market by rail. At a meeting of fruitgrowers here it was stated by one grower that he sent some pears to Wellington and they were five days on the journey. In regard to the railway service, rapid transit of produce is a great want as far as we are concerned here. During the war we were obliged to suffer, but we have not yet received our original service. If we had the deviation, and dairy-produce were forwarded in the evening and could go through the same night it would be in store in the morning, and there would be very little loss as far as shrinkage is concerned.

MARTINBOROUGH.

Saturday, 24th May, 1919.

The Committee visited Martinborough.

Mr. M. Smith, Chairman of the Martinborough Town Board, said the town and the district had been hungering for years for better transit facilities. The lack of proper transit facilities was most keenly felt. The production of the land had been held back from the same cause, and the position would remain unsatisfactory until better means were provided for getting their produce away and getting their goods in.

Mr. John Martin said he did not think there would be any secondary industries in the district until they got the railway. If the war had not intervened he thought they would have had the railway constructed. When the railway was constructed he was certain it would facilitate the starting of industries in that district. Until they got the railway and the hydro-electric scheme they would be at a disadvantage. The dairy industry would be further promoted if some-

thing further was given them in the way of railway facilities. When proper railway facilities were provided the Martinborough district would, he thought, be a good source for a milk-supply to Wellington.

Mr. A. O. CONSIDINE said if prohibition had been carried four millions and a half was to have been devoted to compensating the trade. Was it too much to ask four millions and a half should be expended in development and reproductive works? If the Government could find money for the purpose he had stated, surely they could find money to increase the productiveness of the country. He thought they were justified in asking that a railway-line be made to Martinborough.

The CHAIRMAN and Mr. HORNSBY acknowledged the welcome which had been extended to the members of the Committee.

MASTERTON.

MONDAY, 26TH MAY, 1919.

C. E. DANIELL, Timber-merchant, examined.

The railway from Wellington to Featherston was opened in 1879, coming over the Rimutaka Range, and from that year to the present an agitation has continued for its deviation. I produce a map showing the suggested deviation. This route is seven miles and a quarter shorter than the made line, and taking Woodside Junction as a starting-point the present route to Upper Hutt involves a climb of 2,485 ft., whereas the route I suggest reduces this to under 1,300 ft. Responsible officers have reported that on the traffic figures of twenty years £13,000 per annum could be saved in haulage, and that the haulage of a given weight would be only one-sixth of the present cost if the available route were used. The excessive waste of business-time and the delays in the transit of produce, particularly frozen meat, are serious handicaps to the full development of the district, and the injury to live-stock in transit due to excessive shunting is a continuing cause of complaint. The desirable, even necessary, co-operation between city, port, and country districts is often blocked by the obstacle of the Rimutaka. We urge that the question of route, as well as the urgency of the work, be referred to a small body of competent commercial men, whose judgment would be based on the needs and possibilities of trade and production, and the practicable, efficient, and economical investment of capital necessary to get the best result for the whole community. I also wish to call attention to the fact that this district while producing timber up to ten years ago has now to import much of the timber required, and the Railway Department charges for the carriage of imported timber one and a half times as much as for local timber. From Wellington to Masterton, a distance of sixty-five miles, the charge is 2s. 8d. for local timbers, and 4s. for imported timbers. I submit that the time has come when the ports as ports should not have the advantage that comes from the excessive charge now made by the Railway Department.

J. C. COOPER, Managing Director, Wellington Farmers' Meat Company (Limited), examined.

I desire to draw attention to the fact that in the Wairarapa and the district farther north we have a splendid hinterland which could be made available for closer settlement. It is one of the best districts in New Zealand. Unfortunately, however, it has a serious drawback—namely, that in the matter of roading there is an entire absence of metal. It seems to me, therefore, the only way to settle the country is by a light railway running from a given point on the main line to the northern end of the Wellington Province and the southern part of Hawke's Bay, tapping the railway about Waipukurau. This would open up much of the land now held in large blocks.

J. CASELBERG, President of the Masterton Chamber of Commerce, examined.

With regard to the proposed Rimutaka deviation, I wish to say that from a business point of view the greatest objection we have to the present Rimutaka line is the unreasonable time it takes for goods to come from Wellington to Masterton. For instance, if goods are consigned in Wellington on a Monday afternoon it is usually Thursday morning before we get delivery in Masterton. It would be an exception to receive goods earlier. This, it must be admitted, is an unreasonable time for goods to travel a distance of only sixty-five miles. The delay, of course, affects every one, and causes no end of inconvenience and annoyance. The cause of the delay is, no doubt, owing to the Rimutaka line being so constructed that goods instead of running straight to their destination have to be taken on in stages. I consider the greatest proof of the urgency of the deviation is the practical admission of the Railway Department that the line as at present constructed is unable to cope with its ordinary or legitimate traffic. For instance, from Wellington to Eketahuna via the Wairarapa is 88 miles, whilst from Wellington to Eketahuna via Palmerston North is 132 miles. Yet the bulk of the heavy goods from Wellington to Eketahuna are carried via Palmerston North and freight charged at the 88-mile rate, whilst live-stock for Ngahauranga and Petone from Eketahuna and Pahiatua is usually carried via Palmerston North to Wellington, and then on to its destination, which means that the Railway Department is forced to carry a large tonnage of goods and live-stock over some forty-four miles for nothing, which is most unsatisfactory from every point of view. Therefore, in the interests of the Wairarapa and bush district, the sooner the deviation is made the better for all concerned.

J. C. Cooper, Managing Director, Wellington Farmers' Meat Company (Limited), further examined.

In tendering evidence on behalf of the hydro-electric development in this district, as I wish to reiterate as little as possible statements already made in my evidence to your Committee in Wellington, all that I feel that I can do now is to further emphasize the necessity for hydro-electric power in this district, and to add that since I last gave my evidence to your Committee the position, if anything, has become decidedly worse, particularly with regard to obtaining coal-supplies. Not only is it more difficult for essential industries such as the one which I represent—namely, the local freezing-works—to obtain supplies to keep going, but the cost also has increased, and probably will continue to increase. Only recently we were obliged to buy 500 tons of American coal at 55s. per ton, plus cost of railage here, which, with handling charges, &c., would probably bring the cost of this coal to us up to £3 12s. 6d. per ton, and it seems to me that in face of the difficulties, or almost impossibility, of getting sufficient supplies of local coal it will be necessary for us to depend more and more upon foreign coal, on which at present we have also to pay the additional railway surcharge. At the present time, as you are aware, the Imperial Government are the owners of the meat in our store, and are really liable for any loss should it not be possible to keep it frozen through inability to obtain coal-supplies; but after the end of June, 1920, the position with regard to meat purchased by the company will be that it will have to take its own risk, and as the risk will be a very serious one it is more than probable that ample provision will have to be made for it in the company's buying operations, and what applies to us, of course, applies to other companies, and these additional risks will probably mean a lower price to the settler. Apart from this there is a serious question of being able to keep such essential industries going at all, and should this not be possible we know that it would mean disastrous consequences to the whole of the country. We have a little example of this at the present time. Through insufficiency of shipping it has not been possible for the freezing-works of New Zealand to cope with the fat stock offered. The result will be that a lesser quantity of meat will be frozen this year than in previous years, and the country will receive a correspondingly less amount for its products. This question of shipping is, we know, only temporary, but the possibilities of stoppages through want of coal are of such a nature that there does not appear to be any effective way to overcome them other than by the introduction of new power such as we are advocating. So far I have only dealt with the position of a single industry, but all the smaller industries existing in the various towns of the Wairarapa are, if anything, in a worse position. Nor must we overlook the many dairy factories and dairy-farmers who are power-users. With these the fuel question is becoming very difficult, and going from bad to worse. Up to this point I have merely spoken on the question of the existing essential industries, but as New-Zealanders we are looking forward to the development of other industries, particularly to the working-up of our products, such as wool and hides, and in the near future we are hoping in this district to establish woollen-mills and tanneries, and there is no possible hope of seriously contemplating the establishment of such industries unless we can secure, if not cheap power, at least reliable and permanent power, such as we know we can obtain either by the development of a local hydro-electric works of our own, or by taking our power from one of the Government sources which it is, we believe, the intention of the Government to develop. We are also anticipating that the application of this power to the greatest of all our industries—namely, the farming industry in this district—should have the effect of increasing production so very much desired and advocated by economists at the present time, who are pointing to our huge war debt and stating that the most effective way of coping with the increased interest bill and other war charges is by increasing production. Added to this, we know from results which we have already seen that it will tend to make farm life much more attractive. Perhaps it may not be out of place if I were to stress the important advantages of being able to establish industries for the working-up of local products, such as I have named, in a district such as this. There is, to begin with, an enormous saving of handling, as the goods would be worked up where produced, instead of being sent to some distant centre for this purpose. There is also the question of distribution of population. By the development of power of this kind it will not be necessary to compel the manufacturing population of this country to flock into a number of given centres, as this power is just as cheaply obtainable in one part of the country as another. Each district should have its own industries and so spread the population, avoiding by so doing the necessity either of slums or congestion such as is to be found in the manufacturing centres of the Old World, or even in America. As far as our progress in this district is concerned, we have had, as I previously advised, all of our rivers tested to find out just what power is available in this district. This valuable information we have at the present time, and we are at present making preparations for the establishment of a Hydro-electric Board district in accordance with the provisions of the Electric Power Boards Act, 1918. We are hoping to have the initial work completed within a few months so as to be able to establish a Governing Board, who would then be able to carry out the establishment of such works either locally or buy the power from the Government works when established. Money, of course, for this purpose would be required, and we are confidently looking to your Committee to assist us to obtain such necessary funds.

To Mr. Hornsby: With regard to the Mangahao scheme, I would be satisfied, provided the power can be brought into use quick enough, if the Government would allocate a certain amount of the power to the Wairarapa district; but the question is, Can they do it? We require about 4,000 horse-power, and we consider that all the power available for this portion of the Island will be utilized between Wellington and Wanganui, and we will not be able to get any of it. If we could get money for the development of the Waiohine scheme we could supply power to the district in eighteen months. Last year the freezing-works consumed 8,000 tons of coal, costing £17,000.

The works have developed considerably in recent years. At the outbreak of war we had storage for 120,000 carcases, and to-day we can store 400,000.

To Mr. Craigie: The Waiohine scheme of hydro-electric power would provide a minimum of 4,500 horse-power at a cost of £22 per horse-power at the headworks. Mr. Daniell and I conferred with Mr. Parry about the scheme. He regards it as a local affair, but quite good. He does not consider it to be as good as his own big scheme. If we establish a local scheme the Government would subsequently take over the main distributing-lines, but not the headworks. The headworks might be taken over as a stand-by.

The Chairman: You referred to the Act passed last year. That Act gives you full power to borrow the money you require?—Yes; but the point is, Can we get it?

If your security is good enough?—We are at present endeavouring to constitute the whole of the Wairarapa district. The flat portion would be the inner area, and we would take in an outer area. If we raise the money ourselves we may not get it as cheaply as the Government can give it to us.

You have said that you look to the Committee to assist you to obtain the necessary funds. I may point out that we have had this matter before us previously, but never before have we had it put to us that the Government should find the money. Do you expect the Government to find the money for your scheme in opposition to its own?—Is it a question of opposition? If the Government scheme is not big enough to give us the power we require we have perforce to go in for a scheme for ourselves, and it is the duty of the Government to place us in the same position as the settlers on the other side of the range. The Government ought to say to the various Electric Power Boards in different districts, "We will find one big loan for you to enable you to do the whole of your works." The Government can raise the money cheaper than we can.

We have conditions easy now for different localities to raise their own loans and go on with their works, offering security by way of rate, and it has not been proved to the Committee that you cannot get the money?—I do not say we cannot get the money. We might have to go Home for it.

£100,000 is a small amount?—That is for the headworks. The reticulation will cost another £100,000. The Board would probably ask for authority to raise a quarter of a million.

I strongly urge you to develop your scheme, and it is not proved to me that you cannot get money at a reasonable rate?—I believe we could get the money, but the Government could get it cheaper for us.

As a member of the Committee I say, "Develop your own scheme, and do not depend on the Government too much for the money"?—We shall have to do that. We must get power, and if we cannot get it from the Government we must develop it for ourselves.

Rather than wait year after year for the Government scheme it is for you to consider your own scheme?—That is so. Our coal bill is going up every year, and something must be done.

C. E. DANIELL, Timber-merchant, further examined.

In company with Mr. Cooper I interviewed Mr. Parry about a hydro-electric supply for this district. After hearing what he had to say I am sure that the national scheme is the one that every citizen of New Zealand should heartily support. Mr. Parry was asked, "Would the Government take over our local scheme?" and he said, "No; it would cost too much to develop, and proportionately the big scheme is the cheaper to develop." I should like to hear from the Committee what attitude it will take as to the pushing-forward of Mr. Parry's scheme, especially in relation to Mangahao and Waikato.

The Chairman: The mind of the Committee is that it will make the strongest possible report for the development of hydro-electric energy throughout the country. It is another question when you are going to get it.

Witness: As to the financial position, I take it we shall have to borrow money for the reticulation. The national scheme ought to be taken up by the Government, and the local people could borrow money for the reticulation. The nation's interests are so much at stake in the development of the power that more than an ordinary fight ought to be put up over it, and if nothing else is done as a result of the Committee's visit I trust that the development of the power now going to waste will be turned to use for the benefit of us all.

T. R. MANNELL, Wool-scourer, examined.

My reason for coming before you is to bring under your notice an industry that is at present in its infancy; in fact, so far as the Dominion is concerned, or even our own district, the people are in ignorance about it. In New Zealand we are troubled with what is known as "bidi-bidi," and to all appearances this weed is steadily making its way into prominence and objection. I wish to refer to the weed, and to show that the objection to it may be turned to profitable use. "Bidi-bidi" in wool is not only a means of lowering the market value, but it creates a danger by its presence when shipped overseas. Prior to the war—which we trust has terminated—it cost in England something in the vicinity of 5d. per pound to carbonize wool, which I understand yielded a discoloured article of very inferior quality. Under much more trying circumstances and considerably greater working-expense we are producing better results at a much lower cost. From the standpoint of shipping-space I will call your attention to the great saving in this direction. Every 900 bales of wool shipped in the grease may be cleaned, and scoured, and packed into 600 bales of good-quality first-grade scoured wool. This wool is not a damaged article, but is placed by the Government Valuers with scoured wools that have not been touched by the "bidi-bidi." Observe the saving in shipping-space, and the grade of wool produced from what in the greasy state is termed "D grade" (seedy wool). I unhesitatingly say we should not allow

this grade of wool to leave our shores in its rough state. As to the "bidi-bidi" when removed from the wool, I found on making investigation that a heap of seed at my works had fired from the centre, and when it cooled off it had left an ash which contains potash. The percentage of potash I am unable to quote. Possibly in the near future the analysis will be available. Another product which has never been brought to a satisfactory head is the grease that washes out of wool at the time of scouring. You undoubtedly know that lanoline is obtainable from the wool-grease. I believe, from what little experiment has been made, that we in New Zealand are wasting what should be brought into use. I have a process mentally mapped out that will stop this waste. In fact, here is a sample, which you may inspect, which was obtained by the process referred to. [Sample produced.] For a considerable time at my own works we were throwing away a greasy product which on analysis proved to contain over three times the amount of grease necessary to make it a payable working proposition. I have the analysis, but do not wish to make it public at this juncture. There is a plant obtainable from England which is utilized for degreasing wool, which would prove—if it can do what it is claimed to do—to be of great benefit to the development of seedy-wool treatment. Previously to the wool-control coming into force by the Imperial authorities I am informed that quite half of the scouring-wool left the Dominion in its greasy state. That, of course, has not been the case during the last three years. Something like 242,000 bales of wool were scoured during the season 1917–18, which must have proved the right way to handle this class of wool, or the controlling forces would not have permitted it to be done. The figures quoted can be verified by the Department of Imperial Government Supplies. Another waste which has been going on very largely is what is known as "daggings," or, in other words, the very dirty wool which comes off the crutch of the sheep. There are thousands of tons of this class of dirt and wool not being put to its proper and most profitable use. The wool, which can be separated from the manure, makes a low-grade wool, but it is of sufficient value to warrant the cleaning of "daggings." The manure from this product is valued at £4 per ton on analysis by agricultural chemists. The analysis has been obtained. In conclusion, let me stress the importance and need for the development of hydro-electric power, and the deviation of the railway from a piece of railroad which at any time may be the scene of a more shocking accident than that recorded from the more northern province. From a community health standpoint all factories and works should be carried on in the less congested districts, and this can be assisted by the development of electricity and railways, and laws preventing the carrying-on of industries in proximity to the cities.

To Mr. Hornsby: I do not use sulphuric acid in dealing with the greasy wool. I think the acid process is a failure as compared with the way in which we deal with it in this district.

To the Chairman: If the lanoline industry can be developed we should stop the greasy wool from going out of the country. Why send away an article of considerable value? It might be proper to pass legislation to prevent wool with, say, 35 per cent. of grease going out of the Dominion. As to compelling wool-owners to scour their wool before shipment, there are men who deal in wool who might prefer to ship their greasy wool to England rather than sell through local markets. My process of cleaning the wool would give employment to a certain number of hands. If a woollen-mill were started in this district I believe the requisite labour would become available.

J. CASELBERG, President of the Masterton Chamber of Commerce, further examined.

As to shipping wool Home in a greasy state, I believe that owners of wool are quite alive to the profitableness of shipping it scoured. However, practically half of the wool of New Zealand is bought in the Wellington wool-sales for English buyers, and they would be the people who would have to consider whether it would pay to scour in New Zealand or not.

J. C. COOPER, Managing Director, Wellington Farmers' Meat Company (Limited), further examined.

A subject which has been agitating the people of this town and district for some considerable time past has been the establishment of woollen-mills. It has, however, been pointed out latterly that the question of power must be settled first. Apart from this, one of the effective ways in which the Government could assist such a movement here would be by the supply of details of the various machines and plant required, their cost and output. This is information which to the inexperienced laymen who are anxious to push business of this sort is of very great value, as it is well known that in almost all of these undertakings large sums of money have been spent on either obsolete plant or the wrong plant required for the specific purpose for which it is wanted. As to wool-scouring before shipment, it is not business to pay a shipping freight on dirt, and that must be a factor in causing a good deal of the wool to be scoured locally.

Mr. Forbes: Do you think it would be premature to say that the wool must be scoured locally?—I do not think it will be necessary. The common-sense of the farmer will show him that it will pay him to get the wool scoured prior to shipment.

If it is practicable to save the grease and get a product of value the scouring-works ought to be able to scour the wool at a low cost?—If the product could be saved it would result in a big return. The thing is to know the proper process for it. The work is done in the Old Country, and our scientists ought to be able to say how the product can be properly treated.

Mr. Hudson: You would not suggest that in the erection of expensive machinery you would apply to the Government for advice as to the class of machinery to put in?—If we established a company we could, at any rate, apply to the Government for a list of the most up-to-date plant to buy.

JAMES W. BLACKMAN, Engineer and Manager, Municipal Gas Department, examined.

I desire to point out the disabilities under which we labour owing to the Rimutaka Incline. The Masterton Municipal Gasworks require some 5,000 tons of coal per annum. The delay that occurs after the truck is loaded at Wellington is at times unreasonable. Three days is a short period, and I have known coal take five days from Wellington to Masterton. The most serious difficulty is that though the coal is loaded dry at the port it often occurs, especially in the winter period when our plant is working at its maximum, that coal arrives in an absolutely sodden state. This breaks down the heat in the retorts, thus decreasing the make of gas and necessitating an increase in the number of retorts required to be used for a given make of gas, with extra labour and handling. At one time the Railway Department allowed the use of tarpaulins on payment of the usual charge, but of recent years this has been forbidden. I also wish to deal with the railway surtax on imported coal. An anomaly which exists, and which is of particular importance in view of the existing shortage of all classes of coal, is the fact that Newcastle coal is charged a penal freight of 4s. per ton extra. This places inland towns and their coal-consumers at a considerable disadvantage as compared with the coastal towns. Many of the Newcastle coals are excellent for gas-making purposes, both as to quality of gas and coke produced, and while we are always prepared to use the coals from the West Coast of New Zealand there are times, such as at present, when it would be a great convenience to use coal from overseas.

The Chairman: What is the rate you pay on the coal?—14s. 7d. for Newcastle, and 10s. 7d. for local.

R. BROWN, Land Agent, examined.

In common with many other parts of the Dominion, the position with regard to housing is acute in Masterton. Houses are no longer being built as an investment for revenue purposes. Many houses are occupied by two or more families, and the difficulties are accentuated by the frequent sales over the heads of tenants. Even old houses are occupied at rentals far in excess of values. The solution of this problem is of vital importance to the extension of industry. It is not a solution to give municipal authorities the power to build and establish houses unless the funds are also provided. The money required throughout the Dominion for this work should be provided by the Government out of accumulated surplus of taxation or out of loan; it should be guaranteed to local bodies, and not left to chance, and not limited to £10,000. From eighty to a hundred houses are urgently needed in Masterton immediately. The power to acquire land for housing schemes should be widened and the procedure simplified, and, over and above this, the supply of materials for building should be assured.

To Mr. Craigie: I think the homes might be standardized. They ought to be made of concrete.

To Mr. Forbes: Private enterprise has ceased to supply houses, because it does not pay. People with capital can get better investments in other directions.

To Mr. Hudson: I think the Government should find all the funds out of loan for houses. They should either do that at a payable rate of interest or let the local bodies put a joint loan on the market to be guaranteed by the Government.

J. C. COOPER, Managing Director, Wellington Farmers' Meat Company (Limited), further examined.

I endorse the statement that it is almost impossible to rent a house in Masterton. The fact has come home to us in our own business, particularly with regard to slaughtermen and other skilled workmen. The company cannot take up the question of building a house for every man who may come along and say he wants a house. This year it would have meant that houses would have had to be built for twenty slaughtermen, plus other departments. We have had to take on single men because houses were not to be had for married men. We have offered to assist any man in the works into a house. The result has been that the men are buying houses, which is really making the position worse, as houses are becoming scarcer than they otherwise would be. The big trouble is to get land and provide a house at a rate a working-man can pay. As far as I know, at the present prices of materials it cannot be done. Fortunately, some classes of material are coming down in price. Up to the present you could not build a house fit for an employee at a price that would allow him to pay a rental equivalent to the interest on the cost. At present we employ about three hundred men, and sometimes four hundred.

The Chairman: Would not your company subsidize an interest account on a loan to provide the accommodation?—The shareholders might have something to say about that, but it is a scheme that is worth considering. We are already losing money by not being able to get houses for good men. Our biggest trouble is with the casual men, whose labour we require at certain times of the year.

W. H. JACKSON, Mayor of Masterton, examined.

I have been the headmaster of the Masterton State School for over thirty years, and I am in full control of the primary and secondary education in the Municipality of Masterton. I am therefore in a position to state positively how the housing problem affects Masterton educationally. Owing to the difficulty in obtaining house accommodation many families have had to leave Masterton. Only last week two families, with three children in each family, had to leave the district because the houses they occupied had been sold, and they had to vacate. The housing problem is so acute and urgent in Masterton that the Government must be most strongly urged to lend a hand in meeting the situation at once, if only as a temporary measure. The Government has on hand a large quantity of building-material at the Featherston Camp. If the usual course is followed this will be sold in lots and at very low prices. The Masterton Trust Lands Trust has a large number of building-sites to let. These would, I am sure, be made available

to the Government, at a peppercorn rental, if the Government would take advantage of the opportunity afforded to give some relief to the Municipality of Masterton regarding its housing problem. The Imperial Government is adopting the plan I bring before you. They are shifting some of the hutments on to sites provided for returned soldiers, and are making the best use of those buildings, and I submit that nothing better could be done with the hutments at Featherston than what I suggest. The municipality cannot build houses and let them at a rental which the tenants could pay. If we as a Borough Council were to borrow a large sum of money and build houses and calculate the rent at only the barest interest to save the municipality from loss we could not let one house, as the rents would be over the heads of the people for whom we had built them. The remedy is for the Government to provide money at a cheap rate, or to take the problem in hand as a national problem. The Masterton Trust Lands Trust is prepared to assist the Government in the interests of Masterton.

C. E. DANIELL, Timber-merchant, further examined.

Following on what Mr. Jackson has said, I may state that the Masterton Trust Lands Trust has tried to get rid of its sections at any rent possible. We have offered some quarter-acre sections at £1 per annum for the first ten years and £1 10s. per annum for the succeeding eleven years. The conditions of lease provide that at the end of twenty-one years the ground is revalued. These sections have been on sale year after year, according to the requirements of the law, but there is no demand for them. The tenant has the right of renewal for twenty-one years on condition that he pays the increased or the decreased value, as the case may be, as assessed by three independent men.

F. NORRIS, National Service League, examined.

I advocate that more publicity should be given with regard to articles made in New Zealand by our home manufacturers. In bringing this matter before your notice I may say I am of the opinion that in a few months we shall be up against keen competition from foreign countries, and therefore we ought to make as much work as possible in New Zealand. Our returned soldiers should have every chance of employment, and our industries and factories are the only places where partially disabled men can find employment at full rates. Many largely used articles which are made in New Zealand are scarcely known by the average person. Large purchases of foreign imported goods are made daily by housewives, although articles of equal, or even better, quality are made in the Dominion. The same thing applies to men. Foreign goods are bought for their work or business although similar goods are made in New Zealand. The reasons why our local manufacturers are overlooked are as follows: (1.) Very few people know the splendid goods already made in this country. (2.) The wholesale importer's interest lies in selling imported articles, especially if he holds the sole agency for foreign manufacturers, as he has no competition to fear. (3.) The greater part of our population are from other countries, and who are familiar with brands of goods made in their own respective countries. (4.) Many of our industries are practically in their infancy, or just developing, and a prejudice exists that they cannot give the finish and appearance to their goods that well-known older manufacturers of other countries obtain. The artisans of New Zealand are as capable and clever as those in any part of the world, and given up-to-date and first-class machinery are turning out as good an article as can be purchased in any country. My suggestion is that the Government take the lead in a "publicity campaign" with the object of making more widely known the merits of New-Zealand-manufactured goods and the advantages to be gained by buying from our own factories. The probable result would be an enormous increase in the output of our industries. Factories would be rapidly enlarged and new ones started, providing work for men and women, and especially for partially disabled returned soldiers. As an effective means of carrying out the scheme suggested to give publicity to New Zealand products and manufacturers I would suggest—(1) A tour through all our schools of the Dominion, with drawings and photos of New-Zealand-made articles; (2) a wall-sheet of these illustrations to be fixed in all schools and railway-stations; (3) that each school child be given a pamphlet about New Zealand goods with a request that the parents fix it up in the home. All this could be carried out at a cost of £600, and it would undoubtedly influence the juvenile and family mind in the way of supporting native industries. Will your Committee also consider the advisability of place of origin of imported goods being printed in much bolder type on labels instead of the small type now used, so that purchasers can easily read same? Publicity is also wanted for the seeds grown in New Zealand. We grow the finest of many kinds of agricultural and garden seeds.

A very large trade could be opened up with South Africa in the way of tinned meats manufactured by our New Zealand freezing-works.

WELLINGTON.

THURSDAY, 29TH MAY, 1919.

O. HOLST, General Manager of the New Zealand Casein Company (Limited), further examined.

The Chairman: I understand you wish to make a statement with regard to evidence given by Mr. Cuddie?

Witness: That is so. I have to thank the Committee for giving me a copy of Mr. Cuddie's evidence. In reading it through, and also in reading the reports published in the local newspapers, it is evident to me that on some points a wrong impression exists in the mind of the Com-

mittee as to the policy of my company. I therefore desire to place on record the actual facts. Firstly, there is a little misconception in regard to the patent which my company holds for the lactic-acid method. I referred briefly to this fact in my evidence in Wanganui. I would like to add this: After written negotiations an agreement was made in Melbourne in March, 1911, between my company and the representative of a firm in Hamburg. My company acquired from that firm the use in New Zealand of their process of making casein. One of the clauses of the agreement was that the company was to send to New Zealand its casein expert to instruct us in the use of their method. This expert proved to be Mr. August Neilsen, who arrived in New Zealand in December, 1911. On the advice of his solicitors (Messrs. Chapman, Skerrett, and Wylie) he applied for a patent for the process before divulging it to us. The patent was duly granted, but under our agreement with the firm an assignment of the patent was made to his firm and ourselves jointly. On the outbreak of war we applied, in response to advertisements by the Internal Affairs Department, to have the ownership of the German firm determined and deleted, and that was done. I may add that Mr. Neilsen was a Dane by birth and a German by naturalization. So far as the use of the method is concerned there also seems to be a misconception. In my evidence in Wanganui I stated that the method has been used by all our clients among the dairy companies for the past seven years without any payment of royalties, and it is still so available. In the course of recent negotiations with a group of Taranaki dairy companies my company offered to sell at a valuation our assets at Aramoho to the companies interested in the supply of the curd. Those companies comprised the Taranaki factories and also factories in the Wairarapa and Manawatu districts. We also offered to leave our money in the concern at 6 per cent. We think the offer was a most reasonable one, and we cannot understand why the companies did not avail themselves of it, instead of working another factory in opposition. Later, at the special request of the chairman of the group committee (Mr. Morton), we submitted to them an offer whereby they could use our patent, take away from the factory at Aramoho a substantial portion of the supply, and work our patent on a royalty basis. At the same time we left open for the companies our original offer. We had no desire to trade in the patent rights, but naturally when it was put to us, as it was by Mr. Morton, that it was desired to take away a portion of the business we had built up, to damage the business, and to some extent render useless part of the capital expenditure to which we had gone, and to harm our business generally, and furthermore to limit the co-operation to factories in north Taranaki, cutting away the factories south of Wanganui and letting them sail their own sea, as it were, we felt that we had, in order to protect our own interests and to protect also those companies that had loyally supplied us from south of Wanganui, to ask for a royalty which would be sufficient to recompense us for the loss we would suffer, and to recompense also those companies south of Wanganui for the higher cost of production, and thereby the smaller net return to them which would be occasioned by the smaller production at Aramoho. Therefore we asked for the sum of £2 10s. per ton on casein as a royalty. Further than that, we have gone to a considerable amount of expense and trouble in opening up a market for casein in London. When the war broke out there was no market in London. In opening up a market in London we were ably assisted by Messrs. Joseph Nathan and Co., who have an office in London, and after they had opened a market for us there we appointed them selling agents for our New Zealand casein in London on a commission basis. The committee in Taranaki objected to being bound to one particular firm as their selling agents. We pointed out to them the immediate effect of having more than one seller of casein in the London market, where the buyers are few—that the price would be lowered, and therefore not only would our selling agents be deprived of a certain amount of legitimate commission, but we ourselves and our clients would have to accept a lower price for our output. The committee, however, insisted on that point, and asked us to cover the point by a royalty on the output, and we did so, fixing it at £2 10s. per ton. It has been said by the Chairman of this parliamentary Committee that this royalty was exorbitant. It is not for us to say whether it is or not, but in all the circumstances we think it is not. If the royalty is held to be exorbitant there is ample protection under the Patents Act, where it is laid down that any firm or person holding a patent is not permitted to restrict the use of it by charging exorbitant royalties, and if the royalties are held to be exorbitant they can be fixed by the Court. Further, there is no need for any company to pay the royalty. If a company desires to use the patent and will approach us in a reasonable manner it can have the use of it. We cannot offer anything fairer. It was at the request of the farmers' committee itself that the matter was put on a royalty basis. At any rate, the whole question is still the subject of negotiation, and my company is prepared to consider any reasonable proposal which will facilitate the working and ensure the growth of the industry so long as we merely conserve and protect the capital we have invested, and any proposal that emanates either from the committee set up in Taranaki or from the Department of Agriculture will be most seriously considered by us. The suggestion was made, apparently, that the State should acquire the patent rights, and in reply I have to say that we shall at all times be willing to entertain any proposal of the kind. Some years ago we offered to hand over to the State the rights we then possessed, but the offer was apparently not acceptable to the Department of Agriculture. I may say that we do not desire to hand over out patent rights to any group of factories like that in Taranaki without making due provision that other clients in New Zealand shall have the right to use them if they wish to do so. If the patent is taken away from us it represents the only security we have for our capital expenditure. It is the only recompense we can hope for for the work we have done for seven years, and it has been good and beneficial work, and a number of dairy companies have had the advantage of it; but we shall gladly consider any proposal as to the disposal of our rights. Mr. Hornsby asked if we are not acting in restraint of trade. We are not. We have pushed the thing for seven years. We have gone out of our way to persuade dairy companies all over New Zealand to take up the manufacture of casein. We have never asked for anything that is not a fair thing.

We have never endeavoured to create any monopoly, and as I have said we have been forced in one instance only to fall back upon our patent rights as the only defence we possess against a joint attack upon our work.

Mr. Hornsby: You say that if the product is sold to Nathan and Co. you would charge a certain sum to the producers. If it is not sold to Nathan and Co. you would charge £5. I say that is a restriction of trade, according to our law?—It might be if we had said that it must be sold to Nathan and Co., but that is not the case. We say expressly "through" Nathan and Co., who are merely the selling agents, and are entitled to 2½ per cent. for handling the product. They do not determine the market value. It is sold in the open market.

You impose a penalty of £2 10s. if they do not sell?—We do not restrict the market. They must have somebody to sell in London. We have an agency agreement current between the Casein Company and Nathan and Co. whereby all the casein produced by the company is sold through the agency of Nathan and Co. in London, America, and New Zealand at a certain commission.

But you are restricting them when you impose the penalty?—It is no penalty. If they choose to make use of the agency the £2 10s. disappears. Why do they prefer any other commission house?

Why not allow the companies to act for themselves and sell to whom they please?—We have allowed it.

Is the £2 10s. not a restriction?—No.

You compel them to deal through a certain firm?—No, we do not.

There is no compulsion, only "you must"?—The whole point is this: We have entered into a contract with this firm, which has given valuable consideration as well as proving to our satisfaction that they can deal with this particular commodity better than any other firm.

Mr. Cuddie says that the £5 charge is prohibitive?—I do not think it can be called "prohibitive," but if it is prohibitive and unreasonable there is ample protection under the patent law.

And so there is in the restriction-of-trade law?—I doubt if it will apply, but I leave it as a further point under which the companies may obtain redress.

Who is chairman of directors of your company?—Mr. F. J. Nathan.

Mr. Luke: There is a penalty of £2 10s., is there not, if a purchase of the product is made outside?—That is only in one instance. If this particular group of factories wishes to break away and sell their product in opposition to us and to the factories that are situated south of Wanganui, and who still wish to retain their interest in the working of the Aramoho factory, we say that it will impose a direct loss on us as well as on those factories, because if there is going to be more than one selling agency in London, where the buyers are few, the obvious result is a depression of the price, which we as well as they shall have to accept. For the life of me I cannot understand the attitude of the companies in Taranaki in wishing to set up in opposition to the existing selling agency, which has proved successful.

Would it not be better for the State to have control of the whole thing?—Yes, if the State will work as hard as we have worked.

Would it be a very expensive undertaking to acquire your rights?—I think not. We have never been unreasonable.

Mr. Veitch: If you had sold part of your business to the Taranaki people and so reduced your business through Nathan and Co., would that have been a breach of your contract with Nathan and Co.?—I am not quite sure whether there is a minimum quantity stated in the contract: there may be.

Did you contract with Nathan and Co. to sell all your output?—Yes.

Mr. Poland: Supposing that a number of dairy companies in the Waikato went in for casein-manufacture and desired to use your patent, is your company prepared to let them have the use of the patent for £2 10s. per ton and a free agency, or must they sell through Nathan and Co.?—If I am not mistaken the Waikato factories are using our process at present. We entered into an agreement with the New Zealand Dairy Association, and I think the agreement holds good yet.

What are the provisions?—To market through ourselves.

Not through Nathan and Co.?—Through the New Zealand Casein Company.

And the company markets through Nathan and Co.?—Exactly.

But I ask whether if some other dairy company were to enter into the manufacture of casein and were to ask for the use of your patent rights, can they have those rights for £2 10s. per ton with a free market through any firm that offers?—That case has not arisen, and I cannot answer the question.

A case of the kind has arisen in Taranaki and you say it is a special case?—It is.

Would the Waikato case be a special case too?—So far as we are concerned we have no factory established in the Waikato district. We have no capital invested in plant which could be damaged, and therefore the amount we should have to ask to protect our interests there must be guided by that fact. Secondly, we should have to look into our original agreement with the New Zealand Dairy Association to see to what extent they are interested in it.

You cannot say?—It is impossible to say offhand.

We may conclude that they would have to pay the same as Taranaki has?—I do not think you are justified in concluding that. It is a matter that will have to be the subject of negotiation. Also, the matter of the royalty charges to the proposed Taranaki company is a matter for negotiation. We have submitted terms, and if they are not acceptable it is open to the other side to submit counter-terms.

Dr. A. K. Newman: Were you frank with us at Wanganui when you said the conditions were £2 10s., and we now find that the product must be sold through a particular firm?—I think so. I was placed in a very difficult position at Wanganui, inasmuch as the letter written to Mr. Morton at that time was in consequence of certain negotiations. I could not, without a grave breach of

confidence, disclose those negotiations, which might end in nothing, and which, as a matter of fact, have not ended in anything.

Are there not two methods of manufacturing casein?—There are more than two.

Over how many methods have you got a claim?—One—the lactic acid. We secured it because in our opinion it was the best, and it has proved the best and the cheapest.

A. J. RUTHERFURD examined.

I do not pose as a geologist, but it is a subject which I have always taken a great deal of interest in. I used to discuss the question of oil a great deal with the late Sir James Hector. It is a curious thing that in Burma, Sumatra, and Borneo the direction of the deposits of oil runs in a line which would strike the North Island of New Zealand at the Taranaki Bight and would continue across the Island towards Castlepoint. Deposits of oil have been obtained in Taranaki at New Plymouth. Sir James Hector always maintained that those deposits would not be large deposits, for the reason that the volcanic disturbances in that region had been so great; but he always thought that farther inland more permanent deposits of oil would be found—sealed up by the great envelope of papa rock that reaches across the North Island to a great depth. I suggest that the services of an expert be secured, and that boring experiments be carried out at spots recommended by him. I do not think that pipes of heavy calibre would be necessary in the carrying-out of such boring operations. I recommend that the prospecting and boring be done with lighter pipes—that the bores should be purely prospecting-bores.

MONDAY, 2ND JUNE, 1919.

A. HARRIS, M.P., examined.

I produce a sample of tobacco which was grown in Henderson, about twelve miles from Auckland, by Mr. Joseph Franich, a Dalmatian. [Sample produced.] He told me that he had grown tobacco very successfully in his native country, and he had imported the seed from Dalmatia, and planted it on his land at Henderson with highly satisfactory results. He tells me that he is an expert in tobacco-culture and that that is second to none in the world. The great feature is that that is grown on what is known as poor gum land, which is not suitable for many other branches of agriculture. Not very far from Mr. Franich's farm there is a block of land belonging to the Crown, known as the Birdwood Estate. It was formerly a gum reserve, but the reservation has been lifted, and the suggestion has been made that this land should be offered for soldier settlement. The land that this tobacco was grown on is identical with the land on the Birdwood Estate and with many similar areas of land in the North. If an industry of this kind can be established on land which is not suitable for ordinary agriculture, it should have the assistance of the Government in every possible way. I wish it understood that I am giving you the opinion of the grower of the tobacco: I myself do not pretend to know anything about it. He assures me there is no better tobacco grown anywhere. If that is so an industry might be established by Government assistance that would be available to soldiers. Partially disabled soldiers might carry it on very well: there is no really hard work attached to the industry, and the poor land could be utilized very largely for it. The sample I produce is a fair one of the tobacco he had.

To Mr. Hornsby: Mr. Franich cures the tobacco simply by drying it. He has a number of different grades of tobacco. He tells me it depends entirely upon the time at which the leaf is picked and the way in which it is picked. He is prepared to place his knowledge at the disposal of the Government.

To Mr. Forbes: As far as I know Mr. Franich has not submitted the tobacco to any tobacco people to get a report on it; but he told me he had no difficulty in selling any he could produce.

Colonel G. F. C. CAMPBELL, Superintendent, State Advances Department, examined.

The Chairman: The Committee would like to have some evidence from you in regard to the present position as to advances to workers and others about to build houses for themselves. You know there is a great scarcity of houses throughout New Zealand, and we are anxious to offer some recommendations to the Government in connection with that question?—At present the Department is advancing up to the full limits provided by the Act, the full limit being £450—that is, for workers. The practise is for the applicant to fill in a form, and on receipt of his application we transmit it to the Valuer-General, accompanied by proposed plans of the building. This, of course, is in cases where a worker is intending to build a house for himself. The Valuer-General obtains a report from his valuer, who estimates the value of the house when completed according to the plans and specifications, and also estimates the value of the land upon which the building is to be erected. The matter then goes before the State Advances Board for consideration, and the Board is empowered to advance up to £450 on the security. The advance in the case of a building is paid out in instalments—progress-payments; so that as the house progresses, so the money is advanced. In cases where workers desire to purchase buildings already erected, of course there is no necessity to pay any progress-payments. The valuation made by the valuer is submitted to the Board, and the Board considers and makes an offer or otherwise, and if the offer is accepted that amount is paid over in a lump sum.

What is the rate of interest?—The rate of interest is 5 per cent., reducible to 4½ per cent. for prompt payment.

And a sinking fund?—Yes; and the advances are made on a table.

What is the rate of earnings that a worker must receive or be in recipt of in order to take advantage of the system?—Advances are made to workers receiving not more than £200 per annum.

And what is the percentage of advance on the security?—We can go up to a three-fourths margin.

Do you do so?—Sometimes, but not always. In fact, it depends entirely upon the class of security as to whether we go up to the full three-fourths or not.

In view of the high price of building sections, do you think this limit is sufficient to assist a working-man to build a house suitable for his requirements?—No, I do not; but in most of these cases we find that the person who is helping the worker is prepared to take a second mortgage. We find that is very frequently the case; or the worker has a certain amount of money to assist.

But this limit was in force before the added cost of building-materials came about?—Yes.

Under these circumstances, do you not think it is too low?—I do; I do not think that at the present time a person can build a suitable house for £450.

In view of the great scarcity of houses, what limit do you suggest would be a fair one to thoroughly assist a worker?—The position now is simply this: that if a worker is able to build a better house he can apply under the Advances to Settlers Branch for a loan up to £1,000 for the purpose. I have not thought out what would be a fair increase to make in the case of a worker's loan: the reason being that we always recognize that a worker who wanted a better class of house under the present existing conditions would apply under the Settlers Branch, and the limit there is £1,000.

And has that been the limit for some time past?—The limit according to the Act is £2,000, but during the war-time we have had to restrict the lending. As a temporary measure only the Board restricted the loans under the Settlers Branch to £1,000.

We are dealing with buildings particularly?—We can now lend £1,000 to a settler for building a house.

That is not generally known, I think?—It has been made public in the newspapers by the Minister. He made a pronouncement a little while ago, and we are getting applications in.

What is the percentage of advance in that case?—Three-fifths.

The interest is the same?—Yes, and the conditions are practically the same.

In the case of a worker who requires a larger advance under the Settlers Branch, do you think that three-fifths would suit instead of three-fourths?—When we are dealing with the proportion there is one great question we have to face, and that is as to whether the Advances Board is warranted in granting advances to an extent which would jeopardize the money-lenders' interests at Home. We would like to do all we can to assist the borrower, and we are dong so; but in regard to the three-fourths margin I can assure you that in almost every case where we have been forced to realize we have not been able to realize to the extent of our mortgage, and that is on the three-fourths basis, the reason being that where we have had to realize the securities have been allowed to depreciate. But I would like to make it clear that in the vast majority of our loans the securities have been well looked after.

Mr. Poland: Have you had many realization cases?—Not many. So that when we have to consider the question of margin we have also to take into consideration the responsibilities of the Board, and also the amount of money which we have at our disposal to lend, because we cannot borrow in the London market just at present except at very high rates.

Mr. Hornsby: You have always got a good deal of money coming in as the result of repayments?—Yes; I am glad you have mentioned that, because under the restricted limits which the Board imposed at the beginning of the war we found that we were not running through our borrowed money very quickly owing to the fact that money was coming back in interest and principal—the money that was being repaid—and that has enabled us to carry on satisfactorily during the war-time without asking for additional loans.

Have you been able to trace the causes in any cases of failure of the people to pay up where you have had to foreclose—have you gone into that? Have you had many foreclosures?—Not a very large number. There were some cases of leaseholds, where the Board tried to help back-blocks settlers, and where the settlers have thrown up their leases and have gone away. You have also to recognize that there are dishonest people who have received advances and used them for other purposes than that of settlement, and some of these people have left their holdings, and we have had to realize in the best way we could.

What about the towns and villages in the interior—you have not had many failures there, have you?—It depends a great deal upon the town. Take Waihi, for instance—we have had a lot of trouble there; or take the West Coast of the South Island—we have had some considerable trouble there.

Mr. Craigie: They are going back?—Yes; but I could not say that we have had more losses in the big towns than we have had in the small ones.

The Chairman: What rate does your Department pay for money that it obtains to lend?—It varies. We have, of course, some of the original loans, which were raised at, I think, 3 per cent., and later at 4½ per cent. I would like to make this perfectly clear to the Committee: that what I have said with regard to losses does not mean that the State Advances Office is not quite capable of standing these losses, because we have made provision and we have made reserves which enable us to clear these losses, and without coming upon capital.

Mr. Hornsby: You have never approached a dangerous position at all?—No, never.

What is the source of the supply of money at present for your Department?—The source of supply is the London market.

Not the Post Office?—No, not the Post Office. The London market has been the source of supply, but we have now a certain amount of money which we are working upon. There is another source of supply that has come in in later years, and that is the Public Debts Sinking Fund.

The Chairman: What rate do you pay for that?—We lend it on behalf of the Public Debts Sinking Fund Board. The money is paid by the Treasury out of the Consolidated Fund every year, and we invest it in loans to local authorities or in loans to settlers.

With regard to the sinking fund for the extinction of the loans, what are the periods?—The periods run to 36½ years generally for local bodies' loans.

I am referring to loans on buildings?—As a rule, for twenty or thirty years.

Do you differentiate between wooden and concrete buildings in that respect?—As a matter of fact, that would be a matter the Board would consider, and if anybody desired a longer period for a concrete or brick building no doubt the Board would agree, provided it came within the limit provided by the Act.

Mr. Poland: Do you find that people are satisfied to accept a twenty-year limit for repayment?—Yes, I think so. If we grant a twenty-year period, and an applicant says he would like it for thirty years, the Board would probably let him have it. We have done so in many cases. Applications for an extended period are very few. In fact, the majority of people who get loans rather like to reduce them as quickly as possible. Twenty years is a fairly long period for a wooden building, and they are satisfied.

What is the limit of wages that enables a man to get an advance as a worker?—£200 a year.

Do you think that is a sufficiently high limit at the present time, or do you think that it might be increased now? Not quite £4 a week is a pretty low limit?—Of course, the purchasing-price now of the pound is much less than it was, and it is quite open to consideration as to whether the limit should not be increased.

Mr. Hornsby: There is the definition of "worker." Take a town in the interior of the Provincial District of Wellington. People are sometimes driven to this position: they buy out a property and thus dispossess a renting tenant, and that throws that tenant and his family completely out, and they do not know which way to turn. He may not come within the definition of "worker" under the Act; he may get £6 a week, but he is not in a position to build because he has a family to support, and, as has just been said, the lowering of the purchasing-power of the sovereign has been so great that he is as badly off as a man getting a smaller salary who has not so many claims upon him?—Yes, there are many cases of that sort, and there are many cases in which we would like to give people more if we were empowered to do so.

Mr. Poland: There is still the advances to settlers to fall back upon. I am suggesting that £200 a year is rather low for an ordinary worker to come under the advances to workers scheme. You think yourself that it might be increased now owing to the increase in the cost of living?—Yes, I think that would be a reasonable thing to do.

The Chairman: Supposing a worker takes advantage of the privilege and borrows money, there is nothing to prevent him selling the property to any one else, I presume?—The Board will always agree to transfer if the person borrowing is not able to continue.

Supposing he is able to continue but he wishes to sell?—We do not encourage speculation, but we do not desire to prevent a person selling a property if he cannot continue to live there.

Mr. Poland: Of course, he must make a statutory declaration?—Yes, he is required to make a statutory declaration that he intends to live there.

The Chairman: Is there any check upon repeated applications for advances by the same individual—is there any regulation or restriction against repeated applications for advances?—No, there is only the maximum to guide us.

In the event of a man borrowing and selling in order to make a profit out of it and applying for a new loan?—If we found that a man made a practice of doing that we would say, "You are a speculator and we cannot help you."

Are you getting many applications now for advances?—Yes, but I cannot tell you the number. Our Board is meeting every week, and a great number of applications are dealt with—from local bodies, settlers, and workers.

Mr. Craigie: Since the war began you have not gone on the London market for money for these advances?—No.

What is the amount from the Public Debts Sinking Fund coming in yearly: do you get the full amount of the Public Debts Sinking Fund?—Yes.

How much does it amount to?—I cannot tell you from memory, but I can easily let you have a statement of the figures if you wish.

Is it half a million now?—It would be considerably more than that now.

And there are the repayments coming in?—Yes.

Are these the two sources from which you are getting the capital?—There is the original money borrowed from the money-lender in England: that is being turned over; it is coming back in repayments, and it goes out again. There is also the balance in hand at the beginning of the war which we temporarily invested: we shall be using that shortly. There are also the payments on account of the Public Debts Sinking Fund, which amount every year to a considerable sum. Each year as the public debt increases so is a larger amount paid in.

As demands for houses increase, as we hope they will, to enable working-men to get homes of their own, you will have to supply money from other sources?—If the demand were greater than we could supply we would necessarily have to apply for more money or else reduce our limit.

Do you think you could raise it in New Zealand?—No, I do not think so. We could not raise sufficient in New Zealand. We can raise money for war purposes in New Zealand, but we could not, I think, raise money for State advances purposes to any extent in New Zealand.

Do you think the money-market will get dearer at Home, or do you think we may get money cheaper?—I doubt if money will be cheaper for some time.

If you cannot get money your operations will be restricted?—They will be restricted in time, but not yet. We have at present sufficient to equal the demand.

The advances you gave before the war are quite inadequate now for a worker to put up a home?—Of course, the advance we gave before the war would not be of the same use to a man now.

And have you extended it?—No; it is limited by Act of Parliament in the case of workers' loans.

Would you suggest that the amount should be raised?—I do not see that there is any objection, but as I have said there is always the Advances to Settlers Branch for workers to obtain their loans from if they want more than £450.

The Chairman: It would not make any difference to the total amount lent if the limit to workers were increased: they would simply take advantage of the advances to workers instead of the advances to settlers?—I do not think it would; but it should also be remembered that there is no very great difference between advances to settlers and advances to workers: the chief difference is that they get a little larger margin under the Workers Branch, while on the other hand there is greater risk.

In the event of loans being made on houses built of concrete there would be no great objection to increasing the number or amounts of loans to workers, I presume?—No; I do not see any objection at all to that if the security is good. I do not see any reason at all why it should not be done. If the practice of building concrete buildings were adopted generally one of our difficulties in lending money would be done away with, and that is the perishable nature of the security. In a large number of cases where applications are made for loans on existing buildings the valuer finds dry-rot in the buildings, and he has to do his duty, and reports to the Board accordingly; and that results in reducing the loan which the Board can give—it must do.

You have nothing to do with building workers' dwellings—that comes under the Labour Department?—Yes.

They have their own funds?—Yes.

W. B. MONTGOMERY, Comptroller of Customs, examined.

The Chairman: The Committee would like some information from you with regard to the Australian tariff and other matters?—In Australia they passed an Inter-State Commission Act in 1912, and appointed to that Commission three Commissioners, one of whom was Mr. Lockyer, the late Controller of Customs for Australia. I do not remember the names of the other two gentlemen, nor can I tell their qualifications. I produce the Inter-State Commission Act, also the first annual report, in which you will find all the subjects upon which the Commission reported as far as the tariff is concerned.

Mr. Sidey: Was it a permanent Board?—Yes. It was a Board that had other functions than the mere revision of the tariff. It had general functions relating to trade and industry—for instance, "to investigate the production of and trade in commodities; the encouragement, improvement, and extension of Australian industries and manufactures; markets outside Australia, and the opening-up of external trade generally; the effect of the tariff on any Tariff Act or other legislation of the Commonwealth in regard to revenue; Australian manufactures and industries and trade generally; prices of commodities; profits of trade and manufacture; the wages and social industrial conditions; labour—employment and unemployment; bounties paid by foreign countries to encourage shipping or export trade; the question of population, immigration, and other questions referred to the Commission by either House of Parliament by resolution for investigation."

Was it a Commission for the Commonwealth?—Yes. I can give you, as an example of their work, one of the reports upon tariff investigation. It deals with paper, paper boards, and the manufactures of paper and wood-pulp, and it shows the method of inquiry and the statistics they gathered covering the matter. Then, before they would consider any industry for tariff reform they made the parties interested give them very full particulars, distinguishing between established industries, prospective industries, and other cases where the industry was nebulous and not even prospective. The whole of the particulars are set out in the Act, and in the forms I produce.

The Chairman: What power did the Commission possess: was it merely the right of recommendation?—Merely of recommendation. I am given to understand, but I am not sure, that the recommendations of the Inter-State Commission did not greatly influence Parliament when it finally came to amend the tariff of Australia later on. Parliament did not quite allow the investigations of the Commission to guide them in framing the tariff. As to how far the Commission may alter or amend the tariff, they cannot do it at all. We cabled to the Controller in Melbourne as follows: "Is there power under the Australian law to amend the tariff by Proclamation or Order in Council on the recommendation of the Inter-State Commission? If so, kindly cable statutory authority." The Controller replied: "*Re* tariff: Amendments can only be made by resolution submitted to Parliament by the Government, and become operative immediately, but subsequently dealt with by Parliament before confirmation or otherwise." It is the same as we do here. Amendments are brought down by resolution and have to be confirmed by Parliament. That has to do with the amendment of the tariff, generally speaking. They have, however, certain powers in the same way that we have to admit articles that are required for certain industries free of duty, but the powers are somewhat restricted. They are restricted in our case to "articles and materials suited only for and to be used solely in the fabrication and repairing of goods in New Zealand." That would not permit of our altering any tariff heading or amending the tariff in any way. They have a wider power, however, inasmuch as they are able to admit machinery and goods generally, beside all minor articles that are used in industries.

In New Zealand we find a difficulty in this respect: Certain machines have been introduced since the last tariff, and those machines are classed under the n.o.e. section, and consequently

have to pay a duty. It makes it almost a great hardship?—It is a hardship. If I may be allowed to express an opinion, I would like to say that for my own part I believe we should have a sort of evolutionary tariff instead of a fixed one. The present law is not sufficiently elastic, and may hamper and prevent the establishment of industries that would otherwise be established. I had before the Minister a little while ago—and I believe he is favourably disposed towards it—a proposed provision to introduce into our law to run somewhat on these lines:—

"*Provision to rectify Anomalies injurious to Trade or Manufacture.*

"1. Whenever it appears to the Minister that the duty upon any article or the freedom from duty of any article imported or proposed to be imported into New Zealand is operating, or is likely to operate, in an injurious, unfair, or anomalous manner, either with respect to the public or to any industry, trade, or occupation, or whenever it appears to the Minister that trade concessions, whether by way of railway or shipping freight, special bounty, rebate, or otherwise, are being granted upon goods exported from countries other than British dominions, as against goods exported from British dominions, in such cases the Minister may set up an Advisory Committee consisting of not more than five persons selected by him to advise upon the special subject at issue.

"2. Such committee shall report upon any questions submitted to it by the Minister, and shall offer a recommendation as to the settlement thereof.

"3. The Minister may thereupon by his order suspend the existing tariff upon any article, and may in lieu thereof substitute such tariff as appears to him just: Provided that any order imposing duty or creating exemption from duty under this section shall first receive the approval of the House of Representatives.

"4. In the event of the rejection by the House of Representatives of any Minister's order made under this section the duties or exemptions from duty in force prior to the issue of such order shall resume and continue.

"5. Wherever under the Customs Acts power is granted to the Governor-General or to the Minister to admit free of duty any article, such power shall include the power to impose or retain a preferential duty on such article when it can in the opinion of the Minister be satisfactorily made or produced in British dominions."

Mr. Sidey: It is subject to the House approving of it?—Yes, but it can be put into force immediately, to be eventually ratified.

The Chairman: It might be an objection if a man wished to commence business?—It might; but a man would have to wait only six months or so at the outside.

In Australia is the whole tariff opened up to parliamentary debate when one or two alterations are made?—Yes, the whole question is raised.

As it does here?—Yes, exactly in the same way.

Would it not be possible to deal with specific items without opening up the whole question?—That is for Parliament to say. It is a matter of procedure, I think.

Would it be a desirable thing to bring about, so that the tariff could be more frequently reviewed?—Certainly. It would be very desirable if an amendment of the tariff could be made without throwing the whole of the tariff open to discussion.

Mr. Poland: You cannot bring up an amendment of the land law without having the whole thing under discussion?—It appears to me that every Government is shy of tackling the tariff. It is a dangerous subject to tackle.

The Chairman: In your experience of the administrative part of the work, do you not think it is time for a general revision of the tariff?—Yes, unquestionably.

Mr. Hornsby: It is twelve years since we tackled it?—It has been running since 1907, and the conditions of trade and industry have altogether altered in that time. It is high time there was a revision of the tariff. There are many vexed questions outstanding that need to be gone into at the present time.

The Chairman: In regard to dumping, what power have we under our law to prevent dumping from foreign countries or even from the British dominions?—We have no special power, but I have submitted a dumping clause somewhat similar to the one in force in Canada. I believe the Minister is favourable to it. It reads:—

"1. In the case of articles exported to New Zealand of a class or kind produced in New Zealand, if the export or actual selling-price to an importer in New Zealand is less than the fair market value of the same or a similar article as defined by section 114 of this Act, there shall, in addition to the duties otherwise established, be levied, collected, and paid on such article, on its importation into New Zealand, a special duty (or dumping duty) equal to the difference between the said selling-price of the article for export and the said fair market value thereof as hereinbefore defined; and such special duty (or dumping duty) shall be levied, collected, and paid on such article, although not otherwise dutiable: Provided that the said special duty shall not exceed 15 per cent. *ad valorem* in any case, and that it shall not apply to goods whereon the duties otherwise established are equal to 50 per cent. *ad valorem*.

"2. 'Export price' or 'selling-price' in this section shall be held to mean and include the exporter's price for the goods exclusive of all charges thereon after their shipment from the place whence exported directly to New Zealand.

"3. If at any time it appears to the Minister that the payment of the special duty by this section provided for is being evaded or avoided by the shipment of goods on consignment without sale prior to such shipment, or that such duty is being evaded or avoided by any other means, he may in any case or class of cases authorize such action as is deemed necessary to collect on such goods or any of them the same special duty as if the goods had been sold to an importer in New Zealand prior to their shipment to New Zealand.

"4. The Minister of Customs may make such regulations as are deemed necessary for carrying out the provisions of this section and for the enforcement thereof.

"5. Such regulations may provide for the temporary exemption from special duty of any article or class of articles when it is established to the satisfaction of the Minister of Customs that such articles are not made or sold in New Zealand in substantial quantities, and offered for sale to all purchasers on equal terms under like conditions, having regard to the custom and usage of trade.

"6. Such regulations may also provide for the exemption from special duty of any article when the difference between the fair market value and the selling-price to the importer as aforesaid amounts only to a small percentage of its fair market value."

Clause 5, I may add, is intended to stop the exploitation of the market in New Zealand, where there is only a small manufacture.

The 15 per cent. you mention may not be sufficient?—It can be made higher.

Mr. Sidey: Is that clause on the lines of the Canadian provision?—Yes. In Canada it is provided by section 6 of the Customs Tariff Act, 1907, as follows:—

"In the case of articles exported to Canada of a class or kind made or produced in Canada, if the export or actual selling-price to an importer in Canada is less than the fair market value of the same article when sold for home consumption in the usual and ordinary course in the country whence exported to Canada at the time of its exportation to Canada, there shall, in addition to the duty otherwise established, be levied, collected, and paid on such article, on its importation into Canada, a special duty (or dumping duty) equal to the difference between the said selling-price of the article for export and the said fair market value thereof for home consumption; and such special duty (or dumping duty) shall be levied, collected, and paid on such article although it is not otherwise dutiable: Provided that the said special duty shall not exceed 15 per cent. *ad valorem* in any case."

In America, on the other hand, the legislative prohibition aimed at dumping has taken a different form, and it is contained in an Act passed as recently as 1916, as follows:—

"That it shall be unlawful for any person importing or assisting in importing any articles from any foreign country into the United States to commonly and systematically sell or cause to be sold such articles within the United States at a price substantially less than the actual market value or wholesale price of such articles, at the time of exportation to the United States, in the principal markets of the country of their production, or of other foreign countries after adding to such market value or wholesale price, freight, duty, and other charges and expenses necessarily incident to the importation and sale thereof in the United States: Provided that such act or acts be done with the intent of destroying or injuring any industry in the United States, or of preventing the establishment of an industry in the United States, or of restraining or monopolizing any part of trade or commerce in such articles in the United States."

The Chairman: You are not making a penalty on the importer of dumped goods?—No.

Mr. Veitch: If you were to adopt the American law you would prohibit the dumping even if it is not competing with a local industry. Mr. Montgomery's clause permits dumping so long as it does not strangle a local industry?—Yes, that is it, and the people will get the goods cheaply.

The Chairman: Under the Australian tariff are we not treated in some respects as a foreign country?—Yes. They place us on a worse basis for preferential purposes than they do Great Britain. They put us on the same footing as a foreign country. It is only a two-schedule tariff —"British tariff" and "foreign tariff," and the dominions are among the foreign countries.

How do we treat them?—We treat them as a British dominion. We put them on the most favoured tariff.

Have you one of the latest copies of their tariff?—I think I can send you one. I may have to send for it.

Is the Commonwealth dealing with its tariff shortly?—I do not know.

In regard to reciprocity with South Africa, the Act is operative still, is it not?—We have a treaty with South Africa whereby certain articles are admitted under favourable conditions into South Africa in exchange for a similar benefit granted to South Africa here. It is a small list as between South Africa and New Zealand. These are the articles that come in from South Africa to New Zealand: Feathers, 15 per cent., ordinarily 25 per cent.; fish, 1½d. per pound, ordinarily 2d. per pound; dried fruits, free, and they are free from all countries at present, but the treaty was arranged when there was a duty of 2d.; green fruits, free, and many green fruits are free at present, though there is a duty on apples, pears, and so on; maize, 6d. per cental, ordinarily 9d. per cental; sugar, free, and it is free now from every source; tobacco, manufactured, 2s. 6d. per pound, ordinarily 3s. 6d.; tea, not otherwise exempt, 1d. per pound, ordinarily 3d. to 5d. per pound; wines, other than sparkling, 2s. per gallon, ordinarily 6s.; sparkling wines, 5s. per gallon, ordinarily 15s.; on all other goods except spirits, 3 per cent. less than the duty which would otherwise be payable.

It is an old treaty?—Yes, it was made in Mr. Seddon's time.

Mr. Craigie: We do not do much business with South Africa?—Very little at present. I can prepare a return to show the amount, also the goods they take from us.

The Chairman: Upon what goods do they give us preference?—I have not the information here, but I will forward it.

In your opinion are wines imported from South Africa mostly sold under South African brands at lower rates in consequence of the lower import duty?—I do not know.

It is possible for those wines to come in in bulk and be sold as Australian?—Yes, and complaint has been made to that effect by the Australian people.

The present condition of the tariff would allow it?—Yes, it could be done.

There is no check on it?—There is no check internally that I know of.

Mr. Sidey: You suggest that the Minister set up an Advisory Committee of five persons. Would they be Government officials?—Not necessarily.

Perhaps those interested in a trade?—They would be the persons best qualified to deal with the question. If it were a question involving engineering they would have to be expert engineers, and on every committee there would probably have to be a lawyer, with the Minister as chairman.

Do you think it would be advisable to have a permanent Board to make recommendations?—Yes, I think so; and, as I have said, the tariff ought to be an evolutionary one, instead of the present method, under which the country and business ventures generally are thrown into a state of anxiety over a considerable period of time while Parliament is revising the tariff.

You think that we should have power to deal with a portion of the tariff without opening the whole tariff up?—Yes. I can give you a glaring instance to show how necessary it is that we should have more power to deal with difficulties as they arise. During the war the exportation of bar iron, sheet iron, and all kinds of metal goods necessary to our industries was prohibited from Britain. Upon those articles there is a preferential duty. We had to turn for our supplies to America, and the result was that upon a great many of those articles, such as bar iron and sheet iron, our merchants had to pay 20 per cent. duty.

This provision you suggest is to meet special cases where special Boards are set up?—Yes.

If you had that provision would you still require the permanent Board?—There might be a modification, and we could set up a permanent Board instead of a special one.

And then this provision would not be required?—Not if it were agreed to set up a permanent Board, in which case Parliament would never need to review the whole tariff.

Mr. Veitch: A reciprocal treaty was made with Australia by the Hon. Mr. Fisher not long ago. What is the position with regard to it?—It has lapsed owing to the fact that the Government which came into power in Australia immediately after the treaty was concluded was turned out. The treaty would have been in force now had the Government not lost its seat.

Do you find generally that the tariff on raw materials required for industries in New Zealand is hampering industry here?—I think you would have to give specific cases before I could answer the question. There is a tremendous list of articles that may be regarded as "raw material," which is a term which is hard to define. The bootmaker calls leather his raw material, and the tanner calls hides his raw material.

Mr. Poland: Is there much dumping into this country of goods which do not form an industry here?—We have not found it so.

There is not much reason to fear that industries will be killed by it?—As a matter of fact, I have not found a great deal of dumping taking place. I have in mind one or two cases of dumping with the express purpose of killing an industry in New Zealand.

But in cases where there is no such industry to kill?—Then let us have the goods. It is only where there is an industry to be killed that they dump.

Mr. Craigie: We had evidence about tanned skins. It is anomalous that the same tariff is charged for tanned skins as for the manufactured article?—I take it that you are referring to sun-dried furs. I think that these skins could be dressed in New Zealand. As far as I remember the case, the people concerned wanted to get in the fur skins which had been sun-dried. They wanted to make up mufflers and that kind of thing in New Zealand. I think evidence could be obtained that they can be dressed in New Zealand.

Would the skins come here to be dressed?—Yes. I have found instances where the sun-dried fox-skins are being imported into almost every port in New Zealand, and I presume they are dressed here.

The Chairman: Some time ago we had special legislation in connection with protection on agricultural implements. Has it proved effective in giving protection to those engaged in that class of business?—There was a Monopoly Prevention Act passed a considerable time ago, which has been revived from time to time and is still in operation. It provided for a refund of duty upon materials used in the manufacture of agricultural implements in New Zealand. At the same time it provided for the fixing of prices of rollers, harrows, discs, and other agricultural implements specified in the schedule.

At that rate, that portion of the Act is not serviceable at the present time, if it is in force?—It is still in force. Any parties aggrieved can apply for a Board to be set up to protect them and fix the prices. I do not think there is any great competition in the class of agricultural implements made in New Zealand.

I am afraid you are wrong there. It is certain, however, that the Act is a dead-letter?—Well, they have the power. It need not be a dead-letter if they like to bestir themselves.

Mr. Poland: What is the value of the agricultural implements imported?—I could give the information, but I do not think it would be of any use to the Committee.

The Chairman: Under the present tariff manufacturers of agricultural implements have to pay as much as 20 per cent. on raw materials, such as iron, whereas stamped iron manufactured into articles comes in free of duty?—That can only have reference to imports during the war. I have given the Committee an instance of a hardship owing to the tariff being insufficiently elastic during the war.

It is a hardship on the implement-makers?—Yes, except that they are able to get a refund of the duty on making the implements.

Are they making such application?—Yes, different firms get refunds from time to time.

What is the mode?—They give a specification, which the Collector verifies from their books.

Is it not a fact that during recent years there has been a large increase in the importation of agricultural implements?—I could not say without referring to the statistics. I will supply a return showing the importations from 1908 to 1918.

As we already give Australia preference, would we not be handicapped by the fact that they discriminate against us as they do?—We certainly give them the whip-hand of us.

Mr. Hornsby: With regard to the skin business, we had a witness before us in Timaru who said there is no skin-dresser in New Zealand. He said, "The duty on fur goods is 25 per cent. I would like to get the tanned skins in at the same rate as the raw skin. The skins have to be dressed, and there is not a skin-dresser in New Zealand"?—Yes, they were tanned skins. I think Mr. Craigie was under the impression they were dried skins. I assume that they can tan those skins in New Zealand, because I have found at every large port that the importation of fox-skins is taking place. Somebody must be tanning them or they would not be imported. I believe I ascertained at Dunedin that they are being tanned.

The witness said there is no skin-dresser in New Zealand?—I doubt it.

He also says, "I do not see why we should not get dressed skins in free, the same as raw skins, because there is no one here to do the dressing." He was very positive?—He may be right, but I have a note in my papers that fox-skins are imported, and evidently they can be dressed here. If all the ports import them they must be dressed here.

The Chairman: What is the rate of duty on fur coats selling at up to 200 guineas?—The rate is 25 per cent. *ad valorem* for British-made and 37½ per cent. for foreign-made.

In regard to a special tax on expensive luxuries, what is your opinion?—The tax is pretty heavy already—37½ per cent. on foreign and 25 per cent. on British. If the article is expensive to begin with the tax increases with the value of the article.

I take it, then, you are not in favour of more tax on luxuries?—I think all the luxuries are pretty heavily taxed already.

In regard to importations of motor-cars, what does the Department do in connection with the cost price of cars coming into the country: do you have an expert to ascertain the selling-price of cars in other countries before you fix the duty?—We have a departmental inquiry agent in Great Britain who inquires into the fair market value of all the British cars of any importance exported to this country. During the war British cars were practically cut out of it. We also have an agent travelling through the United States on his return to New Zealand who will make many more inquiries for us. On a previous visit he also made inquiries, and we know pretty closely the fair market value of cars as sold in both America and England.

You take steps to see that the information is available as to the selling-value?—Yes. The officer is a skilled accountant, and he requires full disclosures of valuations and sales.

Is the duty assessed on the wholesale value?—On the fair market value when sold for home consumption and in the ordinary course of business.

The wholesale value?—Of course, "wholesale" is not the word in the Act. It is "the value whether wholesale or retail in whatever condition the article reaches the open market."

It is not necessarily a retail transaction?—Not necessarily so.

In the ordinary course it is practically calculating the wholesale selling-price?—Yes, it is.

THURSDAY, 5TH JUNE, 1919.

Dr. C. J. REAKES, Director-General of Agriculture, examined.

The Chairman: The Committee wishes to ascertain the position in regard to the control of the Department of Industries and the Department of Agriculture. We understand that the two Departments are controlled by you?—Yes, that is so. The position is that the Industries and Commerce Department, which at one time existed as a distinct and separate Department of the Service, was merged into the Department of Agriculture some years ago, and the Department of Agriculture, Industries, and Commerce is now run as one Department without any marked line of demarcation between the two portions of it. As a matter of fact, the Department is primarily a Department of Agriculture, and it has never had an organized industries and commerce section.

In what year did the merging take place?—I could not tell you exactly from memory; it was about eight or nine years ago. I have made a start in dealing specifically with the industries and commerce side by deputing one officer specially to give the whole of his time and attention to that. He is a capable man, who had experience in business matters before he joined the Government service.

Does your Department control the Board of Trade, which also deals with commercial matters?—No; the Board of Trade is controlled directly by the Minister in Charge of the Board of Trade—that is, the Prime Minister, and during his absence from New Zealand by Mr MacDonald, Minister of Agriculture.

It is a system of divided authority. The Board of Trade is essentially a commercial branch?—It is a separate body entirely. It is certainly connected in a way with the Department of Agriculture—that is, its financial matters are dealt with by the Department of Agriculture; its expenses are debited to our vote.

In other respects it is an independent body?—Yes.

Is that a desirable state of affairs, in your opinion?—It depends upon whether the intention of the Government is that the Board of Trade shall be a permanent institution, or whether it is to do work for a special purpose during a special period. I have no knowledge regarding that. But there is no doubt there is room for a great deal more to be done in the direction of departmental activity bearing on industries and commerce generally.

Do you think it requires a special establishment, or would you recommend that it should be continued at present in conjunction with the Department of Agriculture?—Whether it becomes an independent establishment altogether, or whether it remains a portion of Department of Agri-

culture, it should have its own organization, either within the Department of Agriculture or out of it.

At present it has not that?—No. At the present time a good deal of the work is done by myself or the Assistant Director-General, and by this special officer whose duty is to give the whole of his time to that work.

Does your Department control the purchase of supplies on behalf of the Imperial Government?—No; that is done by the Imperial Supplies Department, which is a special organization set up for that special purpose.

Mr. Hornsby: Plenty of division, is there not?—Presumably it was not contemplated that the Imperial Supplies Department would exist for any length of time, but only during the period of the war. The Department of Agriculture looks after what might be called the working portion of that particular duty. The officers in the meat-inspection service look to the grading of the meat, and see that it is kept up to a proper standard of quality according to its various classes; they certify to the quality and to the quantity shipped, and the officers of the Dairy Division do similar duty in connection with dairy-produce.

You are not specially concerned then with the development of new industries or with assisting existing ones?—Technically we are, and we fully realize the necessity, but at the present time we have not the organization to do the thing thoroughly. We do the best we can under the circumstances, but under our present organization we are not in a position to, so to speak, launch out and adopt a progressive policy. We are dealing with all the current work as it comes along.

Doing the best you can under the existing conditions?—Yes. I may say that the agricultural side of the Department is just now going through a thorough reorganization, and the Minister, I know, is desirous of extending the work in connection with industries and commerce.

Do you favour the severance of those Departments, or have you any recommendation to make in regard to improvements?—That is a point under consideration just now—as to how under the Department of Agriculture there can be established a definite organization for the whole of this industries and commerce work.

Would it not be better that the Department of Agriculture should be quite apart from industries and commerce?—It would be for some reasons. On the one hand, industries and commerce from a manufacturing point of view constitute a totally different class of work from agriculture; and in the agricultural line there is room for much further development.

Mr. Craigie: One relates to primary industries and the other to secondary industries?—Yes. This country will have to depend upon its pastoral and agricultural industries as its mainstay from a money-producing point of view for a good number of years; consequently any extension of the work of fostering those industries in a proper way is bound to be valuable if it is intelligently carried out.

The Chairman: You are not prepared to give a comprehensive detailed statement in regard to the reorganization?—You see that really involves a question as to what is the policy of the Government in that direction—you mean as regards organization dealing with industries and commerce?

Yes, and also whether there should be a separate Department or separate branch of one Department, distinct from agriculture?—I would suggest that at the commencement it should be organized as a distinct branch of the present Department, with a view of making it a separate and distinct Department as soon as its organization and its work have reached a stage that warrants the setting-up of such a Department.

Mr. Hornsby: We have had some evidence with regard to the trouble some farmers say they are up against with regard to purebred or high-grade bulls of milking-strains—bulls and heifers: can you give us any idea to what extent you are prepared to help the small farmer—the man who has not very much money—to obtain these animals?—We always give the best advice we can, and put farmers in the way of buying that class of animal, when they come to us for assistance in that way; but we have not of late years, at any rate, done anything in the way of directly supplying them, except by sales of young bulls from the State farms. A good many years back the Government of the day imported several high-class bulls into this country, and distributed them in various districts where they could be used for serving cows of settlers in the neighbourhood. For some reason or other that arrangement did not work out very successfully, and the results did not warrant the Department continuing it as a policy.

Is it within your knowledge that there are so many breeders now of purebred stock that the farmer really would have no difficulty in getting—being advised where to go?—A farmer can always get a bull of good milking-strain if he goes to the right man for it.

And you are prepared to assist in directing him as to where to go?—Yes; if a farmer comes to us for advice we give him the best advice we can. We do not recommend any one individual breeder.

There are many breeders of pure stock in this country now?—Yes, there are a good number in this country at the present time.

The Chairman: There have been proposals made to the Committee that experimental farms should be established in different parts of New Zealand, other than where they are at present: have you anything to say in regard to the desirableness of extending the system of State experimental farms?—That is a question that has to be approached with a very great deal of caution, and should be given very full consideration. I myself, in travelling about the country, have frequently been met by requests that experimental farms should be established in particular districts, but on going deeper into the matter with the individuals who wished to have the experimental farms they are not very clear in their own minds as to the nature of the work to be done

on the experimental farm they think should be established. My own feeling is that it would not be a good policy to multiply experimental farms too much. I think it would be far better to concentrate experimental work at a few centres and do it thoroughly. You cannot carry out experimental work thoroughly and to the best advantage unless you have the right type of man to do the work, and those men are not very numerous. It is far better to limit the experimental work, so far as carrying it out at experimental farms is concerned, to a small number of establishments. But valuable work can be done in addition to that. There may be demonstration farms.

Such as they have at Stratford?—Yes; that is in connection with the dairying industry, and on the same principles farms could be established in connection with agricultural work in other parts of the country. The Stratford farm is working successfully. It is run on quite different lines to the older-established Government farms. The farm has been established and is financed by a committee of local farmers. It has its own manager. The Government gives a subsidy in that case of £300 a year, and a responsible officer of the Government is a member of the managing committee—as a matter of fact, he is the chairman; and Government experts advise and assist the committee in laying out the work of the farm. It has proved of great value to the dairy-farmers in the neighbourhood. They are able to go there and see practical up-to-date dairy-farming carried out, and carried out on lines which are not beyond the reach of any dairy-farmer with an ordinary amount of capital.

Do you recommend an extension of that system in preference to the establishment of larger farms?—Undoubtedly it is a very much better system, both practically and economically, and it has this advantage: it enables scientific facts that have been discovered by experimental work to be put into practical operation on the farm.

Have you not a system of conducting a farm of that sort in conjunction with County Councils?—We are just establishing a farm on very much the same lines in the Manaia district, Taranaki. In that case, instead of having a committee of local farmers, the County Council forms the managing body; but there again the Government officer is a member of the committee of the County Council which deals with this farm. In this case also the Government subsidizes the farm.

Of the two systems in regard to the smaller schemes which do you prefer—the County Council system or the system of control by local people, not connected with a local body—or do you recommend both?—There is very little to be said either against one or the other. In each case the measure of success achieved by the management depends upon the calibre of the men. Whether they are members of a County Council or whether they are elected as members of a local committee, it comes back to the human factor after all.

Are these small model or demonstration farms available for agricultural instruction to school-children?—In the case of the Stratford farm, the pupils of the school closely adjacent utilize the farm to a considerable extent for educational work; the teachers take the pupils to it. As a matter of fact, there is a small area which is set aside specially for the purposes of the school. In the case of other farms we encourage the taking of school pupils to them for educational purposes, and we are doing our best to further develop the educational side.

At the present time there is a system of divided control—the Education Department very often employs instructors to go about teaching farmers how to farm: is that entirely beyond your control?—It is, but up to the present time there has been no clashing of interests, so to speak.

Does it not seem a strange thing to have the Department of Agriculture and the Education Department both engaged in the same work?—The Education Department instructors in the country who come in touch with the farmers are really employed by the Education Boards. The Education Department proper limits its activities principally to what we might term primary instruction and to children in the schools; but the Education Boards' instructors go among the farmers and do general work.

Do you not think that leads to confusion, and that it would be better controlled by one Department?—Yes. As a matter of fact, I have already had a preliminary discussion with the Director of Education on this point of agricultural instruction to farmers.

Of course, it is all right so long as the Education Department links its activities to school-children?—I believe we are both agreed upon the point that there should be co-ordination of work between the two Departments: in other words, that the available staff should be utilized to the best advantage of both. The Department of Agriculture is just now, as part of its reorganization, building up its educational staff. We have just lately engaged two well-qualified instructors, both men with sound practical knowledge of agriculture, but at the same time holding educational qualifications up to a university standard.

Do you recommend that when it comes to the instruction of farmers your Department should do that work and not the Boards of Education?—That would certainly be much better. Of course, there are a great many farmers who feel that they do not want to be instructed, and many farmers do know their business very well as it is; but the wiser ones do, at any rate, appreciate the value of good scientific knowledge when it can be applied in a practical way to their farming operations, and in that direction instructors of the right knowledge and common-sense type will be valuable men among the farmers.

What would happen now in the event of, say, the Taranaki Education Board employing a man at, say, £500 a year to go teaching farmers—what effect would that have on your activities in the same district?—It would make me think hard. It would be absurd for us to appoint another man to cover the same ground; but, as I said just now, I am very hopeful that the difficulty can be overcome by a mutual arrangement between the two Departments. It ought to be. There should be no division of effort between the two Departments when they are both working to the same end. I have always thought that there is much scope for the intelligent instruction of primary- and secondary-school children in the principles of agriculture.

Mr. Hornsby: Even there, do you not think it would only be right that all those efforts should be guided and governed by the Department of Agriculture?—We can hardly go so far as to undertake the teaching of schools, because——

I do not mean the teaching, but the guiding?—We assist in that respect now. Every year we have a class of school-teachers at Ruakura Farm. They camp there for a fortnight, and we organize a system of lectures and demonstrations, and give general instruction to them, which I believe is of assistance to them in connection with their instruction to the school-children. That is work in which the co-ordination of the two Departments is shown in a good light. The Education Department is able to take advantage of the facilities we possess in imparting knowledge to their teachers; and I think as time goes on that is work which should be developed to a greater extent than at present.

Mr. Forbes: I understand there has been a promise made to have an experimental farm established at Westland. It appears that in that district farming matters are a good deal behind other parts of the country: has anything been done in that respect?—We have done a considerable amount of preliminary work in Westland. I have had a report prepared on the possibilities of Westland as an agricultural area, and also on the lines as to how the Department could best assist in developing the country from that point of view. Some time ago an area of land for experimental purposes was selected between Greymouth and Reefton—before I had anything to do with this branch of the work—but nothing definite was done in that respect: the project practically dropped, I think. Whether the work undoubtedly required in Westland could be best furthered by starting an experimental farm at once, or whether we should do general survey-work and meanwhile giving advice to farmers throughout the district before we actually start our experimental farm, is a matter which is to be considered at the present time. I am shortly visiting the Coast for the special purpose of dealing with this question.

I think the Minister made a sort of promise that he was going to establish an experimental farm at Westland. Parliament passed a vote last session for that purpose?—Yes, and such a farm, properly run, will be valuable; but we must have matters arranged on a proper basis before we start.

The Chairman: What was the amount of that vote?—It was £3,000.

In Canterbury there has been a demand for a farm in connection with plant-breeding and wheat experiments. What sort of farm would be necessary to do that work?—If the Government were undertaking it on their responsibility entirely a fairly large area of land—good agricultural land, typical of the bulk of the land in the provincial district—would be needed. It would be rather difficult to get one large area typical of Canterbury, because the land there varies very much. The necessary farm buildings would also be needed.

Have you got a man in the Department able to carry on that work?—We have some very good men; but what we are proposing to do is to make use—for the present, at any rate—of the existing organization at Lincoln College. Lincoln College possesses facilities which suit the purpose required, and it also has an excellent officer in Mr. Hilgendorf, who already has done good work in connection with plant-breeding, seed-selection, &c.; and the intention is to co-operate with Lincoln College in connection with this work, the machinery of the Department of Agriculture alone being utilized in the later stages. In other words, the preliminary work of selection and breeding would be done at Lincoln College, and when we get an improved strain thoroughly established, and its value proved, then the seed resulting from it would be sown on larger areas on selected farms under the immediate control and direction of the officers of the Department of Agriculture. In that way we would gradually get a sufficient quantity of the seed produced to enable it to be placed upon the market. In return for the work done at Lincoln College the Government would grant a subsidy.

Mr. Forbes: Would it need a strengthening of the staff to carry on that work?—Possibly a condition would be that everything that was done at the College in co-operation with the Department in connection with this special work would have to be agreed to, so to speak, by myself and my expert officers before it was started.

You would really have to outline the scheme for them?—We would map out a scheme in concert with Lincoln College.

You think that would meet the difficulty as far as that was concerned?—Yes, that would meet the difficulty so far as Canterbury, and probably North Otago also, are concerned.

You think Lincoln College can be utilized?—Yes. I consider that existing institutions should be utilized as much as possible; in other words, there should be co-operation between the Government and private institutions like Lincoln College, just as there should be between two Departments of the Government service. We are all working for the same end.

Is there any similar establishment—say, at Timaru or in the North Otago district?—No.

Would your Department be prepared, if an arrangement be made locally with respect to a governing body for the establishment of such farms as have been established in the North Island, to assist them in a similar way as is done in other parts?—If a proposal were put forward, based on the general principles governing the establishment at Stratford, we would be prepared to view the proposal very favourably.

At Stratford who owns the land?—The committee leases it, and would like to get possession by some form of purchase. It is Native land.

Does the committee attend to the actual farming operations?—Yes.

And you give them advice and direction?—Yes; and the Government gives them a subsidy. There are capable farmers on the committee.

You think in that way good work could be done?—Yes, undoubtedly.

Have you any special instructors giving instruction in connection with the new soldier settlements?—We have instructed the local officers of the Department to give the soldier settlers

in their districts all the assistance and advice they can, and this is done. Soldiers—in some cases, at any rate—come to them for advice quite freely. For instance, there is a soldier settlement not very far from Hamilton. The Manager of the State farm at Ruakura visits that settlement at frequent intervals, and gives the returned soldiers all the assistance he can.

Mr. Hornsby: It has been mentioned to the Committee on several occasions that the system they are carrying out in England is a good one—that is, sending out instructors to the farmers—going on to the farms and advising the farmers personally, the same as the "Coat-off Brigade" do in connection with dairy companies?—As a general principle, I favour any scheme which enables the farmer to get first-hand advice from the expert officers of the Department, but whether it is advisable in New Zealand for the instructor to, so to speak, thrust himself on the farmer is rather debatable. What I think should be our first line of action is that we should seek to establish the right feeling between the instructor in the district and the farmers in the district, so that the farmers feel confidence in him, and realize that they can always go to him for advice and assistance, either at first hand or by correspondence with him. To bring this about it is necessary that the instructor be the right type of man.

My point is this: there is a disinclination on the part of the farmers to go to the experimental farms, and it has been pointed out to the Committee that the farmers would welcome the visits of such men as I have referred to in order that the farmers may get first-hand information from these officers?—A very large number of farmers do appreciate the visits of officers of that type; and in other cases—and sometimes with some degree of justice—farmers say that they do not need these men to teach them—that they know their own business well enough already.

Mr. Forbes: The more intelligent class appreciate the assistance?—Yes, especially the farmer who knows the practical side of his work thoroughly, and also has a proper appreciation of the value of sound up-to-date scientific knowledge in its application to his farming operations.

Mr. Craigie: That is the ideal farmer?—Yes.

Mr. Veitch: What is the total cost of the experimental farms and of generally educating farmers by sending round men to advise them, and so forth?—I could not give you the figures from memory.

Is there any special levy on any industries, or does the money come out of the Consolidated Fund?—It all comes out of the Consolidated Fund; and the revenue from the experimental farms—which is very considerable—is paid into the Consolidated Fund.

Mr. Craigie: How many of these experimental farms have you got—also agricultural institutions—in the North Island?—In the North Island there are three large experimental farms—Weraroa, Ruakura, and Moumahaki.

How many have you got in the South Island?—In the South Island there is a small place in Southland—about 60 acres—which we established primarily for the purpose of carrying out experimental work with a very troublesome disease which affects Swede turnips. There is also a farm at Ashburton and an experimental area at Gore.

Do you not think it is necessary to have in South Canterbury and North Otago—the granary of New Zealand—some institutions of that sort?—Yes, if in accordance with views as to what should be done in the direction of practical up-to-date work in co-operation with local organizations.

And in conjunction with local bodies?—I think a considerable amount of good work could be done in the direction in conjunction and co-operation with local organizations, the Government contributing the knowledge and a subsidy. In those districts there are problems and difficulties which farmers have to face.

You think the time has come when something should be done in the wheat area?—Undoubtedly, but on right lines. For instance, there is a good deal of work to be done in connection with the pastures in North and South Canterbury—I am not sure about North Otago, but it is probable that the same applies there.

Dr. A. K. Newman: You mean in connection with dying out of grasses?—A lot of the pastures are not as they should be, and it is a question whether better methods of establishing temporary pastures especially could not be adopted.

Mr. Craigie: There are a good many of our boys at the district high schools who want to go on the land: do you not think it would be a good thing if Government agricultural instructors visited groups of these high schools—say, at Timaru, Oamaru, Waimate, Ashburton, Temuka, and Geraldine—and with the assistance of plots of ground gave instruction to the pupils of those schools?—Yes, it would. The point as to the area of the plots to be devoted to this purpose would have to be thought out rather carefully.

The plots need not be large at each school?—That is so. I would point out that if you are going to have such a system carried out in connection with every high school you would be duplicating the necessary controlling staff to a very considerable extent, unless you utilize the existing staffs of the high schools and make the Government officer entirely a supervisor.

If you group the schools?—Something of the kind might be very valuable. It would have to be another instance of the right sort of co-ordination between the Education Department and the Department of Agriculture. Such a system must be carried out intelligently and on sound practical lines.

Mr. Sidey: Do you not think that experimental farms should be established close to railway-stations?—It is advisable that they should be near railway-stations.

Are there not special conditions in Otago which render it necessary to have some experimental work carried on there?—Yes. In Central Otago, in my opinion, there is a very great deal of work to be done.

The conditions in Central Otago are almost unique?—Yes.

Does not that point to the necessity of an experimental farm, or some similar institution, being established there?—We are already arranging with the Lands Department to reserve an

area of 100 acres for special work in Central Otago—alongside the Galloway Railway-station. We are also proposing experimental work in regrassing depleted areas.

Would that be for an experimental farm or for a demonstration farm?—I do not propose to establish an experimental farm on the lines of putting up a lot of costly buildings. What I want to do is to deal with some of the problems confronting the farmers in that district at the present time, and try to overcome those difficulties by experimental or demonstration work on that area; and afterwards to supplement that area by the establishment of demonstration farms in other parts of the district, where perhaps the soil conditions or the water-supply conditions may be somewhat different.

Do you know anything about the scheme of the Otago Expansion League in reference to intensive agriculture?—No, I have not seen that.

Dr. A. K. Newman: In connection with baby-beef and educating farmers as is done in the United States so largely?—We have not done anything in that way at present, and the principal reason for it is that to produce "baby-beef" successfully involves a considerable amount of labour—the labour difficulty here has to be taken into consideration; to force your animal on to quick growth is a question of hand-feeding. When the working-conditions become such as to render it practicable it might be worth going into.

Mr. Hornsby: In regard to Lincoln College, it has been stated in the newspapers that the scientific side of the work there is being neglected: can you say anything in regard to that matter?—So far as one branch of the scientific work is concerned, at any rate—plant-breeding, plant-selection, &c.—Lincoln College has done and is doing very excellent work, and the fact that that work is appreciated is shown by the Government making the arrangement with Lincoln College which I mentioned just now. The war, of course, has to some extent affected that institution, but I could not say that science work is being neglected. I have read some criticisms as to the methods adopted there. One thing has to be remembered: that the work of the farm at Lincoln College is carried out by students, who are coming in and going out from the College from time to time. You cannot get such good work from lads under such conditions as you would from experienced and well-trained farm hands. No doubt Lincoln College, like all other similar institutions, is capable of being improved.

The Chairman: It has been stated in evidence to the Committee that farmers do not understand what the policy of the Department is in regard to the breeding of purebred stock at Moumahaki?—At Moumahaki we do not go in for breeding purebred stock to any extent. We have a small herd of Ayrshire cattle there. We have some good Berkshire pigs, and we have a few Ryeland sheep. But the working policy at Moumahaki in the past, so far as I know, had not been very clearly defined; and one fairly important feature in the reorganization work of the Department which is under way at the present time is a definite policy in regard to what extent the breeding operations of the Department should be carried on.

In taking that matter into consideration, I suppose that at Moumahaki you would regard the dairy cow as being an essential feature?—Yes, if we are going in for a breeding policy at Moumahaki it should be on dairy lines.

In that connection would you recommend the "special purpose" or pure dairy type of cow being specialized in—that is, in opposition to the "dual purpose" cow?—I consider that in a case like this, where you have farmers divided into two camps—the "special purpose" and the "dual purpose" cow—it should be our duty to breed and keep both, and get facts and figures which would demonstrate which of the two is the better, or to demonstrate that both are equally advantageous.

We have had evidence from the Dairy Branch of your Department strongly urging the "special purpose" cow in preference to the "dual purpose" cow?—In such districts as Taranaki, and in districts where the dairy-farmer has to pay high prices for small areas of land or pay high rentals, he is safer with the "special purpose" cow, because his object is to get as much butter-fat out of his land as he can, and he is not much concerned over the beef question.

Could not this matter be determined at an early date so that the people interested can get the necessary information?—We have two exceedingly able men at the head of the Dairy Division—Mr. Cuddie and Mr. Singleton—and they have both advocated the "special purpose" cow for many years. In regard to that question, I stand by them when it comes to the point. Of course, when beef-production has also to be considered, then the "dual purpose" cow must have full consideration.

But where the district is purely a dairy district?—Then the "special purpose" cow should have first consideration. Still, the beef man does not always breed his own stock. A very considerable proportion of the store stock that ultimately become beef is derived from the steer calves from cows owned by dairy-farmers, and it is there that the "dual purpose" cow comes in, so to speak.

Very often thousands of those cattle which are slaughtered are not worth bringing up?—A great majority of those cattle are calves of "special purpose" cows.

In some cases the cost of rearing the calves is prohibitive?—Yes, that is so. Another factor which operates is that there is not so much skim-milk available for dairy calves as there used to be. The extension of cheese-production, casein-manufacture, &c., has made a difference in regard to calf-feeding.

In connection with noxious weeds we have had strong representations made to us to the effect that the Act is inoperative practically—that noxious weeds are spreading and becoming a curse in some districts?—I only wish those gentlemen who criticise the Act had a little experience in administering it. It is an extremely awkward Act to administer, and as it is framed at the present time I do not see how it can be administered successfully in the case of some weeds. At the same time, the officers of the Department undoubtedly do their best to get the provisions

carried out, even if those provisions are not in themselves sufficient to altogether prevent the spread of noxious weeds. The Act provides generally that weeds must be cut while they are flowering—before they seed.

Over the whole farm?—In the case of the blackberry it must be so cut for a quarter of a chain from the boundary, and a further quarter-chain each year.

Do you not think that is a ridiculous provision?—I quite agree with you. The blackberry is very troublesome.

On the west coast of the South Island the blackberry is very bad?—In some parts blackberry has already taken possession of the land. It is extremely difficult to eradicate.

Dr. A. K. Newman: Are weed-killers any good?—You can kill it with strong enough arsenic solutions, but that is very dangerous where stock are about. One of the best pieces of blackberry-clearing I have seen was done by pigs, but that was on a small area. There was fern amongst the blackberry, and in getting at the fern-roots the pigs destroyed the blackberry-roots as well. Where land is ploughable good work can be done.

The Chairman: Do you consider the question an urgent one?—It is an extremely important and urgent one; and it is a problem, especially when labour is scarce and expensive.

Have you any suggestions to make in regard to legislation on the question?—Only that for the present I am proposing to endeavour to get the co-operation of local bodies in the matter of noxious weeds generally.

Have you any suggestion to make in regard to Californian thistle?—That is one of the weeds that should be dealt with in conjunction with local bodies.

Could you let the Committee have your suggestions in connection with passing an amendment of the Act?—I am not advocating that the Act be amended as a whole this coming session, but in some districts where it is practically a dead-letter—with Californian thistle, for instance—the idea is to give power to remove any weed from the Second Schedule and place it in the Third. This to apply to the whole or a part of the local authority's district and to be revokable when experience proves it necessary.

In the case of certain good land would you make it compulsory to cut the blackberry-plant before the friut ripens?—I would like to see my way clear to be able to enforce the carrying-out of the provision if it were passed.

In conjunction with local bodies?—Yes; and if the local bodies undertake the responsibility of saying whether certain weeds should be dealt with in their district or not I would be quite prepared to do my part.

Dr. A. K. Newman: Would it not check the pest if it were made mandatory that local bodies and owners of land must carry out the provisions of the Act?—If we could get the co-operation of all concerned it would materially assist in carrying out the provisions of the Act thoroughly, and it would assist to get rid of the pest.

There have been complaints in the Manawatu district in connection with the spread of a leguminous weed something like the lupin?—Yes, that is the weed known as "goat's-rue." It originally grew in Hawke's Bay near the Manawatu River, and seeds have been carried down by the river in floods.

Complaints have reached me that paddocks have been devastated by the weed coming down the river?—I am having a special investigation made into that matter at the present time, but matters are not so bad as that.

The Chairman: Complaints have been made to the Committee in connection with impure seeds—the sale of seeds containing noxious-weed seeds?—The question of framing and submitting to Parliament a Bill to protect farmers from impure seeds has been under consideration for some years past, but there are awkward points to deal with. Two or three attempts have been made to draft such a measure, and I am having another Bill drafted in the hope of getting something that will be workable and effective.

F. W. ROWLEY, Secretary of Labour and Superintendent of Workers' Dwellings, examined.

Members of the Committee and witness inspected earthenware blocks manufactured at Hobsonville, Auckland, and known as Clark's patent hollow building-block.

The Chairman: In the matter of cost, how do these blocks compare with wood in building a dwelling?

Witness: To build a house with these blocks would cost about 10 per cent. more than wood.

The Chairman: We are told, "At our works at Hobsonville, Auckland, we can supply enough building-blocks (1,500) to erect a five-roomed house for about £56; freight would be extra"?—The information I have is from experts, and it is to the effect I state. The houses built at Matangi cost £950, and they consisted entirely of these blocks. In the cost I have included the inside walls as well as the external walls. We have just built half a dozen wooden houses in Wellington for £600 each. We had to put malthoid on the roof, but will put iron on when it comes down in price. In regard to building houses in concrete, we have been investigating the matter and getting information for a considerable time, because it is a cheaper material in the long-run, though it costs more in the first place. We also think that concrete should lend itself better to standardization than wood. We have had submitted to us seven or eight systems devised by different builders in New Zealand of erecting houses in concrete, and we are now arranging to get a committee of experts in the building trade, particularly in concrete, to investigate the whole of these methods, including the method now before the Committee, and report as to which, if any, should be adopted for workers' dwellings. We are at the present time trying to arrange for 200 houses to be put up, and we hope to get the report I refer to sufficiently far advanced to enable us to build, at any rate, some of the houses on one of the methods.

How many of these dwellings have been built?—We have built about seven hundred houses up to date—that is, since the Act came into force in 1906. From 1906 to 1913 there were not many houses built, and the ones that were built were in the four centres. Since 1913 we have built a considerable number. In 1914 we built approximately two hundred, and in 1915 about a hundred. We could not build any more because of the war, and since then the cost has gone up so much that we have had to curtail building. Our difficulty is that we have only a £10 deposit in the first place, and if we had built a house in the middle of the war costing, say, £700, which might be built after the war for £600 where would we be with our small security of £10? Besides, it would not be fair to saddle the occupants with all that expense. The houses are built mostly in wood, but we have a number in concrete.

Mr. Craigie: How does the cost compare?—It depends on the locality. At Petone the concrete houses cost £20 more than the wooden houses.

You built some concrete buildings in Timaru: how do they compare with wood?—I am afraid I have not the information here, but I can get it.

The Chairman: We would like to know the relative cost?—A five-roomed house in concrete would cost about £60 more than a similar house in wood.

Dr. A. K. Newman: Are they rainproof?—Yes.

The Chairman: Are they reinforced?—Most of them are. There are differences of opinion as to whether reinforcement is necessary for buildings of this type.

Have they hollow walls?—Some of them have.

Mr. Hornsby: Are you investigating Mr. de Montalk's system?—Yes. He is anxious for us to take up his system. Two months ago I asked him for a definite price, with specifications, to enable us to build twenty-five or thirty houses as an experiment. He was pleased with the offer, but has not come forward yet. He has not established his plant yet, I think.

The Chairman: When you hear a statement that sufficient blocks can be supplied for £56, does it not suggest that the present cost of houses is altogether too high?—It certainly suggests that houses should be built at lower cost. The actual fact, however, is that the houses at Matangi cost £950, and the builder, who is an Auckland man, says in the report to me that in Auckland the houses would cost 10 per cent. more than wood. Then there would be the cost of freight as well.

We have clay in Wellington that would be suitable?—I think so.

Our information is this: "Where earthenware pipes are being manufactured the cost of adapting the machine for manufacturing our patent blocks would be very small, probably under £100." It seems a matter for consideration?—Yes, certainly.

Mr. Craigie: £56 is only for the outside walls?—Yes; but if you compare that cost with the cost of timber for the same walls it seems ridiculously low.

Dr. A. K. Newman: What is the cost of the timber for a five-roomed house?—I cannot say. Obviously, however, it is much more than £56.

The Chairman: What system do you have in regard to building? Do you let contracts?—Yes, we use the contract system.

Has it been satisfactory?—It is the best, because it has the advantage that we know the cost before we start.

Has the Department never contemplated doing the work itself and so avoiding the payment of profits?—It is a question whether the Department could build cheaper than private builders. We have built a few houses on the day-labour system.

In regard to concrete construction, is it not possible to reduce the cost per house if a number of houses were put up adjacent to each other, the Department to provide the requisite plant and to supervise the work?—I quite believe it would be. My idea is that the cost can be considerably reduced without bringing about monotony of appearance by building a number of houses of almost the same design, but "dotting" them about the city. Instead of having fifty houses in a block put two or three in one place and two or three in another place. Of course, in that way you might have to pay a little more for your sections.

Have you recommended the Government to take into consideration the question of establishing its own building organization?—No. The Workers' Dwellings Board has discussed the matter, but has not decided to recommend it. It would be a big undertaking, although if it is going to be an advantage it ought to be done. We would then be able to import our own materials from England.

Are the Government sawmills made use of in connection with building workers' dwellings?—We have tried to get the output, but there is none available. We have also tried to get material of value from the hutments at Trentham and other places, but it is all required by the Defence Department.

Dr. A. K. Newman: If you want to lodge the people properly and decently, is it not a certainty that the Government or the local bodies must contribute part of the cost as a loss?—Private builders cannot do it, but I believe the Department can provide dwellings more cheaply.

The Chairman: Under what system?—To some extent under the system we have had in force. We can build cheaper than private builders for several reasons. One reason is that we are able to buy the land and let a contract for a number of houses. Then, we charge 5 per cent. interest, there are no profits, there are practically no legal charges, and the administration charges are low. Out in the open market you have the architect's fee to pay. We have our architect, but there is only his salary to be met. Our administration charges are very low. We have just built six houses at Kilbirnie, costing £120 per room, or £600 per house. They are wooden houses, but some of them have outside sheets of concrete—slabs about ½ in. thick—which are put on instead of weatherboards. It is a kind of poilite. But the point I wish to

make is this: We can provide these houses, including section and all charges, for about £150 less than private builders can.

How do you make that out?—My estimate is based on the six houses we built recently, as follows: £670 for the house, £22 for administration, and £125 for the section; while there was no charge for legal expenses, making a total of £817. If built privately the charges would be: House £750, architect's expenses and supervision, £56, section £150, legal expenses £10: total, £966, or £150 more.

Dr. A. K. Newman: If we standardized things and Parliament went in for building five hundred or a thousand houses, could the expenses be reduced?—Yes. If we could build 100 houses of the same design and scattered them about Wellington we would, we think, be able to reduce the total cost from £966 to £800. This is allowing for the houses being built of wood.

The Chairman: Do you not think it is undesirable to keep on building in wood with the poor class of timber we have?—Yes, we agree with that. I made the calculation only for the sake of a comparison.

Dr. A. K. Newman: Do you say that if we built largely we could reduce the cost of building by 20 per cent.?—That is a pretty big reduction. It might be 12½ per cent.

On a bigger scale—say, 5,000 houses—the reduction would be still more?—The only thing is that you would not be able to build the 5,000 in the same place. You would have to scatter them, and that would make the cost greater.

The Chairman: What constitutes a worker?—One whose earnings do not exceed £175 per annum.

Is that not ridiculously low?—Yes. It has practically been decided to raise it to £225. The recommendation we are making is that it should be £225, with increases of £10 for every child over three in number, with a maximum sum of £300.

Will that proposal be submitted to Parliament shortly?—At the earliest opportunity, I believe.

Mr. Craigie: As to the workers' homes, do you provide a bathroom and hot and cold water?—Yes. It is generally a porcelain iron bath, though we have occasionally to put in galvanized-iron baths. There are also washhouse, scullery, and all conveniences, and we put in electric light or gas.

If the Government went in for a big scheme and standardized the houses you might save 12½ per cent.?—Yes, I think so. We would not be able to effect that saving in a small town, where we could build only ten or twelve houses. In towns like Marton and Patea we could not build many houses.

You prefer material of a permanent character instead of wood?—We have always been anxious to encourage concrete.

In Auckland they are making asbestos and cement slates for roofs: have you compared their value with iron?—There is a concrete tile made in Wellington, and I have experimented with them, but they are not a success. The asbestos article is much better, but more expensive. The colonial make is not so good. We are always advised to have the English asbestos slate.

If iron came to its former price it is the cheapest covering for a roof?—Yes, iron is undoubtedly the best.

Is your Department thinking of suggesting that we should get statutory authority to go in for a wholesale building scheme?—If the Government will find the money the Department will build the houses. We have sufficient statutory authority already. I may say that the workers' dwellings scheme has been in its experimental stage until quite recently. It is largely a question of finance—whether we can ensure that the payments can be collected properly. I have watched that point particularly for the last five years, because if we cannot collect the instalments regularly we need not talk about workers' dwellings. We have now reached this position: On the whole of the houses erected to date, allowing two or three weeks' grace, the amount in arrear is 7s. 7d. per house per annum. Further, in every instance the arrears are more than covered by the occupant's equity in each case after deducting depreciation.

You say that a five-roomed house would cost £900. What would be the rent over twenty-five years?—It is fairly close if you reckon it at 8½ per cent. on a wooden house to cover maintenance, rates, insurance, and all other charges.

Dr. A. K. Newman: That makes the rent more than £60 a year?—On £750, yes; but he is paying off the principal as well. I admit it is high. On a concrete house, over a period of 36½ years, the rate would be 7 per cent.

Mr. Craigie: Have you any difficulty in securing land?—No; the boot is generally on the other foot.

What limit would you give for a section?—Wellington is the dearest. We do not run more than £125 for a section with a frontage of 40 ft. or 50 ft. and a depth of about 120 ft. The sections at Kilbirnie cost £110 each, and there were fourteen of them.

I suppose you have a limit that you cannot go over as it makes the house too dear?—Our capital cost of a dwelling is fixed at £750, including the section.

The Chairman: Is the limit not too low?—It is a question whether applicants can afford to carry more than that. It comes to £1 5s. per week. We must find a system that will not exceed that amount, and we can do it if we standardize.

Are your houses all five-roomed houses?—We have some three-roomed and four-roomed houses, but it is the five-roomed house that is generally asked for.

In the case of local bodies which have available reserves, is there any co-operation between your Department and the local bodies that want houses built?—We are often approached by local bodies who have land, as in the case of Patea. As soon as we have applications for houses we inquire, in the first place, for Crown land. If there is none we then look for local bodies' land, and if there is none of it we buy land.

A local body may have a municipal reserve: would it be available without an Act?—Sometimes an Act is necessary. Several times we have had a clause in the Reserves and other Lands Bill.

Can you cope with the great demand for houses all over New Zealand?—Yes, we have the system going.

You are thinking of building 200 houses, which is a big order?—I do not think you could get labour to build more than 200 houses in New Zealand at the present time. There is not a carpenter to be got in Wellington to-day. It is my idea to start with the 200, and then if we can get labour for more we can arrange for more.

What about the finance?—The Government must find the money.

What money have you at your disposal?—We ask for it as we require it. We have no assured fund. Last year Parliament voted £50,000, of which £20,000 or £25,000 was spent.

Have you any difficulty in getting tenants?—No. When we have called for tenders we get into touch with applicants, and say to them, "It will cost so-much for the house and so-much for the section, and the rent will be so-much per week: can you pay it?" Sometimes the proposal is turned down.

What is the rate of interest you charge on houses?—5 per cent.

And the sinking fund?—For a wooden house it is 2 per cent. at compound interest for 25½ years, and for a concrete house 1 per cent. for 36½ years.

Dr. A. K. Newman: Is it not a fact that the houses costing £1 per week exclude many people whose earnings come to £150, seeing that £1 per week takes one-third of their earnings? Many people can afford to pay only 10s.?—Certainly, it does not help them, but I do not think there are many of them. Even labourers will earn more than £150 a year.

On an average?—Yes.

Supposing they earn £175. If you take £52 a year it is too much?—Yes, it is.

And a crowd of the poorer people live in rooms because they cannot afford £1 a week?—That is quite true.

And therefore, as statesmen, we have to consider that class and build cheaper houses?—Yes, or else raise the wages. But how can we build cheaper houses? We do not want little shanties. So far we have kept up a fairly good standard of house.

In England they cannot build houses for the poorer people, and the State and the local bodies have to contribute, even at a loss, something for the housing of these people: is there not a need for that in the big towns of New Zealand?—I expect there is, or the Government might subsidize the rents.

Is it not a fact that a large number of people with small wages cannot afford £1 per week, and they are not decently housed?—Yes, that is quite true.

In other words, this scheme of labourers' cottages does not cater for the class that most urgently needs it?—I am inclined to the opinion that there are not a great number of men who are worth their salt at work who do not earn more than £3 a week.

But even at £3 10s. a week, £52 a year is a charge that cripples them?—Yes. People used to reckon that one day's pay should do for the rent.

As a matter of fact, this Government scheme, excellent as it is, only caters for the well-to-do, and not for the poorer class?—Yes, that is true. The only thing is that we are able to build houses cheaper than anybody else can.

But there is the question that must come before Parliament, whether the people with the smaller incomes should not be assisted by the State to get houses at less than £1 per week?—It can only be done by granting a sort of subsidy.

In England it is impossible to build houses to decently house the poor people with small incomes unless the State steps in and helps?—It seems to me there are only two alternatives—that the State should subsidize earnings or that wages should be increased.

You admit that the present scheme means that only those fairly well off can afford to pay £1 per week?—Yes.

Mr. Veitch: Does your scheme include the renting of houses as well as the selling?—The Act permits it, but we do not encourage it, because purchasers are more satisfactory than tenants.

Do you think that the selling of the houses covers all the ground?—Yes, provided the applicants can find the £10 deposit.

Is it not a fact that there is such a large moving population who cannot buy houses but who want decent houses to live in that we ought to build houses to rent?—All the houses we have been able to build have been sold. We have had practically no applications for houses to rent.

If a man from Wanganui sends in £10 to-day, what would be the procedure if he had a section?—We get the Inspector to report on his character, and whether he has paid his rent previously, and so forth. If the report is satisfactory it comes before the Board, which meets about once a week, and it is then approved or rejected. If the funds are available and it is possible to build we call for tenders as soon as we have a certain number of houses to build. It is not easy to build one house at a time cheaply enough for the people to pay the instalments. Occasionally we have built one house, especially if a man comes along who has a section. Obviously, the cost of building one house at a time is greater than building a number at a time.

Have you thought of any alterations to the Arbitration and Conciliation Act? For instance, in the light of your experience, should the powers of the Court be extended?—Certain proposals on that matter have been before the Government for some time.

Can you suggest to the Committee what should be done respecting the weak points in the present law?—It is a difficult matter for me to speak about, because it touches on the question of politics.

Have you made recommendations to the Government?—Yes.

Have you considered any amendment of the law or any proposals to improve generally the relationship between capital and labour in the country?—That is embodied in the recommendations.

Have you anything special along the lines of the abolition of slums?—I have thought of it, but it seems to me a matter for local bodies and the Public Health Department. Our system could very well work in connection with the abolition of slums.

There has been a good deal said about the guild system and the partial application of it by giving the workers a say in the management of the industries in which they are employed: is that capable of general application here?—Yes, and I think it would be advantageous. It is the trend of the industrial system. The present method has removed the management so far away from the actual work that the workers have lost sight, by standardization, specialization, and so forth, of the purpose of what they are actually doing. The result is that their work has become tedious and without any interest to them.

Have you studied the guild system?—I have read a certain amount of it.

You favour its partial application by giving the men a say in the management?—Yes.

Witness: There is another matter—the apprentice question. I think the crux of the matter is the fact that in New Zealand and in Australia the wages of skilled workers are little more than the wages of unskilled workers. In the United States the wages of the skilled men vary from one and a half times to double the wages of the unskilled workers.

Here there is no inducement for young fellows to become apprentices?—That is so.

The Chairman: Is not that a temporary condition?—I think it is a permanent condition.

Mr. Veitch: The remedy is to pay tradesmen better wages?—Yes. It is a miracle to me that the trades have carried on so well under the ridiculous conditions. A man serves six years as a painter, and when he finishes his apprenticeship he gets 1s. 6d. per hour, while a man working on the wharf can get more.

The Chairman: Only 1s. 6d. per hour?—The award rate is 1s. 6d.

But they actually get more?—Yes, they may be getting more with the war bonus. In the unskilled trades the wages are fixed by industrial agreement, while in the skilled trades the wages are fixed by the Court.

The private agreements give an advantage to the worker?—Yes. The employers are able to give an increase in the one case, but they are not so well able to do so in the other.

R. W. McVILLY, General Manager, New Zealand Railways, examined.

The Chairman: We have quite a lot of inquiries we want to make of you in regard to railway rates, railway-sidings, and other information in connection with the Railway Department. We have already written to you in respect to most of the inquiries we have to make?—I will deal with the first two items mentioned in your letter. Your letter says, "From R. O. Clark (Limited), brick and tile makers, Hobsonville. 'We are handicapped in the pushing of our hollow building brick or block manufactured at Hobsonville by what we consider an unfair classification by the Railway Department. Bricks are classified in Q Class at 7s. 4d. per ton—say, at Frankton—while our building hollow bricks are classified in P Class at 9s. 8d. per ton, or 32½ per cent. higher freight, thus placing us at a disadvantage.'" The claim of the company is apparently that building-blocks should be classed the same as bricks. The information given to the Department when we fixed the rate was that these blocks were valued at 7½d. each. I understand that the value of a block is 9d. One block will be equal to a wall-space of twelve bricks; eighty-three blocks equal 1,000 bricks. The charge for fifty miles carriage on the railway of eighty-three blocks—or 1 ton 3 cwt. 3 qr.—at Class P rate amounts to 9s. 1d.

It is not the amount of the rate, it is the discrimination?—You are bound to have some discrimination, because you have got to take into consideration the load you get. Bricks are pretty high in price now. The figures we have got are twelve bricks at 9d.; that is what we have got from Wellington. They are £3 a thousand. I got a quote one day last week from a bricklayer, and it was from £3 5s. to £3 10s. On a high-side wagon, laid as closely as they can be, we cannot get more than 6 tons of these blocks—that is the maximum we can get; and we can get 8 tons of bricks easily in the same space. We always overload with bricks, and we lose a lot of space with blocks. For railway purposes we have to take that into consideration.

In this case the values are relatively the same?—But you have to remember the Department's point of view—that we are prepared to carry bricks at a much cheaper rate because we can use the full capacity of our trucks. In the case of these blocks we lose 25 per cent. of the capacity of our trucks.

Supposing the bricks got waterlogged, would not that make a heavier weight to carry?—We have weighbridges, and we weigh the bricks. There are many districts in which bricks are carried. We have had a great deal of experience in the carrying of bricks, and we can tell to within very little the weight of bricks manufactured in any part of the country.

What about the water-content?—If bricks are put on the weighbridge we can calculate the weight of the bricks and any additional weight. I may add that you are bound to have these differences, and every railway system has the same. You will find these differences in commodities made of clay and made out of the same raw materials all over the world. I may add that if you have twenty trucks of these blocks you haul in deadweight 65 tons. You are getting a live freight of 120 tons. In the case of 120 tons of bricks you would only have to haul fifteen trucks—that is, 45 tons of deadweight. In the latter case you are saving in trucks, and you are saving in haulage of deadweight. In the one case you have got over 60 tons, and in the other case you have only got 45 tons, so that you are hauling 15 tons deadweight and using five more trucks. In some of these cases the railway rates were fixed at a time when the industries were struggling—years ago—and the rates have remained the same now that they have become established. Some of the rates were fixed at a time when our trains were costing us about 4s. 2d. a mile, whereas

our train-mile has now increased to 8s. 4d. We cannot go on carrying at the same rate. If the contention is that the lowest rate is to be made the rate at which all similar products are to be charged, then in view of the altered conditions the Department will be compelled to raise the lowest rates. In the case of the bricks, that article is getting the benefit of the rate granted to it years ago when the brick industry was struggling, and when our operating charges were about half what they are now. It may help the Committee if I say that five years ago we went very exhaustively into the question of the tariff, and the Department came to the conclusion that the tariff does want revision very badly, and it must be in the direction of increasing rates.

Mr. Forbes: And doing away with anomalies, of course?—So far as we can. You can never get rid of all anomalies.

The Chairman: Would your contemplated increase be an increase on the two revisions which have already taken place?—We should probably have to increase the rates in view of the increased cost.

And the passenger rate also?—Yes, probably.

How long has the present railway classification of rates been in operation?—The classified rates as they stand now, with probably one or two small variations, have been in operation for some years. The merchandise classes have been in operation, I should think, since about 1887—probably before that; but that only applies to Classes A, B, C, and D. Classes E, F, and H have been altered; K has been altered; M has been altered; and N, P, and Q have been altered and reduced considerably. But we have to remember that a general reduction in those classes was made about 1897, I fancy. It was a long time ago.

Is it proposed to have the matter brought up to date shortly—I refer to the tariff?—We have quite a lot of data ready for the purpose of making a complete revision of the tariff, so as to bring it up to date; but, of course, the war has prevented us from doing anything.

In what respect mostly have the increased charges come on the Railway Department?—There must be alterations in the classifications and increases in many commodities—many commodities locally produced as well as on some others that are imported.

In what respect have the increased charges been put upon the Railway Department mostly?—The cost of operating charges.

Wages?—Wages, outside material—everything. In fact, there has been a general all-round increase almost on every article the railway uses—rails, boiler-plates, iron and steel, coal, cement—everything. Wages, of course. The minimum wage for a man in 1895 was 6s. a day to 6s. 6d. a day; it is now 12s. a day.

In view of what you have said, that a revision is contemplated and that costs have gone up, the only thing we can get information upon now is in respect to a few of the anomalies?—The next question is the following paragraph in your letter: "'From the chairman of directors of the New Zealand Honey-producers' Association (Limited): 'The tariff now operating is one fixed at a time when honey was railed, at the most, in few hundredweight lots. Honey is now railed in truck lots, and the same rate does not apply to any other farm-produce. The present tariff, without taking into consideration the 10 per cent. and 10 per cent., is £1 6s. 6d. per 100 miles for honey, and only 14s. 6d. per 100 miles for butter, while butter represents a higher cash value and takes up nearly double the space.'" The existing rate on butter was made at a time when the dairy industry was a struggling one, and the Department and the Government wished to foster the industry. Butter at that time was selling at 2½d. to 2¾d. a pound.

Not so low as that?—Yes. I am speaking now from figures quoted by Mr. Scott of the National Dairy Association.

It was never sold at that price?—I can assure you that those are the figures given to me. I myself was buying it in town at the time at 5d. I am speaking from information given by Mr. J. R. Scott, secretary of the National Dairy Association. I have the information on the file, and those are the statements he made.

I hope you will not base your tariff on that statement?—The butter rate was based on that statement, and that is what I am coming to. The rate was based on the price quoted by Mr. Scott for the purpose of helping a struggling industry. From that time the railway rate on butter has remained stationary. Honey is classed D—locally produced. Butter was classed D prior to 1899; that is when this reduction was made.

Mr. Forbes: 1899, was that a low year?—Yes, I think that was the low year. According to the Year-book, the value of butter in 1899 was £4 to £4 7s. a hundredweight, and in 1916 it was £10 5s. 11d. The wholesale price f.o.b. is now £180 a ton. Looked at from the point of view of freights, the honey-man no doubt feels that he is suffering a hardship, but from out point of view it is not a question of reducing the rate on honey, but it is a question of raising the rate on butter.

The Chairman: Would the same remarks apply to wool?—The wool rate has been reduced twice.

But the value of wool has gone up considerably?—Yes. Wool was brought down, I think, when it was 4d. or 5d.

Mr. Forbes: Has the rate never been raised since?—No; that is the trouble. Those charges were fixed at a time when these industries were struggling—just the same as fruit—and we have never raised them since.

The Chairman: Except the 10 per cent. and 10 per cent.?—Yes.

The tariff rate on wool was fixed, when?—I think it was about 1902. Wool is classed H. Butter was D, and was brought down to E and a half.

What are the rates for 100 miles?—£1 6d. 6d. for honey, 14s. 6d. for butter; and I know that the rate for wool was brought down.

When was the rate for butter fixed?—According to this note it was in April, 1899.

And honey?—I am not sure. Some concessions were made on honey between 1895 and 1899, but I cannot fix the date. I have been so busy with other questions lately that I have not had time to go into these matters myself. I have had these notes furnished to me. I would like to have gone into these things myself and have given you definite information.

Considering the market price of honey is the rate charged per hundred miles excessive or otherwise?—It is not excessive from a service point of view, and it is not excessive for the value; but the rate on butter is much too low, and the Department has contemplated for quite a long time increasing the rate.

Mr. Forbes: There is another matter in connection with honey. The beekeepers complain in my district that some Stationmasters carry out the regulation differently to others in regard to the carriage of honey and the concessions made in regard to empty tins—I refer to honey sent from my district through Christchurch to Lyttelton?—There must be some misapprehension about that. If they satisfy the Department as to the position we do not stick literally to the regulations. I may state that in many cases the privilege granted in respect to the carriage of returned empties was grossly abused. In a few cases which came under notice attention was drawn to it, and instruction was given that there was to be a tightening-up of vigilance to see that the regulation was complied with. That is the only difficulty with them. As a matter of fact, the Department's complaint is that our men are inclined to be a little bit lax: they do not inquire too closely.

You consider that the honey-producers' tins returning to Lyttelton would be complying with the regulations?—As long as he satisfied the Department on that point there would be no difficulty at all.

There is another point—in regard to the carriage of seeds?—Seeds for cleaning?

Does that only apply to grass-seed? Does it apply to grain cleaned at a distance? That is a common practice—for a farmer to send his oats to a dressing establishment and get them back dressed to sample, and then send them back; and then he says that is seed, and he asks for the concession granted in respect to seed-cleaning?—It was never intended for that. It was intended to apply to grass-seed only.

The Chairman: The question of the charge for railway-sidings has been brought under the notice of the Committee?—The policy of the Department is that where private siding access is granted to any firm in the main centres the rent is £50 a year, at between stations the rent is £50 a year, and at the smaller stations it is £25 a year. That is the annual charge; and grantees have to pay the cost of laying the sidings and any loop connections that are necessary to join up with the main line.

Including material, labour, and everything else?—Yes.

And who does it belong to afterwards?—To the Crown.

Notwithstanding that the grantees pay the whole of the cost?—That is part of the agreement.

At New Plymouth a complaint was made that a siding cost a company about £4,000. They said that the company had to pay for straightening the railway-line before they could get the siding?—They did not have to pay for straightening the railway-line. That is not correct. The Railway Department contemplated making some alterations at Smart Road for its own purposes, and the Taranaki Freezing Company subsequently applied for the establishment of a private siding there. The siding they proposed to put there from their freezing-works necessitated a very considerable alteration in our lay-out. Plans were prepared showing the alterations, and the whole matter was gone into by our engineers and the representatives of the freezing company. The position was explained to the representatives of the company, and it was made quite clear at the outset that the siding and alterations were necessary to enable the Department to provide for the wants of the company and not for the wants of the Government Department, and therefore the cost would require to be paid by the company, and the company acquiesced. The estimated cost of the work at the outset was approximately £5,100. That was the cost of the work that was involved. As the Department contemplated making certain alterations for the public convenience which would cost about £350 or £400 we intimated to the company that we would be prepared to bear a proportion of the cost of the £5,100, and that the Department's proportion would be £700. We were not prepared to go beyond that, for the reason that we could have done all that we required for the public at an expenditure of not more than £500 at the outside. The company agreed to that, and their liability was £4,400. £5,365 was the total cost of the work, and the Railway Department paid £965.

You do not take into account the extra traffic they bring to the railway?—So far as that was concerned, the company selected the spot which would suit their operations best. From our point of view, Smart Road was not the place we selected; it means more work for us. We have now to work that business by special trains, and it is a costly business for us. When a ship is working at New Plymouth Breakwater there is an engine and a set of men running backwards and forwards to and from the Breakwater with wagons. That is not a payable proposition to us, and, so far as the company is concerned, instead of the company having any ground for complaint they really got off very well, because we regarded it as a matter of honour, having told them that the extreme cost would be £5,100. We said we would pay £700, and they should pay the rest—£4,400. The cost of carrying out the work exceeded the estimate, and we paid the amount ourselves, so that from the Department's point of view it has cost us from £400 to £500 more than we contemplated when we set out.

Is it the general policy of the Department to encourage merchants or manufacturers increasing the number of sidings?—We do not discourage them, but we do not encourage them.

A witness in Southland, a sawmiller, drew the attention of the Committee to what he considered a grievance in connection with a siding to a sawmill in that district?—Yes, I have read his statement. He is in just the same position as other grantees of similar sidings. A man enters into an agreement, and he knows what he is doing when he starts.

The Railway Department is in the position of being a monopoly: it has the whole thing in its hands, and we want to try and see that a fair thing is done?—The policy of the Department and the conditions under which private sidings are granted have been the same for a great many years, and it is only quite recently that we have heard any complaints about the conditions being unfair.

In the case of a sawmill, it seems rather a hardship supposing there are only two or three years of timber-cutting?—I take it if there were only two or three years of cutting the sawmiller would not require a siding. The sawmiller knows all the conditions before he binds himself to anything. If he says that he will not comply with the conditions, of course that is the end of it.

The general manager of the Otago Iron-rolling Mills (Limited) says, "What we ask is that all rolling-mill machinery should come into the country free of duty, and that we should have a preferential railway tariff on locally manufactured goods"?—I do not think Mr. Smellie has very much cause for complaint. There is a provision at the present time in the tariff that the rate on bar iron and castings consigned direct from the works to certain stations is reduced. The company asked for a minimum of 5 tons; the Department made the minimum 4 tons. Notwithstanding the special rates, which are very low, the Department has not got the traffic between the points specified.

The policy of the Department is to give preference to locally manufactured goods?—Yes.

But it is not so in this case?—Yes, it is. The goods are sent from local factories to certain stations at a special rate.

It seems to me the preference does not apply to nineteen-twentieths of the iron consigned?—My reply is that the Burnside iron-people might consign their iron from Burnside to Lyttelton, and then from Wellington to the place of distribution, giving the Railway Department the benefit of the carriage of its goods as much as possible.

I do not see how they could do that. If they sent their goods to Lyttelton by rail, and then from Wellington to Auckland by rail it would be very expensive?—Then, the question comes to this: The evidence given before the Committee is in the direction of endeavouring to secure from the Railway Department special rates which would only be used to get steamer rates further cut, and the Railway Department will get no more business than it does to-day. That is our experience. Some years ago we heard quite a lot about anomalies in the railway tariff—that it was full of special rates made on the representation of various manufacturers. Those rates, I may say, were retained for years, and the Department never got any traffic worth talking about out of any of those institutions, except in the case of frozen meat. All the other manufactories for which we gave special rates failed to use the special rates.

I suppose they will consign their goods in the cheapest way whatever you do for them? The Committee tries, however, to stimulate local effort, and that is why we are making suggestions?—I quite understand you, Mr. Chairman. Of course, so far as the Department is concerned it can only go a certain distance. The policy is—and it is shown in the tariff—that a large number of New Zealand products are classified one class below the imported, but, as I say, you can only go so far with it.

Witness: In Christchurch, Mr. Marriner, representing the Canterbury Chamber of Commerce, referred to the insufficiency of the Christchurch railway-yards. There is a shortage of accommodation at Christchurch, and in 1914 a scheme of improvements and alterations was contemplated. Unfortunately, we were not able to get the money, because of the war. Further, we could not get the material. We are fully alive to the shortage, and are anxious to improve things, because our operating-expenses are increased by the fact that we have not got the accommodation that is necessary.

The Chairman: Is there any immediate intention of dealing with the matter?—It will be dealt with as soon as the material comes to hand, provided we can get the labour, which is also a difficulty.

Mr. Hornsby: May I inquire about the electrification of the Lyttelton line instead of the duplication of it?—The difficulty is that the expert, Mr. Parry, after looking very closely into the matter of electrification, found that we could only deal with the passenger business by electricity, so that we would still be in the position of having to use steam-engines for the goods, and as the goods traffic is very heavy we should be using more steam trains than electric trains for the passengers. For that reason we have come to the conclusion that the duplication is the better thing. It is not possible, with the power the authorities will have available, to deal with the goods business as well as the passenger business. There was a difficulty about the tram peak-load, which was a governing factor.

The Chairman: Mr. Parry referred to the matter in his evidence in Wellington. [Mr. Parry's evidence on the question on page 13 read.]

Witness: The Railway Department does not agree altogether with Mr. Parry's statements. Our attitude on the electrification question was that as he could not deal with both passenger and goods traffic the duplication should be adopted.

Mr. Hornsby: Was the question referred by your Department to Mr. Parry?—Yes. It formed the subject of considerable discussion between the two Departments.

Would your difficulty not be removed when the increased power is installed at Lake Coleridge?—It is possible. We are making further investigations into the matter now.

If you could get rid of the smoke in the tunnel it would be a good thing for the passengers, and also, I think, for the Department?—That is so, and we are going into the matter.

At Timaru, Mr. Barkas, of the Timaru Chamber of Commerce, complained that there is a special rate from Christchurch, but not from Timaru to Christchurch?—The position is that at the time the rate was originally put in the tariff imported goods were brought to Lyttelton in ships and sent in smaller vessels to Timaru in opposition to the railway, so that we made a special rate

to retain for the railway the traffic from Lyttelton to Timaru. There was no traffic going the other way—from Timaru to Christchurch—at that time, and therefore the rate was not made applicable both ways.

The Chairman: It gives the Christchurch importer an advantage over the Timaru importer?—Yes. Of course, the position has altered since then.

Mr. Craigie: It is absurd that goods may be sent from Christchurch to Timaru at half the rate charged on goods sent from Timaru to Christchurch. Seeing that conditions have changed now, cannot the rates be altered?—They probably will be in the new tariff.

The Chairman: Is it not a simple matter to alter a thing like that?—It is not so simple as it looks. It cuts the revenue all over the place. A man may want to send goods from Christchurch to Temuka, a distance of eighty-seven miles, and pays £2 5s. 10d., but he sends the goods to Timaru, and then back to Temuka, a distance of eleven miles, for £1 6s. If we make the rate operative the other way you may as well cut out the classified rates altogether.

Why not give Timaru the same chance as Christchurch?—That is probably what we shall come back to.

Mr. Craigie: Are the differential rates to be reviewed in the near future?—Yes, they are, and already to a very large extent many of these differential rates have been cut out altogether.

Witness: Mr. Kirkpatrick, jam-manufacturer, of Nelson, said that jam sent from the local factory was charged at B rates, but if sent from another factory—not a local factory—it went under A rates. The position is this: all the rates that apply to local factories were intended originally to apply only on the section of railway on which they were granted. The Nelson rate was only intended to apply to the Nelson jam. Mr. Kirkpatrick has been told that if he will send his jam from Nelson to Wellington and rail it from Wellington to its destination he will get the benefit of the local rates. He wants, however, to send it to Auckland, Onehunga, or other places by steamer and rail it from there to its destination at the lower rates. We say, "You are asking us for a concession, and we will give it to you if you comply with our conditions." We are not unreasonable, because the Nelson–Wellington shipping route is the regular shipping route.

The Chairman: You would not ask him to send jam for Taranaki to Wellington and rail it from Wellington?—Why not? He uses the sea route when he can get it cheaper, and then he uses the railway to get a chance line of traffic. We have told him, as far as Christchurch is concerned, that if he ships his jam to Lyttelton he can get the lower rate there. If he sends goods to Waikato we say that he should send them to Wellington and rail them, instead of shipping to Auckland and then railing to Waikato.

Witness: The next question is in regard to the "Restar" business.

The Chairman: It seems that tar when made ready for use on roads pays an extra rate over and above the rates on raw tar from the gasworks?—Manufactured tar is half-rate B and the road-material is three-eights Q.

The contention is that the Railway Department carries metal at a low rate to encourage road-making, but discourages people when they use tar for making the most approved type of road?—We have to look at our revenue all the time. It is a question of policy and how far the road-material is to get a concession. The three-eighths Q rate does not pay the haulage expenses.

Mr. Forbes: There should be no special concessions on the railway differentiating between one user and another?—You could not run the railways on those lines. Wherever there are railways serving the public you must have different rates. It is inevitable. You have it on the trams—workers' tickets and ordinary tickets.

The Chairman: You admit the principle of carrying a roadmaking-material at a low rate, because you carry it at the three-eighths Q rate, and why not extend it when you make a better road with the tar?—It is a question of how far you can go.

Permanent roads are in the interests of the Railway Department, are they not?—I am prepared to admit that.

Mr. Hornsby: There is also the question of encouraging a local industry. The "Restar" Company is spending a large sum of money in producing things from tar, and it is a handicap on them to have this heavy freight on the railway, because their manufacture is not used as much as it would be if carried at a cheaper rate?—Of course, they have a concession.

Witness: Then as to the rate on disinfectants. (See Mr. Doig's evidence, page 189.) In this case it is a question of sea competition, and wherever you have sea competition the sea will always beat land carriage. Next, Mr. Murdoch at Hawera said that trucks used for carrying meat were also used for taking dairy-produce. That may be, but as a matter of fact they are always scalded out after carrying meat. The witness also said, "The timber through want of proper covering gets saturated with coaldust when going through tunnels. The tarpaulin sheets cannot be got at times." Of course, we do not undertake to provide tarpaulins for coal, timber, and so on.

The Chairman: Why not supply them and charge extra?—We do charge, and where we can provide them we do provide them, but we do not give an undertaking to do so. If we have tarpaulins, and there is timber as well as merchandise on the railway, we give the preference to the merchandise. The Department has not made a secret of the fact that it is short of tarpaulins. Owing to the war we have not been able to get the canvas for four years. Further, we have not been able to keep the tarpaulins we have in stock in good repair, so that to-day instead of using one tarpaulin we have frequently to use two or three to cover goods.

Would it be possible for the people who are making complaint to supply their own tarpaulins?—They have the option, but they are not taking advantage of it. Of course, the position will get better now, because the canvas is coming in again and the number of tarpaulins is increasing every day. About a fortnight ago we got a line of canvas in completion of a 1914 order.

As to the supply of trucks, is the Department short of trucks for the carriage of cheese, butter, and meat?—Under normal conditions we have sufficient trucks. There is always a greater or less difficulty where you have a glut of traffic and everybody wants to be served at once. At the present time the trucks difficulty is accentuated by the fact that we have fewer trains, which makes it difficult not only to handle the orders for trucks, but to get the trucks along the lines. It is not infrequent to have at ports like Timaru and Lyttelton 600 or 700 trucks standing for weeks awaiting steamers. Again, the large boats come in and unload 5,000 or 6,000 tons of general merchandise, and simultaneously you have a coal-boat with 6,000 or 7,000 tons of coal.

This is the statement of the Chairman of the National Dairy Association: "I want to say there is constant trouble in getting sufficient railway-trucks. We receive into the works at Moturoa about 120,000 boxes of butter and 150,000 crates of cheese, and we find great difficulty in getting sufficient trucks when shipment is required. Further, the condition of the trucks leaves much to be desired. It would be in the interests of producers if we had better facilities in this respect"?—This gentleman expects the Railway Department to have trucks standing at hand waiting to deal at a moment's notice with the biggest output of butter just at the minute when his ship is there. We cannot undertake to do a thing of that kind. All we can do is to meet the requirements of the business fairly and reasonably, having regard to the requirements of other people, who have equal claims to our service all over the country.

Will your time-table be increased before long?—Unless the coal difficulty takes up quickly there will be a curtailed time-table. I have now a very small supply of coal, which is causing me anxiety.

Mr. Luke: The opinion of the public is that you are hoarding it?—No. I have to run trains on Sunday to carry coal for the trains on the Monday.

Witness: Mr. McCluggage said, "There has been a very great shortage of trucks all over New Zealand, especially down our way. Sometimes we apply for trucks, and we load them, and they stay here perhaps for days. Sometimes it is on account of the train not having a runner, while the ballast-train will run out with twenty runners, but it cannot leave a runner because that would be against the regulations." I read that statement through two or three times, and to me it seems exaggerated. Our people would not leave trucks standing anywhere for three or four days.

The Chairman: He said the timber could not be taken away by the regular trains because of the lack of runners. That would explain the difficulty?—So far as that is concerned, you would not get a case like that once in five years. The guard would put the truck of timber next one of his ordinary trucks, and that would supply the runner. It is not our practice to run trucks empty, and on that particular line no train passes with goods that has not a wagon suitable to act as a runner.

Will the officials always shunt?—Yes. This witness makes a vague statement, and has not given a date, but I shall investigate the matter. In all the cases I have investigated where trucks have been delayed I have invariably found that consignment-notes have not been left on the wagons.

There is the further statement: "I had a small piece of shafting coming from the New Plymouth Breakwater. It took a week to go from the breakwater to Stratford. It took ten days to go to Pohokura, a distance of fifty-nine miles. It would have paid me to get a buggy and a pair of horses and send it through in that way to the mill. It cost 3s. 9d. to send it by train and 7s. 11d. for the return trip. I asked the reason for the difference. They told me there was a small parcel tied on to it the second time, and it went back under a different rate. Because four bolts that were with it were tied in paper the rate was doubled. That is not helping industries at all. I think an improvement could be made if the regulations were remodelled, and they allowed passengers to take other than personal luggage in the van up to 1 cwt. or 2 cwt., or if they put a van on behind the guard's van and put parcels in they could drop these parcels along the line every night"?—That is not a very practicable kind of remedy. The position is this: Every mixed train has a road-sider in addition to the guard's van. It carries small consignments, while the purpose of the van is to carry passengers' luggage. Passengers are allowed to carry up to 1 cwt.

But they cannot take machinery into a carriage?—They can take it as long as they pay "Excess." For instance, you can take a bag of sugar if it is for domestic use.

Mr. Luke: Can a carpenter take a kit of tools?—Yes. If a man has a piece of shafting he can get it in the van and pay "Excess" on it and take it home with him. At New Plymouth one of the difficulties is this: The steamer arrives there with several hundred tons of cargo. It is put out in bulk into trucks at the Breakwater. It has to be taken up to New Plymouth, unloaded there and sorted and reloaded. In no case is a truck fully loaded with merchandise at New Plymouth for any one station. We have tried for years to get the ships to give us the goods in such a way as to expedite their despatch by rail, but we have never managed it. We must recognize the ship's difficulty: it gets its cargo on board any way, and it has to put it out. As to the alleged charge of 7s. 11d. for the return of the casting, I think I can give you an explanation of the probable reason: When he sent the casting down the line it went through the "Goods," and when it was sent back it went through the "Parcels." The reason it was sent through the "Parcels" would probably be that the consignor was in a hurry, and he would not take it over to the goods-shed and put it through the "Goods."

He was told it was because it had the four small bolts on it?—I do not think that was the reason.

The witness also said, "I did not report to the Department the delay that took place in the shafting coming out. You might as well put a letter in the waste-paper basket as write to the Department"?—Of course, that is his opinion.

They all get answers sooner or later?—Yes, sooner or later. I suppose he gave as much information in his letter as he gave in his evidence before the Committee, and it might take us three or four months to trace it.

Witness: Then as to the carriage of fruit. I have read Mr. Southcott's statement. He spoke of an iron wagon with holes all over it. I have not heard of such a wagon, but have sent for information about it. The position in regard to fruit-wagons is that we have what we call the "XA" wagon. This is specially built for the conveyance of fruit, and was used formerly for butter. It is a very good type of wagon, with ample provision for ventilation. As a matter of fact, some time ago a delegation of the Fruitgrowers' Federation waited on the Minister and admitted that this class of wagon was a marked success, and said that the supply of the wagons was much appreciated by the Fruitgrowers' Association. These wagons are in use all over New Zealand. Of course, in the glut of the fruit season there have been occasions when we have had to supply an ordinary K wagon. As a rule, the louvred wagon is supplied, and we are increasing the supply of them. The difference between the wagon in the photograph produced and our wagon is that the one in the photograph is louvred from the floor to the roof, and our wagons are louvred only half-way down.

The Chairman: We were told it takes four or five days to send fruit from Hastings to Auckland, and that at times fruit has been sent by the express trains?—The mail-train is run at a high speed, carrying mails and passengers and not goods. The wagons built for the conveyance of goods are only capable of being run at a limited speed. It would be unsafe to run them with the mail-train.

At Masterton and other places there are people developing a trade in perishable fruit, and they say it is taken on the railway by the officials as a favour, and they have not the right to get it away?—In what way are they favoured? Anybody can get small consignments of fruit by the slow trains.

Would it not be possible at certain times of the year to attach a properly built truck to a fairly fast train and make the producers pay the cost?—You can only do that where your train is not fully loaded. Generally speaking, the passenger-trains on the Wairarapa lines are loaded up to the maximum capacity of the engines, and in that case the best you can do for the fruit is to bring it along by the mixed train. I should be surprised if I were told there is any objection being raised to people sending fruit by the slow trains.

At Hastings a witness told us that they send away 300 tons of fruit every week?—That is 50 tons a day, and, assuming it comes to Wellington, it is only two truck-loads. In the case of a consignment of fruit from Napier to Wellington, under the very best conditions you could not get the fruit from the grower to the consumer in twenty-four hours—that is what he is contending for; and all I can say in regard to this question generally is this: that if the fruitgrowers are prepared to give us train-loads of fruit they can get transit; but it does not pay the Department to put on trains to run from Napier to Wellington to bring a 5- or 10-ton load of fruit, and to bring one or two other wagons, when the train has to stop at intervals of a few miles along the route. There is nothing in that for us. With every desire to assist the industry it is not reasonable to expect it. On the mail-train now we bring, whenever we can, small consignments of fruit, and we give the quickest possible transit to larger consignments of fruit. I may add that we are quite prepared to run trains even at a loss if we can get train-loads.

What do you call a load?—I would want 100 tons.

Dr. A. K. Newman: Would you want it marshalled at one station?—If we started at Napier we would expect it to be fully loaded up at Hastings.

Is that generally known—that the Department would meet growers to that extent?—It is generally known, because we have told the people over and over again that we are quite prepared to run special train-loads of 100 tons. As to the remarks in the evidence about the railage charge for evaporated fruit, this is another case of wanting the lowest rate. All I can say is this: that if the lowest rate in the tariff is accepted as the standard of all rates we shall be running our railways at a loss. As to the complaint at page 272 of the evidence, looking at the matter from a railway point of view I should say if a person wants wool for scouring he should buy it from the farmer and rail it to the place where the works are. As to the statement at page 275 with reference to the carriage of native and imported coal, the differential rate in favour of native coal is in pursuance of the policy of giving preference to local products. It is not proposed to depart from that in the case of imported coal.

And in the case of imported timber?—All imported timber pays rate and a half. The whole trouble about these rates is this: that originally all goods were charged on a flat classification, and from time to time when people were seeking to establish industries and manufactures in the country they approached the Department and the Government, and the Government laid down a policy giving certain concessions. Industries get established. Later on others come along and make requests, and by degrees you get to a stage where, broadly speaking, as a matter of policy pretty well all local industries and manufactures get a preferential rate over imported.

Mr. Forbes: Do you think that any alteration that may be made will be more in the direction of evening up?—Yes, it must be in the direction of evening up—of raising rates. There is no question about that.

There is no question of the rates on the imported article being reduced to the native rates?—No; any alteration in the tariff made now or in the near future must be in the direction of increasing the rates.

The Chairman: A statement was made that it has sometimes taken five or six days for fruit to be conveyed from Greytown to Wellington?—I should think that statement is very much exaggerated. If the witness said twelve hours it would be more like it.

A through bill of lading is wanted by fruitgrowers from one Island to the other?—It is curious the ignorance that exists amongst the people concerned in the fruit industry. As a matter of fact, we now send regularly fruit from Alexandra in the South Island to Hawera, New Plymouth, and other places in the North Island. It is consigned right through.

Mr. Veitch: Is there any scheme under consideration by the Department with respect to the housing of the staff? That is a very serious problem in the main centres?—We have, as a matter of fact, authorized the building of a number of houses at the present time. There are twenty, I think, being built as a start in the programme of housing the staff. But this is the position: before we embark on any programme of that kind we must see that it is arranged on a sort of commercial basis. I am sorry that I have not got the list with me. We have got hundreds of houses at the present time for which we are not getting more than 5s. or 6s. a week in the country and in different centres. We have houses in some centres which if let by private individuals would bring in from £1 5s. to £1 10s. a week, and the men get them at 8s.

That would be in the country?—No; at our different centres.

Wellington?—Some in Wellington; but in the case of Wellington some of the houses are of an old type—they were taken over from the Wellington-Manawatu Company. There are some at Thorndon that are very cheap. There is one house I know of that is worth £80 a year—in fact, you could easily get £100 a year for it—and we are only getting £42. As I have said, we have started twenty houses as a first instalment. How far we intend to go in this matter will depend entirely on whether we can get the thing on a proper commercial footing. As far as I am concerned personally as General Manager, if I can see my way to carry out a scheme that will bring in a commercial return on the capital invested I would not hesitate to make a recommendation to the Minister; but naturally I hesitate when I find it difficult at the present time to get anything like a commensurate rate of rental for the houses that we have already got in occupation by the staff. By that I do not mean that I would raise the rates of rental unduly high, but I think we should get a certain percentage on the outlay, and provide a certain amount of sinking fund for the upkeep. At the present time we are getting no return at all.

Mr. Forbes: When were the rates fixed for these houses?—They were fixed on a day's pay, and when the maximum was 8s. a day.

Mr. Luke: Would you favour the building of homes adjacent to the workshops?—My scheme would be to provide houses for our own men so as to keep our own men. I would provide for the running-men first. But, as I have said, you must have the housing scheme on a commercial footing to start with.

The Chairman: Could you let the Committee have a statement of the exact position of the matter in regard to the carriage of fruit, showing the ports at which shipments are made?—I shall be very pleased to do so. I want to make it quite clear: I do not want to mislead you in regard to fruit that is shipped at a port where there is no railway; but as long as the fruit is delivered at a railway-station in either island it is booked right through to any other station.

THURSDAY, 26TH JUNE, 1919.

Rev. R. S. GRAY, President, New Zealand Alliance, examined.

The Chairman: The Committee would like to hear from you in regard to suggestions which have been made that wine-growing as an industry in New Zealand should be exempted from the operations of the prohibitory law. We would like to hear from you the Alliance's objection, if any?—I take up the position, and I think it is the position that the Alliance takes up, that so far as the prohibitory law is concerned the mere fact that this is a New Zealand industry does not make it differ from any other industry—for instance, barley-growing, or beer-making, in so far as these may be considered by some to be a necessary industry. There is a great deal more capital, I should think, employed in connection with both the latter industries than in connection with the former. And I think that until it can be shown that the use of wine has no injurious effects upon the people consuming it the mere fact that the Government placed a sum of money on the estimates some years ago to subsidize wine-growers furnishes no effective reason for differentiating between wine-growing and barley-growing. As a matter of fact, I would like to say that while I cannot furnish you with statistics, it is a very well-known fact that some of the wine-growing districts in Europe have an exceedingly heavy ratio of drunkenness and intemperance, and that some of the hardest drinkers and the worst drunkards are to be found in those wine-growing districts. I think the contention that wine-drinking is on quite a different basis from the drinking of spirits and beer is very fallacious. I do not think that a man who partakes of wine necessarily, therefore, signs a pledge against spirits or beer. The Prohibition attitude is that in the interests of the Dominion—in the national interests of the Dominion—the manufacture, sale, and use of all intoxicating liquors should be prohibited. If I were asked to say in a sentence, therefore, what would be the objection of the Alliance to making any exception in favour of wine-growing, I should say that since wine is intoxicating liquor it certainly must come under the prohibition law, and I can see no reason for exempting it. The use of wine for invalids and its sale for such purpose is provided for under the medical exemption. I notice that one witness at Auckland stressed the fact that wine-growing might be useful for invalids. There is a provision in the Act for the sale of wine for medicinal and sacramental purposes. I am sure that the people who are engaged in trying to make this country free from the liquor trade would not think for one moment of agreeing to exempt the wine industry.

Mr. Hudson: You are aware, of course, of the strength at which wine is permitted to be produced for sale in the Dominion?—It is of a lighter class than some of the wines produced on the Continent.

The Chairman: 18 per cent. of alcohol?—Yes; that is quite enough to make a man groggy if he takes much of it.

Mr. Hudson: I suppose you know what hop-tonic is?—I have heard of hop-tonic.

That is admitted now as a temperance drink?—What strength?

What the law will permit?—Yes; that is considerably less than 18 per cent.

Yes; but there are cases where hop-tonic has had the effect of wine?—If hop-tonic begins to have that effect no doubt it will be brought under the same provisions.

From a purely prohibition standpoint, do you or do you not think it advisable, instead of going—to use a vulgar phrase—"the whole hog," to allow prohibition to be carried with these light wines exempt and possibly light beer also?—At the present time I do not, and unless you suggest that there should be an alteration in the 1918 Act——

The Chairman: Mr. Hudson is not suggesting that.

Witness: Then I do not think the question is pertinent, because the Act of 1918 provides for specific issues being submitted to the electors, as you know.

The Chairman: The Committee does not intend to make any suggestion with regard to an alteration of the existing Act.

Witness: If State control is carried—and I do not think it will be—but if it is carried instead of prohibition, that I should say will provide the opportunity for those who desire to have light wines and beer—*i.e.*, to attempt to establish a system of light beer and wine; but the Prohibitionists are root and branch opposed to all intoxicating liquors, and they want to clear the country of all intoxicating liquors as a beverage.

Mr. Hudson: You are not prepared to consider a compromise in that way?—We could not consider any compromise now.

In conection with the future?—I could not say what the New Zealand Alliance would do as to the future. I can say now that we stand for the prohibition of all intoxicating liquor as a beverage. In our judgment the country would be very much better off without any of it, both economically and morally.

Mr. Forbes: You do not think the Alliance would wish to discuss an alternative of any sort?—They could not now. I cannot see any point in suggesting it now. We are in the middle of the final campaign in which we are fighting for prohibition, and other people are fighting for State control or the other issue.

The Chairman: You do not intend to mean that if you fail you will give up?—No. What I mean is that we had a petition campaign, we had a compensation campaign, and now we are having this campaign with the three issues. Nor do I mean that if we carried our point there should not be another vote for prohibition or State control.

Mr. Forbes: Can you tell us what Australia has done in connection with wine licenses in relation to their licensing law?—I do not think they have made any exception there in favour of wine. I do not know of any. When prohibition was adopted in South Australia I believe the same representations were made as are now being made by the viticulturists here; but I do not think any exception was made there. I cannot speak positively, however.

You know that it has been suggested that returned soldiers—men who are not in the best of health—could go in for wine-growing—that it would be a very congenial occupation for such men. As a member of the New Zealand Alliance you would not discuss any extension of the industry in favour of them?—We are all exceedingly anxious to find returned soldiers employment, but I think that that is rather a specious than a pertinent argument, and I think it might as well be suggested that returned soldiers should become hotelkeepers as that they should grow grapes for winemaking. It would be really lighter work, because in the former case they would only have to pull the beer-handle.

Some people in hotels do not know how to run them properly—that is the trouble?—I quite agree with that.

Mr. Pearce: Could you tell us what the position is in Canada where they are supposed to have carried prohibition—the position as to wines and light beers; are they not exempted?—Oh, certainly not. The only province in Canada which has carried an amendment in favour of light beers and wines is Quebec. Quebec has done it, and Toronto is to vote upon it in August or October next. They are submitting that to the people instead of complete prohibition.

Can you tell what is the position in the United States?—Prohibition is actually in force in the United States—war-time prohibition. The law there makes it clear that on the 16th January, 1920, a constitutional amendment prohibiting all intoxicating liquor comes into operation. That has been carried in both Houses by a two-thirds majority. It was afterwards submitted to all the States for ratification, and forty-five out of forty-eight States ratified.

Are you aware that the President has stated that he is in favour of light beers and wines, and that he can veto the Bill?—He cannot veto this Bill; it is a part of the Constitution. It is impossible for the President to prevent this coming into operation on the 16th January. There is only one way in which that can be abrogated.

He stated that he was in favour of that, and he has the power to veto any Bill?—He has not the power to veto this Bill or any Bill that has become part of the Constitution. I have a report of the whole of the debate that took place in Congress on that occasion. The law can only be altered by a two-thirds vote of both Houses and ratification thereafter by three-fourths of the States—that is, thirty-six out of forty-eight States. This amendment was put into the Constitution by constitutional means, and it cannot be put out of the Constitution except in the same way.

The statement I have referred to has been attributed to the President, who, of course, is supposed to be with the majority in Congress?—I will tell you what I think is referred to—namely, that the President stated that the war-time prohibition would be continued until constitutional prohibition came into operation, and that all the Forces would not be demobilized until then. I judge that the situation is this: that in the period between the 30th June—*i.e.*, the date at which war-time prohibition finished—and the 16th January the President has now expressed his judgment that instead of there being absolute prohibition it might be advisable to have light beers and wines.

To bring it down mildly?—Yes. He cannot touch a constitutional amendment; he has no power over it.

The Chairman: You are aware, I suppose, that there are very few retail licenses for the sale of New Zealand wine in New Zealand?—Yes.

Has the Alliance ever received any complaints with regard to the conduct of such licenses?—Not that I am aware of. If any were received they would go to the secretary, Rev. J. Dawson. None were received during the time I was acting as organizer.

It has been stated that New Zealand wine can be sold by any one in New Zealand in quantities of not more than 2 gallons?—I cannot answer that. I know that years ago, when I was living in Christchurch, there were some complaints about one of the wine-shops, but I know of no complaints in recent years.

We know your view in regard to the general question?—We hold wine to be part of the intoxicating beverages in the Dominion, and we do not see any reason for discriminating between it and any other.

MONDAY, 30TH JUNE, 1919.

F. W. ROWLEY, Secretary, Department of Labour, and Superintendent of Workers' Dwellings, further examined.

The Chairman: The Committee wants some information in regard to the provisions for selling houses after your Department erects them. Supposing you erect a house, is there any provision against a man's selling it at a profit?—Yes; section 15 of the Act of 1910 says that sale or assignment of any kind must be approved by the Board, and the business of the Board is to see that there is no trafficking.

Mr. Forbes: Who comprise the Board?—The Board consists of three officers of the Department—namely, the Accountant, the Deputy Superintendent of Workers' Dwellings, and myself.

Mr. Pearce: For what reasons do you permit a sale?—We make sure that the man is not simply going in for a house for the purpose of making a profit out of it.

Would that apply if he sells to another worker in practically the same condition as himself?—Yes. As a matter of fact we have to see that the sale is to another working-man.

Do you prohibit the sale to another man who is in a better position?—If a man had to go away from that town to work elsewhere, and if there were no other worker ready to take up the house, then we should get the Minister to authorize the sale to another man.

You have to get the consent of the Minister?—Yes.

Mr. Forbes: What about the goodwill?—The section of the Act is rather obscure on the point. This is what it says: "Before giving consent to such disposition the Board shall see that no money or money's worth is being paid for goodwill."

The Chairman: It says "no money"?—"No money or money's worth."

Dr. A. K. Newman: How can you check that—that is all right in theory?—Of course, it is quite possible that the transaction may be all right on paper as submitted to us, but that some extra payment may be made between the parties without our knowledge.

The Chairman: You could not provide against secret payments?—We could say to the incoming man, "You are not supposed to pay any more than we assess; if you pay any more you are a fool."

Dr. A. K. Newman: That does not prevent its being done. Supposing the Government or a municipality went into a scheme of house-building to provide houses cheaper than the ordinary price?—Which is sometimes the case.

Then the difficulty is to prevent a man exploiting perhaps for his own profit?—We are watching that very closely, but at the same time I should say that it would be possible in such cases—where the parties are acting in collusion, I suppose—to let a certain amount of money pass between them that we would know nothing about.

The Chairman: Supposing a man gets a house built and sells it and comes to the Department with another application, what would you say?—We would look at the application with suspicion.

Mr. Pearce: There is no provision for any man getting more than one house built for him on one occasion?—We would not give him two houses.

Supposing he sold a house within two or three years, would you consider his application?—We would consider it, but we would have to be satisfied that it was a genuine transaction. If he had made a profit on the previous one we would not give him another one under such circumstances.

Mr. Poland: You do not allow a profit to be made out of it?—If we discovered afterwards that by some secret transaction he had made a profit out of it we would not entertain his application.

The Chairman: Is there much trafficking in these houses—you have 700 or 800 houses?—Do you mean many transfers?

Yes?—There are quite a number of transfers, but we always inquire closely into them and ascertain the reasons for the existing occupier giving up the house. We ascertain if the occupier is going to some other town for work, or perhaps the house may not be big enough for him and his family.

In the application form do you ask him the question whether he is taking advantage of the provisions of the section of the Act in applying for a transfer?—No; but we always inquire into the reasons for the desire to transfer.

Dr. A. K. Newman: Supposing a new scheme were brought in under which the rents were much cheaper than £1 2s., which poor people cannot afford to pay: supposing the Government went in for standardizing houses and disposing of the houses and land cheaply, and supposing a man were to desire to transfer, there would be an amount of goodwill in such cases?—Yes.

It seems to me that unless some provision were made to meet such cases the scheme might militate against the very class of people it is desired to help. I am referring to the building of numbers of houses and letting them out at far below cost?—Yes.

The Chairman: You know the provision in the English Act?—No; the English system is quite new.

Mr. Sidey: Do you require a declaration to be made by the incoming tenant?—Yes.

Does that declaration not provide that he had not paid anything for goodwill?—Yes.

Mr. Hudson: Is it a declaration on oath?—He signs a declaration before a Justice of the Peace.

Mr. Sidey: In connection with workers' homes, are they open to purchase?—Yes.

There is nothing to prevent a man at the present time who wants to get one of these houses assisting the present tenant to complete his purchase and then taking the transfer? A man can anticipate the payment of the instalments?—Yes, he can pay off the whole of it if he likes.

A man desiring to purchase a house might hand over to the occupier sufficient money to enable him to complete the purchase and then get the property—get an absolute transfer?—Yes.

Supposing a tenant has completed the purchase, do you still have conditions under which he cannot transfer without your consent?—Subsection (4) says, "This section applies to all dispositions, whether made before or after the issue of a certificate of title for the worker's dwelling."

Dr. A. K. Newman: If we go on with a scheme of building houses—a new scheme—£150 or £200 cheaper than at present, and if we give a man the right to purchase, and he completes the purchase in a couple of years' time, he can transfer the house—it has become his private property?—No; section 15 places a restriction on the property for all time.

Surely not?—Yes. Even if he paid off the whole of the principal the Board must be satisfied that the house is going to another worker.

After he has paid for it?—Yes; it says, "before or after the issue of the certificate of title."

At what time is the title issued?—When he has completed the purchase.

Is he a lessee up to that point?—He is simply under an agreement to purchase.

I always thought you took a mortgage?—No.

Mr. Hudson: Have you ever known of a case where a man has been interfered with in selling—where the Department has stepped in?—As a matter of fact, we have had only one case where a house has been completely paid for, and that was a case where the occupant died, and the amount was probably paid out of his insurance-money by his family.

Are all the members of the Board in Wellington?—Yes.

Then you cannot examine all applicants personally?—That was done originally under the old Act, but we found the provision very unwieldly. Under that Act there was a separate Board in each district. That did not work very well; there was a lot of delay, and there was a lack of uniformity. We thought it better to have the Board in Wellington, and we now get reports of our agents on anything of that kind.

Mr. Sidey: Has the Department built many houses?—Slightly under seven hundred.

The scheme has been in operation how many years?—Under the Act of 1905 the Lands Department simply built a number of houses in the four large centres. After 1910, when we took over the work, we started to build in other districts. In the first year of the war we built about two hundred houses.

The Chairman: You have a return of those houses?—Yes. [Return produced.]

Mr. Pearce: A number of houses have been partly purchased, but the scheme has not been in operation long enough to get to the sinking-fund period?—Yes; but we will accept any amount at any time. The only provision I can suggest to prevent trafficking under any system is to provide some penalty in the event of its being discovered that anything has taken place contrary to the provisions of the law.

Mr. Hornsby: You could alter the form of the declaration making the law more binding and providing for the penalty?—Yes.

That would strengthen it?—Yes.

Mr. Sidey: Can you tell us to what extent the Government propose building houses at the present time or in the immediate future?—At the present time we have simply arranged for 200 houses, because we anticipate that there will not be sufficient labour for more than that at present. As soon as we get the 200 houses started, if the way is clear the Board proposes to recommend the Government to go on with as many more as possible.

Mr. Hornsby: How many applications have you got in?—The information has not come to hand yet.

But there will be some hundreds?—Yes; but I do not think there will be as many as seems to be anticipated. When the declarations are made, and all the provisions complied with, it is found that many applicants drop out.

Dr. A. K. Newman: The present system involves a payment of £1 a week. There are large numbers of poor people who cannot come under the present system?—People who cannot afford to pay £1 a week?

If a man can only afford to pay 12s. or 14s. a week he cannot take advantage of the system at present?—No; he could not rent a house anywhere if he cannot afford to pay 12s. or 14s. a week.

Mr. Veitch: Under the system we are discussing is there any monetary concession of any kind given to the purchaser? Does he pay the full cost of the land and the building?—Yes.

That being so, and in the event of a man purchasing and paying the full cost, and assuming that in the ordinary course the property appreciates in value, to whom do you consider the appreciation belongs?—It belongs to him, I should say.

The Chairman: You have produced a table showing the number of houses built and giving certain particulars with respect to them: there are two tables of payment?—Yes, for the wooden houses the term is 25½ years, and the term for brick and concrete is 36½ years.

FRIDAY, 4TH JULY, 1919.

L. F. AYSON, Chief Inspector of Fisheries, examined.

The Chairman: The Committee would like to get some information from you in connection with the fishing industry generally. We would like, if possible, to elicit points which will help us in framing our report on this question. We are not dealing with the subject extensively, but we intend to include it in our report to Parliament, and perhaps you could throw some light on the subject and help the Committee in coming to its decisions.

Mr. Forbes (to witness): We have had a good deal of evidence brought before the Committee about the way in which the Government might assist the fishing industry—to enable more fish to be caught so as to give the people a cheaper supply of fish. We have been referred to Professor Prince's report. We have his report here?—I may inform the Committee that in 1913 I wrote a report, which was laid on the table of the House. That was before Professor Prince came here. Professor Prince in his report ranged over a great many of the recommendations which I made in my report of 1913. He also referred to some other matters which were not dealt with in my report. I hand to the Committee a copy of my report of 1913.

A Commission has recently reported on the fishing industry at Auckland?—Yes; that Commission sat in February and the beginning of March last. It was appointed to inquire into the question of the trawling-limits and the price of fish.

That Commission made some recommendations in regard to the high cost of insurance?—Yes. I gave evidence before that Commission, and these are the recommendations that I handed in to that Commission. [Document handed in to Committee.]

Do these recommendations cover the fisheries as a whole or do they only apply to Auckland?—They apply to the whole of the fisheries of New Zealand, but there are also recommendations which apply only to the Auckland fisheries.

These recommendations embody practically the evidence which you could give to this Committee?—Yes; but I supplemented that evidence by recommending the establishment of a marine scientific station for the purpose of prospecting fishing-grounds, and also studying the life and habits of the fish in the North in the same way as is done at the hatchery at Portobello.

The report states that the fishing industry is under the control of two Ministers at present, and the opinion is expressed that the industry should be under one Minister?—I think that refers to fresh-water fisheries. As a matter of fact, the fisheries in the thermal district are under two Ministers at present. Then there is the Minister of Marine, who controls the sea-fisheries. The Tourist Department issues the fishing licenses and protects the fisheries in the thermal district from poaching. The Department of Internal Affairs deals with the netting and marketing of trout at Rotorua, Taupo, and other lakes, and it also distributes the trout ova and fry.

Does your Department deal with the hatchery at Hakataramea?—Yes; the salmon comes directly under my control. My Minister has to do with sea-fisheries and the salmon.

On what parts of the coast do you recommend that fish-chilling plants should be erected?—The necessity for fish-chilling plants came under my notice first at Stewart Island some years ago, and then at Kaikoura.

They have got a plant at Kaikoura now?—Yes; it was established after my visit in 1913. I met the fishermen there, and they asked that the Government should subsidize a better steamer service between Kaikoura and Lyttelton, and Kaikoura and Wellington. After going into the matter I told the fishermen that it was not a better steamer service they required but a fish-chilling plant, and I brought the matter before the Department. In the meantime a firm in Christchurch heard of my recommendation, and, in order to secure the fish, that firm has put up a chilling plant at Kaikoura, which meets the requirements there.

They are shipping the fish now by road?—Yes. A chilling plant is very much needed at Helensville, and I consider that one is required at the French Pass or D'Urville Island. In summer-time large quantities of fish arrive at the Wellington market from these outlying places "off colour," and sometimes more than "off colour"—in fact, not fit for food—and have to be destroyed. Before the fish-chilling plant was erected at Kaikoura I knew of a case where 5 tons of hapuku were sent to the destructor at Wellington. Now the fishermen at Kaikoura do not lose a single pound of fish; they are paid the full value for every pound of fish they get all the year round.

Do you think that the facilities for the railways carrying the fish could be improved on?—Yes. I advocated some years ago, in order to develop the fisheries in the South, that an insulated wagon or a special fish-wagon should be attached to the express from Invercargill to Lyttelton two or three days a week. There is an immense fishery all round Stewart Island. The fish caught there is principally blue cod. There is an immense supply of the finest groper, trumpeter, and other fishes, but they cannot get these fish away excepting for a short time in the middle of winter. The fisheries there could be very much developed if a fish-wagon were attached to the Invercargill–Lyttelton express two or three times a week. When Dr. McNab was Minister of Marine we visited the South together, and he was very enthusiastic about the matter. However, the matter dropped later. Of course, such wagons would pick up any fish from Balclutha—fish caught by the fishermen off Nugget Point. There are quite a number of fishermen at Nugget Point. The fish could be taken on to Dunedin and further north, and fish could also be taken on from Port Chalmers, Oamaru, Timaru, and right up.

Has the Railway Department got any of those wagons?—At that time they were short of suitable wagons.

Would you recommend insulated or cool wagons?—The louvre ventilated wagon is the best; that wagon has a circulation of air through it. Let the fish be packed in ice, as they would be if there was a chilling plant there. The great thing in preserving fish fresh is to have the fish cleaned and chilled as soon as possible after they have been caught. If fish have been caught in heavy weather and ten or twelve hours are allowed to elapse before they are cleaned it is something like killing a sheep and leaving the entrails in for a certain time. When a fish has been cleaned and dried it keeps very much longer. If fish are cleaned soon after they are caught they will keep very much longer without being chilled. Of course, the temperature to which they should be subjected depends on the length of the journey.

Has anything been done at Invercargill or Stewart Island in that way?—Not that I know of. Some years ago there was a plant at Pegasus Bay, but a landslip destroyed it. It was in the wrong place. The proper place for such a plant at Stewart Island is Half-moon Bay.

Do you mean that the Government should operate the plants?—I do not know any place in New Zealand where fishermen have such a plant except the Thames, and there is private money in that as well as the fishermen's money. In a good many localities it would be a case of the Government both erecting and maintaining the chilling plants.

Further trawling round the coasts is recommended by Professor Prince: have you recommended that?—You will find that I have gone into that pretty thoroughly in my report of 1913.

Mr. Sidey: You consider that that is one of the first things that should be done?—Yes, with a suitable vessel. The first time when I went round the coast was when the Government chartered a little vessel 68 ft. in length, very lightly engined. We trawled off Timaru in from 45 to 50 fathoms. The only place where we got fish in quantities at 100 fathoms was in the Bay of Plenty during the "Nora Niven's" prospecting cruise in 1907.

Nothing further has been done in the way of trawling since then?—We did a little trawling in the "Hinemoa" when Professor Prince was here, but it was practically going over the same ground that I had previously gone over.

Do you think that the boats at the present time are large enough, or should encouragement be given for the use of larger boats?—The larger the boats the fishermen use the more regular and plentiful will be the supply of fish brought in to the markets in all parts of New Zealand. The smaller the boats the more they are affected by weather conditions. I am very much in favour of the Government helping the fishermen to get a better class of boats. There are certain places like Nelson Bay where the fishermen are sheltered, and in parts of the Hauraki Gulf the present boats are quite adequate.

The Chairman: What about the boats at Napier?—There is only one decent trawler there—the "Nora Niven." If we had a few up-to-date trawlers the supply of fish to the markets would be very largely increased.

You recommend giving a bonus for fish boned and canned for export. Is there any fish canned in New Zealand now?—Very little. There are two mullet-canneries at Kaipara and Awanui. Whitebait is canned; there are two canneries at Hokitika; and there is a toheroa-cannery at Dargaville. Some years ago the Government gave a bonus to encourage canning.

Mr. Forbes: Do you think it should be revived?—Yes, I think so. I may inform the Committee that we have a very large supply of crayfish all round the coast of New Zealand. They are the same crayfish as they have got off Cape Colony, and they can very well. It requires a good deal of expert knowledge to can them so that they keep their colour. All crustaceans are inclined to go black—both lobster and crayfish—but a method of keeping their colour has been discovered in Canada, and is employed at the canneries there. There are a number of crayfish-canneries at Cape Colony, and the Government have assisted in putting the product on the London market, where there is a great demand for the article. Canned crayfish takes the place of lobster for salads. Canned lobster has gone down tremendously in quantity during the last ten years, and canned crayfish will to a large extent take the place of canned lobster. The Cape Government has really opened up the market for us in canned crayfish.

Where is the principal ground for crayfish?—Anywhere where there is a rocky coast—for instance, places like Mahia Peninsula, Coromandel Peninsula, Banks Peninsula, and the rocky coast between Oamaru and Otago Heads; also the west coast of the South Island.

You think a big industry can be built up in canning crayfish?—I am quite sure of it.

The Government would require to pioneer the trade?—I should say that the Government should give a bonus to encourage private individuals to go in for canning. The bonus should be given for a number of years and when the industry gets a solid footing there would be no further necessity for the bonus.

The Chairman: How many years do you suggest?—I should say seven years. I feel convinced that some of the Canadian or American lobster-canners would come down here and engage in the industry.

Should we not rather encourage our own people?—It might be useful if some of the Canadian canners came down here to assist in opening up the industry.

Has anything been done in recent years in the way of the Government advancing money to fishermen for their boats?—No. I recommended in 1910 or 1913 that the Government should help the fishermen.

The Chairman: By giving advances for the purchase of their boats and gear?—Yes.

And that includes nets?—Yes.

Mr. Sidey: What do you consider is the most important thing to do to encourage the fishing industry at the present time?—There are several things. I hold the opinion very strongly, in view of the large quantities of fish on the coasts of New Zealand, that in time to come our fisheries will be a very important industry. Fishing would be a much more important industry to-day than it is had it been helped along a good many years ago. To begin with, I think the fisheries should be a Division of the Marine Department, just as the dairy industry is a Division of the Department of Agriculture. We should have a small staff of men who thoroughly understand the fisheries. I think that is one of the things to begin with.

What is your staff to-day?—I am the staff.

Having done that, what is the next matter of most urgency?—To assist the fishermen to get boats. There are many men with a knowledge of fishing who have no capital to make a start. In some parts of New Zealand there are quite a number of fishermen who have boats on hire from fish-merchants, and sometimes the boats are bought from the fish-merchants on time payments. I know of instances where the men are paying from 10 per cent. to 15 per cent. for the money—the price of the boats. I want the fishermen to be free and get money at a lower rate of interest to encourage them to go in for fishing. If that were done I am quite convinced that a very large number of men would get boats and gear and go in for fishing.

You include insurance, too?—Yes.

Having done that, what would be the next most important thing to be done—survey the fishing-grounds?—Yes, survey all the fishing-grounds in a scientific and practical way. Of course, we have to feel our way. The New South Wales and Queensland Governments have lately gone in for State fishing and State marketing. I do not know how the operations of the New South Wales Government came out last year.

Dr. A. K. Newman: A financial disaster?—The year before it was a financial disaster.

Mr. Sidey: One of the great objects in developing the industry, is it not, is to have cheaper fish for the people?—Yes, that is most important.

Can you suggest to this Committee one way in which we can get a cheaper supply?—Not at the present time.

Why?—Because of the cost of production.

In connection with the catching of the fish?—I have been going through some of the Inspectors' reports to-day. The Inspector at Napier, where trawling is carried on, says that the wholesale price of flat fish has increased by 5s. 6d. a hundred owing to the high cost of coal. They used to get coal for £1 10s. a ton, now it is £3 5s. a ton. The cost of trawling-net twine before the war was 1s. 6d. a pound, now they are paying 7s. a pound. And nets, gum boots, and everything else has gone up accordingly.

These increases are due to the war?—Yes.

We have been told, and I think Professor Prince agrees with it, that if the fishermen were given a market for all the fish they catch, instead of when they get a big haul returning some of the fish to the sea, the position would be different. If the Government or the municipalities were to erect cool chambers at suitable places in which the fish could be stored, would it not be a good thing, and would not the fishermen then be able to sell the fish at a cheaper price? Is that so?—Yes, that is so. I think more than one fisherman stated to the Commission recently that the fishermen could afford to let the merchants have the fish at a lower rate if the merchants guaranteed to take all the fish they caught.

Can you suggest some way in which that could be done? I want to know if the State could take action and put up cool stores throughout the country, take all the fish from the fishermen that they can catch, pay a fixed price, and the State undertake the distribution?—Yes, it might probably be worked out on those lines, but it requires a good deal of thinking out. The State does not want to lose anything.

It does not lose anything in connection with the oyster-fisheries: the State is doing that successfully?—Yes; but that is a small matter compared with the fishing industry generally.

Is the loss likely to be in getting the fish from the cool stores to the market?—Yes, and in distributing.

The fishermen would distribute as they do now. There would be a market where the fish could be purchased?—Of course, the State could distribute the fish by railway probably better than could individuals, but when it comes to retailing in the cities I question whether it would be advisable.

The Chairman: They are doing it in New South Wales?—Yes, they catch the fish and distribute them as well.

Where does the loss come in in New South Wales—in catching or in distribution?—The loss comes in in the distribution; in fact, I think the loss comes in all round. I believe they have a large staff.

Mr. Sidey: Might not the State undertake the export of some of the fish—fish that are not wanted for the local market?—I think the private individual doing the retail work should do the export as well. My opinion is that that had better be left to the private individual.

Do you think the cool stores should be put up by the State?—I think the Government might advance money like they do in the case of dairy factories and cool stores for apples. Why could not the Government advance money to fishermen and merchants or corporations to enable them to erect fish-chilling plants?

Your opinion really is that the State should not enter into the business at all?—I do not think the State should enter into the fishing industry. I am watching carefully what is taking place in New South Wales and Queensland. Probably they may work out a scheme whereby they do not have a loss and also assist the public to get a better supply of fish. I should like an opportunity to go thoroughly into the operations of both those States in these ventures. New South Wales is doing very good work in encouraging the artificial cultivation of oysters.

Mr. Forbes: You have done something in that direction here?—We do a good deal of replanting in the Hauraki Gulf, and we have also done a little in Cook Strait with Foveaux Strait oysters, and I am experimenting with rock-oysters in the Sounds, but I do not think the temperature is very suitable there for the northern oyster.

Mr. Sidey: You agree that fish could be sold cheaper if all the fish that were caught were taken from the fishermen?—Yes.

The Chairman: Is it a fact that the fishermen in some places have a union which does not allow them to bring in more than thirty-six groper, the object being to keep the price up?—Yes; that applies to Dunedin. The Port Chalmers fishermen have a union, which limits the quantity of fish which each fisherman sends to the Dunedin market, but the union does not limit the quantity of the fishermen's catches. The additional quantities can be forwarded to Oamaru and Christchurch, but only a certain quantity can be sent to the Dunedin market. I may explain that that came about some years ago, when the fishermen considered that a certain firm or firms had a monopoly of the market in respect to the fish sent to Dunedin—all the fish got into the hands of two or three dealers, and they gave the fishermen whatever price they liked for them, and in order to keep up the price the fishermen at Port Chalmers formed this union and made that arrangement.

Mr. Sidey: Do you think there should be an extension of the territorial limits around our shores? I am referring to the suggestion of Professor Prince that these limits might be extended to eight or ten miles—the ordinary limit being three miles?—I should think the territorial limits would not be likely to apply to New Zealand fisheries, because we are so far from any foreign countries. Would the territorial limits apply to Australian vessels?

Territorial limits are recognized by international law?—Yes; but they would not apply around New Zealand—they would not apply to Australia, Australia being part of the Empire.

What do you think of Professor Prince's recommendation in that respect?—I am quite aware that Professor Prince made such a recommendation. I think that the three-mile limit is quite sufficient. I do not think there is any danger of foreign powers coming in here, nor even Australia.

You do not think there is any necessity for it?—No, I do not.

Coming to the question of the whaling industry: does every whale-fisher now require a license to fish?—Only the ordinary fishing license. That is only £1 a year for trawlers and 5s. a year for launches. At the present time whaling-vessels are merely licensed as fishing-vessels.

Do you agree with the suggestion which has been made that before any license to fish for whales is granted the applicants should satisfy the Department that they have sufficient up-to-date plant for dealing with every portion of the carcase?—Yes, twelve or fifteen years ago I recommended that practically the Canadian whaling laws should be adopted in New Zealand. As a matter of fact, I am bringing that question up in my annual report. There are only three firms whaling in New Zealand at the present time, and I believe they are all quite favourable to those laws. I believe that each whaling firm should be granted a site for a shore factory, and that each firm should have the sole right to whale along a certain length of the coast—from north to south or east to west. And I think they should give a guarantee before they are granted a license that they are capable of putting up a plant to deal with a certain number of whales.

What length of the coast do you think should be granted to each firm?—Probably twenty-five or thirty miles north and south.

The Chairman: Not more than that?—That would be a range of sixty miles.

Mr. Sidey: One firm asked for a range of 100 miles: do you think that is too much?—I think it is too much. The most up-to-date whaler in New Zealand is Messrs. Jagger and Cook's steamer "Hananui," and she never goes thirty miles north or south. The "Hananui" is working from Whangamumu. That firm extracts the oil and makes bonedust from the bones, but they have not got a drier to deal with the rest of the carcase.

Do you think it is a fair thing for one firm to have practically a monopoly of one part of the coast?—Certainly, because no one will put up a factory at a particular place unless he is guaranteed the right to whale along a certain section of the coast which will give him a guarantee that he may catch a sufficient number of whales to make the plant pay. There are plenty of other parts of the coast where others can catch whales. There are quite a number of places around the coast suitable for whaling-stations.

Are there not only three or four places on the coast where whales frequent?—You can get them off most of the headlands. If two firms carried on whale-fishing at the place it would simply mean that the two of them would starve.

Did the Norwegian vessels and whale-fishers that came here some years ago have a plant?—They brought all the material for a plant. They had an immense quantity of material, which they landed on an island at the Bay of Islands. They made a trial to see if they could catch sufficient whales to warrant them erecting the plant. They got about fifty-one whales, and I think Cook's firm, with their one vessel, got twenty-five. The Norwegians, with their expensive

plant, did not think they could catch sufficient whales to warrant them going on, and they went away.

Under normal conditions they would have got a license?—Then Messrs. Jagger and Cook, our own people, would have had to go out of business within twelve months. There is one thing about whaling which I should like to say. I think another regulation should be made providing that only those persons with licensed factories should be allowed to whale anywhere. I know of cases where fishermen have carried bombs in their boats, and if they see a whale either kill it or frighten it away; in nineteen cases out of twenty if they kill a whale it sinks. I think the Marine Department should make a regulation prohibiting any one chasing or molesting whales unless they have a license.

Mr. Craigie: Do you think that since the trawlers have been operating there has been a depletion of fish on our fishing-grounds?—I do not think so. It is possible that in certain localities, where a number of vessels fish on one spot over a few miles of sea-bottom, the quantity of fish there may be reduced for a time, but if they leave that spot for some time the fish come back as plentiful as ever.

There are plenty of fish, even if the population of New Zealand were double what it is?—Yes.

You know that Timaru is a good place for groper, yet groper have got scarce there. I suppose they will come back again?—Yes. Fish shift about the bottom of the sea, following their food in the same way as wild animals do about the land.

Are you satisfied that a thorough survey has been made of the fishing-banks on our coasts?—No, a thorough survey has not been made. Trawling and line fishing have been done round the coasts of both Islands, but sufficient time has not been devoted to a detailed inspection of each locality. My report of 1913 deals with that matter. We ought to have the fishing-grounds inspected section by section.

You think it would be the right thing for the Government to go in for an up-to-date trawler and have the whole of our coasts thoroughly surveyed?—Yes; I have made a strong recommendation to that effect. I think that is very necessary.

The fishermen off Timaru when a puff of wind comes have to come ashore: you think they ought to have larger boats and better equipment?—Yes, larger boats and better equipment.

You agree that the people of New Zealand should have cheap fish. Do you think that in the future, if the industry is to be put on a proper footing, we should export a great deal of smoked fish?—Yes, I certainly believe that. I think the time will come when we will have up-to-date fish-curing establishments here. We should be able to export fish. Up to the present we have only been working some of the inshore fishing-grounds. We have never gone far out. There is the whole of the west coast from Cape Maria van Diemen to New Plymouth; that coast has never been properly fished, and it is teeming with fish, and there is there the finest trawling-bottom that I have found anywhere.

You think the Government should encourage fish-curing?—Decidedly. I think that Australia is going to be our great market for fish.

You suggest that the Government should assist private enterprise in respect to the erection of cool stores?—Yes, and encourage more fishermen to take up fishing with better fishing-vessels.

You think the Government should advance money for their equipment—the same as advances to settlers?—Yes, to get better equipment and boats.

You have no other suggestion to make: you leave it at the cool stores so far as distribution goes?—Yes, at the present time.

Have you anything to suggest in respect to Corporations taking up the industry?—I believe the City Council of Auckland has been the means of reducing the retail price of fish there. I have on several occasions recommended the Government to encourage Municipal Councils to erect up-to-date fish-markets.

In New South Wales the Government made a little direct loss, but the people had the benefit of cheap fish?—I would not like to make a loss on my oysters. I am afraid I would get a rap over the knuckles.

All it wants is that the Government should give a lead, give inducements for more fishermen to take up the industry, and that the fish should be distributed in a proper way?—Yes.

The Chairman: In regard to the flounder-supply of Wellington, is there any supply coming in at present?—Practically nil.

How do you account for that?—There is a very little extent of flounder-ground about here. Wellington must always get its principal supply of flounders from Napier, and a certain quantity from Foxton.

Dr. A. K. Newman: Is there any danger of the whaling-fishery becoming extinct?—They are becoming very scarce, but in the whaling-grounds in the North Sea and in Behring Sea whales have decreased in number very much during the last fifteen years.

What is the position about here?—About here there are not now nearly the number of whales that there were thirty or forty years ago, when the whalers used to come here. The whale is a large animal, and it is quite easy to exterminate it.

Mr. Forbes: But there are quite sufficient whales here to keep the present whale-fishers going?—Yes.

Mr. Hudson: Do you think the wire of steam trawlers is a menace to the young fish?—No, I do not think so.

In the south of Ireland some years ago it was said that the operations of the steam trawlers detrimentally affected close inshore fishing?—Where trawlers may have a detrimental effect in regard to small fish is where the small mesh may take in large quantities of small fish, which when taken inboard are dead. In that way trawlers working close inshore might injure fisheries over a certain area.

Mr. Luke: Is there any indication that fishermen restrict the catches around Wellington?—No, I do not think so.

Do you think that our trawlers are sufficiently large for the purpose?—There are only two vessels in New Zealand that are built on proper lines—the "Nora Niven" and the "Simplon." The "Nora Niven" is really too small to be classed as an up-to-date trawler.

Would it not be better for the Government to have one or two up-to-date trawlers which could run with supplies of fish to, say, Wellington and Lyttelton, and supply the markets in both Islands: would not that be better than municipalities going in for a small class of trawler and supplying a limited market?—If the Government take up trawling they would have to consider every part of New Zealand. I think that private fishermen are quite capable of doing the catching if the Government give them facilities for getting the proper vessels.

Is there sufficient enterprise?—I am quite sure there is. If there is a well-established market you will get plenty of men to catch the fish.

Mr. Hudson: Would it not be dangerous for anybody to own the boats except the men engaged in the fishing?—Yes, I think it is advisable that the men should own their own boats.

The Chairman: What is the price of cleaned snapper in Wellington?—It has varied tremendously. During the last two years the supplies have been very erratic.

You know the price at which the Auckland municipality sells fish?—Yes. There is no part in New Zealand that has such an immense supply of fish handy to the market as Auckland, and for that reason the supply of fish to the consumer will always be lower than in other places. I deal with that question in my report.

In regard to cool storage on board trawlers, do you recommend that?—There is no necessity for that if you can get supplies of ice. None of the trawlers in the North Sea, or very few of them, have refrigerators. They get supplies of ice from refrigerators on shore, and all the chambers are insulated.

That is a very necessary provision?—Yes. I think the establishment of the little freezing plant at Kaikoura is an example of the advantages of a chilling plant.

Mr. Poland: What is the cost of one of these plants?—It depends on the size.

Do you recommend that the Government should establish one at Helensville?—It would assist.

And also one at Whangaruru?—Yes; there is an immense supply of fish there, and also at Mercury Island.

The Chairman: Is there not great value in the offal?—Yes, the offal contains a certain quantity of oil, and the residue can be converted into a fertilizer. I believe that Sandford and Co., Auckland, intend to put up a plant to deal with the offal from their fishing-sheds. At present it is sent away in a barge and dumped overboard.

With proper methods it would be possible to make use of the offal which is now wasted?—Yes, certainly. I may mention that when I was at Grimsby in 1910 I went out to see two factories at the mouth of the Humber dealing with offal from the fish-cleaning shed at Grimsby, and they were giving the fish people of Grimsby and Hull 18s. a ton for the raw material.

I understand that it takes 18 tons of raw material to make a ton of fertilizer?—Yes.

In regard to the flesh of the whale, it has been suggested that there might be a market for that—in Japan, for instance?—The Japanese whale in a very large way themselves. They use the whale-meat for food.

One firm in New Zealand stated that it was willing to supply sufficient whale-meat for a trial shipment, and it was also stated that the industry is taking a hold in America?—Yes.

Is it not rather a new thing to use whale-flesh?—The Norwegians have been using it for a great many years.

Mr. Poland: Have you ever tried it?—Yes. The first time I tried it I did not know but that I was eating lean beef; it has a slight gamy flavour.

Mr. Sidey: You made certain recommendations as far back as 1909: can you explain why no money has been advanced to fishermen for their boats and gear?—I want to say candidly that up to the present time there has never been a Government that has taken the fisheries seriously. They seem to look on the fisheries as an industry which should develop itself without any practical assistance. I have felt very strongly about it many times.

And that is really the reason why these recommendations have not been given effect to?—I feel convinced that if there had been a separate Division similar to the Dairy Division and other Divisions the position would now have been different to what it is. They have a staff of experts, and the Director of each Division is responsible to the Government for the development and proper working of his Division. The fisheries are worked as part of the Marine Department, whose chief duty is to deal with shipping and lighthouses.

APPENDIX.

AUTOMATIC STAMPING-MACHINES

WRITTEN STATEMENT BY WILLIAM HENRY ENDELL WANKLYN, ACCOUNTANT AND SECRETARY OF THE CANTERBURY JOCKEY CLUB, CHRISTCHURCH.

For many years past I have made a close study of all matters relating to postage and revenue stamps of this and other countries, and have arrived at the conclusion that the more extensive use of the automatic stamping-machine would result in a very considerable additional sum per annum being secured by the Postal Department. I am firmly persuaded that at the present time considerable numbers of high-value stamps are removed from old documents, the cancellation-marks obliterated, and the same stamps used again and again. In proof of my assertion I submit the following photographic exhibits, the originals of which are in my possession:—

Exhibit A.—Stamps Nos. 1, 2, and 3 are affected by the acid and hardly pass; the others are practically perfect, and would escape detection. Stamp No. 4 is blue, and in the photograph the lines of cancellation are seen, but in the original they are not visible to the naked eye, and can only be detected by a powerful magnifying-glass.

Exhibit B.—Some of these stamps have been cancelled with indelible inks and coloured pencils. Nos. 15 and 25 are cancelled by a red pencil, and Nos. 26 and 27 by an indelible-ink stamp, and none of these are good exhibits.

Exhibit C.—I did not have a photograph taken of this prior to obliterating the cancellation, but every stamp would pass without question unless very closely scrutinized. It is, however, interesting that the 3s. stamp and the £1 stamp both expose in the photograph what cannot be detected by the unaided eye; and the 5s. and 2s. stamps at the bottom were cancelled with rubber stamps and indelible inks, which proves that with care indelible inks are not safe.

It is quite obvious that systematic fraud in this direction can be successfully carried out without the least possible risk of detection. There is nothing to prevent a dishonest licensed stamp-dealer purchasing dead stamps of the higher values and retailing them with a handsome commission to the purchasing public. It is commonly known that thousands of used bill-stamps are removed from old documents, notwithstanding their being valueless to stamp-collectors; and there is no certainty as to the ultimate destiny of many of these high-value stamps, especially when it is demonstrated, as I think I have done, that these stamps can be so doctored as to render it comparatively easy to make use of them for a second or even for a third time. On the other hand, impressions taken by means of the automatic stamping-machine are of no commercial value and cannot be negotiated. They are merely placed upon the document, and there they remain for all time.

Then, again, the saving that must accrue to the Government in having large numbers of the automatic stamping-machines installed throughout the country, in all the leading offices, governmental, public, and private, is very considerable, and will become increasingly so as time goes on.

The cost of printing immense quantities of stamps, the trouble and loss of time entailed in counting and recounting must be enormous. The stamping-machine entirely eliminates this waste. If the automatic stamping-machine were installed at all the leading parcels-offices throughout the New Zealand Postal system the use of adhesive stamps would cease, the required impressions could be made on specially prepared postal slips.

Machines for the stamping of higher values for the use of Deeds Offices, &c., could be supplied, and thus provide a perfect daily check on the stamps placed on documents during a given period by means of a register which would be automatically checked by the register on the dial of the machine.

And then as to the revenue point of view: The Postal returns per head per annum prior to the war, as obtained from the Statistician's Year-book, in the undermentioned countries was as follows:—

	s.	d.
Canada	8	0
America	10	6
Great Britain	10	8
Australia	13	5
New Zealand	19	0

In 1905, prior to the introduction of the automatic stamping-machine, the revenue per head of population was 12s.; in 1907 there were only eighty-eight machines in use, but the revenue had increased to 14s. per head. In 1914, when there were about five hundred machines in use, the revenue, as stated above, was 19s. To-day there are between six hundred and seven hundred of these machines in use throughout the Dominion, and the number is steadily increasing.

In my view the automatic stamping-machine is of paramount importance in commercial life, and should be taken over by the Government of New Zealand in the same way as is the telephone system. The machines should be let out to users at a given rental and kept in repair. Under the present dual-control system the machine is leased out to users on a perpetuity lease, at a pepper-corn rent, the consideration being a sum of £32 10s., by way of premium, and the machines can be installed only by permission of the Postal Department. The doors giving access to the interior of the machine are provided with a couple of Yale locks, the keys of which remain in the possession of the Postal authorities. Consequently when any attention is required the company's expert has to secure the attendance of the Postal Department's representative to unlock

the machine, and he has to remain in attendance while repairs or adjustments are being effected, after which the machine is again locked and the keys returned to the Chief Post-office. Thus it will be seen that two men must necessarily be in attendance at every adjustment of the machine, and two men's time has to be paid for by the user, because the time of the Postal official is charged against the company at the rate of 2s. per hour, which charge is of necessity passed on to the user. This is a flagrant waste of time and energy, but apparently is unavoidable under the present dual-control method. If the machines were purchased by the Government they could be leased for a few pounds a year, when many hundreds more users would be able to avail themselves of the advantages derivable from its use, and be a constant source of revenue to the Government.

In conclusion, I desire to emphasize the fact that this statement is not being put in by me in the interests of the Automatic Stamping-machine Company. I may add that I was at one time a director of that company, but what little interest I then had has since disappeared owing to reconstruction having taken place. My advocacy of the more extended use of the machine arises solely from my experience as a practising auditor and as a business man, knowing as I do that both from a commercial and a departmental point of view it is the greatest deterrent of fraud and peculation that has ever been introduced into this country.

Christchurch, 29th March, 1919. W. H. E. Wanklyn.

Written Statement by Charles Horace Gilby, Secretary of the Automatic Stamping-machine Company (Limited), (in Liquidation).

In the Wellington *Evening Post* of the 21st May, 1919, Mr. H. A. Huggins, Comptroller of the Postal Department, is reported as having given evidence regarding the automatic stamping-machine in the following words: "The absence of colour in the impression made by the machine was an instant defect, for it was inclined to hamper the work of the Postal clerks who dealt with the letters."

In reference to this alleged defect, I desire to point out that the present colour used in the automatic stamping-machines (black) was selected by the Postal Department's experts themselves; any other colour than black was absolutely forbidden. A case occurred in a Dunedin office where a newly installed machine was found to give, instead of a black, a very dark purple. This trifling variation was instantly objected to, and an entirely black inking-roller had to be inserted before the Postal authorities would allow the machine to be used. The company will be most happy to meet the Department's wishes in regard to the colour of the ink used in the automatic stamping-machine. We quite realize that it would be an advantage to the mail clerks if, say, a violet or brown ink were used for the automatic stamping-machine, inasmuch as the ink used on the stamp-obliterating machines in the Dominion is also black.

Further, Mr. Huggins is reported as saying, "By the use of the machine the Department was losing about £1,200 per year. There was nothing to reimburse this loss."

Here I venture the opinion that Mr. Huggins has been grossly misreported. It is inconceivable that with his knowledge of postal matters he could have made any such statement as that attributed to him in the last sentence. I understand Mr. Huggins to mean that the use of the machine is costing the Department about £1,200 per annum, which is quite conceivable, inasmuch as a Postal official goes round to the various offices in which the machine is installed, at intervals of about eight days, to check the register and collect the postages. This, however, cannot be treated as a loss of £1,200 per year, unless against the loss you set the gain represented—

(1.) By the saving of commission on the postages recorded on the stamping-machines;
(2.) By the saving in the cost of printing and preparing the stamps;
(3.) By the saving of labour in the sale and distribution, as well as the counting and balancing, of an enormously increased number of postage-stamps, which would be involved were the automatic stamping-machines not in use in this country;
(4.) By the convenience afforded to something like fifty Government Departments, to many local bodies, educational authorities, and semi-public offices, as well as practically the whole of the leading mercantile houses in the Dominion.

I have every confidence in stating that the amount of postage recorded on the machines in the City of Wellington alone totals approximately £40,000 per annum. It is safe to assume, therefore, that the whole of the Dominion collections will represent at least five times this amount in the aggregate, or, say, £200,000 per annum, recorded on the automatic stamping-machines in this country. The saving in commissions on, say, one-half of this amount at 2½ per cent. represents £2,500 to set against the £1,200 referred to by Mr. Huggins in his evidence as a "loss" to the Department. This, I think, is sufficient to dispose of the point in the report above referred to that "there was nothing to reimburse the loss."

It is evident that the impression made on the minds of the Committee by the evidence of Mr. Huggins was that this £1,200 was an annual loss to the country, since Dr. Newman is reported to have referred to it as "a scandalous thing that the Government should lose £1,200 annually through the use of the machine"; whereas the contrary is the fact—namely, that the Department reaps a financial advantage of at least as much again as the amount named by Mr. Huggins, to say nothing of the saving effected in the case of users of the automatic stamping-machine in the prevention of peculation and misappropriation, as well as saving them the inconvenience of having to purchase and stock large quantities of adhesive stamps of all denominations.

I would again urge upon the Committee the advisability of the Government taking over the sole control, leasing, or hiring of automatic stamping-machines in this Dominion in the interests alike of the Department, the company, and the users, inasmuch as the present system of divided authority and dual control leads to a considerable amount of correspondence, overlapping, and waste effort.

Christchurch, 12th June, 1919. C. H. Gilby.

SEED TRADE.

LETTER FROM MESSRS. ARTHUR YATES AND CO. (LIMITED), SEED AND MANURE MERCHANTS, AUCKLAND.

The Chairman, Industries Committee, Wellington.

DEAR SIR,—

We regret that when your Committee sat in Auckland we had not been prepared to put before you our views on different matters concerning our trade.

(1.) We spent about £1,000 per year on catalogues, the printing of which is distributed among different printing firms in Auckland. Postage on these catalogues runs into, say, £100. The Customs Tariff imposes a duty of 3d. per pound on catalogues issued by firms in New Zealand if printed outside the Dominion. This in our case would run into ¾d. per copy. Firms in other countries send their catalogues free of duty (see item 154 of Customs Tariff) direct to the retail customer. This is a matter which concerns every trade in the Dominion, and we would ask your support to have a duty placed on all catalogues entering this country.

(2.) We would ask to have a duty placed on all retail packets of vegetable and flower seeds. We would point out that we, and others, are growers of seeds as well as importers; we give work directly and indirectly to hundreds in growing, cleaning, and packing seeds. The stationery, mostly imported, pays a duty of 3d. per pound if printed, or 20 per cent. if unprinted. The seedsmen of other countries can send their packets, when filled with seeds, either direct to a customer or through agents free of duty, and we know that some thousands of filled packets are imported yearly.

(3.) We handle large quantities of bird-seed, the bulk of which is grown in foreign countries. We pay 30 per cent. duty, and then have to clean, mix, and pack it, giving employment to a number of hands. But we have to compete with the imported article, ready mixed in cartons or bags, on which a duty of only 20 per cent. has to be paid. This has to provide for 25 per cent. of British material and labour, and is easily got over by increasing one of the only two items of British-grown seed sufficient to comply with the Act.

In none of the cases mentioned in the foregoing have the proprietors an interest in this country by which they would contribute to the funds of the Dominion.

Now the war is over we anticipate keen competition by other countries, and after years spent in building up an industry we should receive encouragement, and not be handicapped in the ways we have pointed out. Trusting to have the support of your Committee,

We have, &c.,

For and on behalf of ARTHUR YATES AND CO. (LIMITED),

Auckland, 9th May, 1919. E. YATES, Governing Director.

HOLLOW BUILDING-BLOCKS.

LETTER FROM MESSRS. R. O. CLARK (LIMITED), DRAIN, PIPE, BRICK, AND TILE MAKERS, AUCKLAND.

The Chairman, Industries Committee, House of Representatives, Wellington.

DEAR SIR,—

I regret I was absent from Auckland when your Parliamentary Industries Committee sat there. My intention was to bring before you a very perfect hollow building brick or block, manufactured by R. O. Clark (Limited), Hobsonville. These, I consider, are the cheapest and most perfect building-material of a permanent nature manufactured in New Zealand.

They have long since passed the experimental stage. Last year ten houses, for workers, were built at Matangi, near Hamilton, by the New Zealand Dairy Association (Limited), and several others at Matamata, and they were more than pleased with the results. At present they are being used in the erection of a large dried-milk factory at Waharoa, by the Waikato Co-operative Dairy Company (Limited).

We are handicapped in the pushing of these in the country by what, I consider, is an unfair classification by the Railway Department. Bricks are classified in Q Class at 7s. 4d. per ton, say, to Frankton, while our building hollow bricks are classified in P Class at 9s. 8d. per ton, or 32½ per cent. higher freight, thus placing us at a disadvantage.

Our blocks have only been raised 10 per cent. during the past seven years, while bricks have risen over 30 per cent. and timber about 40 per cent.

The cost of laying our 18 in. by 9 in. by 6 in. hollow brick is much lower than brick, and what I respectfully ask is that the Government should try these on some of their workers' cottages, &c., and that we get sympathetic consideration from Government Departments, including the Railway Department, as I consider all consideration should be shown to any material likely to lessen cost of buildings for workers. At our works, Hobsonville, we can supply enough building-blocks to erect a five-roomed house for about £56; freight would be extra. Houses erected of these would be perfectly sanitary, cheaper than first-class timber, dryer than concrete, and cheaper than brick, damp-proof, fire-proof, no borer, and practically no upkeep.

In conclusion, let me say we are not asking for protection or Government assistance, but for a fair trial of our blocks by the Government, and that the Railway Department classify them in proper class, and not penalize a struggling local industry and retard the use in the country of a perfect building-material. I should be pleased to forward you a sample block if you so require.

I have, &c.,

Auckland, 9th May, 1919. THOMAS MILLAR, Chairman.

By Authority: MARCUS F. MARKS, Government Printer, Wellington.—1919.