1929.

NEW ZEALAND.

FOOTWEAR INDUSTRY.

PRELIMINARY REPORT (DEALING WITH THE PRODUCTION OF FOOTWEAR) OF THE COMMITTEE OF INQUIRY.

Laid on the Table of the House by Leave.

REPORT.

The Hon. J. G. Cobbe, Minister of Industries and Commerce.

SIR,— 4th September, 1929.

Towards the end of 1927 the then Prime Minister, the Right Hon. J. G. Coates, convened a meeting of departmental officials possessing expert knowledge of industrial matters in New Zealand with a view to discussing whether or not an economic survey of the boot industry would be welcomed by the interested parties. The Minister of Customs (the Hon. W. Downie Stewart) and the Minister of Industries and Commerce (the Hon. A. D. McLeod) were also present. The Prime Minister expressed the opinion at this meeting that the manufacturers concerned would welcome investigation and co-operation in order to ascertain whether the development of the industry was proceeding on right lines. He suggested that certain departmental officials, together with leading boot-manufacturers, might form a preliminary Committee of Inquiry and that this Committee should endeavour to ascertain precisely what the difficulties were, and, if possible, suggest means for overcoming them.

Following a discussion with departmental officials, a meeting was arranged on the 17th November, 1927, between the officials and certain representative boot-manufacturers from all parts of New Zealand. Full opportunity was given to each manufacturer to state the present position of the trade, and most helpful information was furnished. The delegates were invited to advise the Government as to whether the boot-manufacturers generally welcomed the co-operation of the Government in such an inquiry, and, further, whether such investigation would be likely to lead to practical and useful results.

Manufacturers' representatives stated that in their opinion the present state of the industry was due to a combination of the following conditions:—

(1) Labour legislation (Factories Act and Industrial Conciliation and Arbitration Act):
(2) Alleged dumping of low-price footwear from Great Britain:
(3) Difficulty of coping with changing fashion in ladies' footwear:
(4) High duties chargeable on certain raw materials in fashionable footwear:
(5) Absence of assured local markets:
(6) Difficulties of marketing.

In view of these conditions the delegates were asked to express their opinion whether official investigation by Government would be welcomed, and also if the proposed investigation would lead to practical and useful results.

It was not until the 21st March, 1928, that the manufacturers resolved that they would welcome an investigation and would be prepared to co-operate with the Government Committee in order that the industry might be fully reviewed.

As a result of this decision the following Committee was set up:—

Official members—

J. W. COLLINS, Secretary of the Department of Industries and Commerce (Chairman).
*G. W. CLINKARD, M.Com., Advisory Officer, Department of Industries and Commerce.
GEORGE CRAIG, LL.D., Comptroller of Customs.
E. MARSDEN, D.Sc., Secretary, Department of Scientific and Industrial Research.
E. T. SPIDY, A.M.E.I.C., Ass.Mem.A.S.M.E., Superintendent of Workshops, Railway Department.

Manufacturer members—

A. TRENWITH, representing Auckland Boot-manufacturers' Association.
E. T. ARNOTT, representing Wellington Boot-manufacturers' Association.
H. DUCKWORTH, representing Canterbury Boot-manufacturers' Association.
J. R. LUFF, representing Dunedin Boot-manufacturers' Association.

* Resigned 19th March, 1929, owing to appointment as Secretary to Administrator at Samoa.

The first meeting of the full Committee was held on the 30th April, 1928, the main business transacted being a consideration as to the future procedure to be adopted and the lines the investigation should take. It was resolved that a preliminary survey should be made at selected factories in the four chief centres, and that Messrs. G. W. Clinkard and E. T. Spidy should make this investigation and report to a later meeting, when the general problems concerning the boot-manufacturers could be made known.

A preliminary report of Messrs. Spidy and Clinkard was considered at a meeting held on the 14th September, 1928, and has proved of very great assistance to the General Committee and in the preparation of this report.

After the Committee had functioned for several months it was considered necessary and advisable to obtain the assistance of employees' representatives, and assent to their appointment was given by the Government. The following were added to the Committee as representatives of employees' federations in each centre :—

C. A. Watts, Auckland.
J. W. Moore, Wellington.
F. M. Robson, Christchurch.
F. Jones, Dunedin.

The subject-matter of the inquiry will be dealt with under the various headings set out below.

Condition of the Industry.

While the investigation shows the existence of relatively depressed conditions in the industry, yet at the same time the extent of the depression has not been continuously as great as has sometimes been suggested. It is difficult to secure anything approaching an accurate view of the condition of an industry which covers such a varying field as is found in this instance. While some units of the industry are relatively prosperous and strong, others are showing a distinctly unsatisfactory and declining condition. The present position of the industry by comparison with earlier years is to some extent disclosed by the official statistics of factory production. The latest figures available are for the year ended in March, 1928, and are shown below. It will be noted that in the period under review there has been an increase of 3,925 dozen pairs (3·4 per cent.) of all footwear produced, but a decrease in value of £5,255 (0·47 per cent.) when compared with the figures of 1927. The average price of boots and shoes in 1927 was 16s. 9d., and in 1928 16s. 6d. The following statement shows the quantity and value of boots, shoes, slippers, and shoettes produced in New Zealand during the years ended 31st March, 1919 to 1928, inclusive :—

Year ended 31st March,	Boots and Shoes.	Slippers.	Shoettes.	Totals.	Per Capita.
		Dozen Pairs.			
1919	118,989	3,441	3,100	125,530	1·26
1920	120,211	2,217	8,982	131,410	1·27
1921	107,088	1,791	3,003	111,882	1·06
1922	110,763	2,734	2,442	115,939	1·07
1923	119,805	1,711	4,087	125,603	1·14
1924	122,591	1,435	4,691	128,717	1·15
1925	114,398	1,580	2,841	118,819	1·03
1926	113,641	1,238	3,569	118,448	1·01
1927	109,780	722	6,651	117,153	0·98
1928	109,222	660	11,196	121,078	1·00
		Value.			
	£	£	£	£	£ s. d.
1919	1,132,014	13,254	10,086	1,155,354	0 17 7
1920	1,334,259	9,314	34,358	1,377,931	1 2 2
1921	1,389,599	8,905	11,354	1,409,858	1 2 2
1922	1,232,687	11,459	7,429	1,251,575	0 19 2
1923	1,384,359	8,219	13,091	1,405,669	1 1 2
1924	1,304,576	6,887	14,728	1,326,191	0 19 7
1925	1,181,122	6,138	9,275	1,196,535	0 17 5
1926	1,149,191	5,442	11,808	1,166,441	0 18 7
1927	1,100,963	3,276	36,670	1,140,909	0 15 10
1928	1,065,830	2,864	66,960	1,135,654	0 15 7

For obvious reasons, the statistics of value are not of primary importance, and the records of quantities produced prior to the year 1921–22 were influenced by abnormal trade conditions. The production in the year 1921–22 was itself doubtless affected by the depression in trade that existed at that time, and, though importations were then still comparatively small, the general demand was slow. Comparisons of value can best be made, therefore, between production figures of years since 1922, and, as the table shows, the figures of the three most recent years were lower than for 1922–23 and 1923–24. The decline, while appreciable, does not, however, record a very marked depression in the industry.

It is of interest in this connection to consider briefly the production figures of pre-war years. The statistics for 1910–11 show the Dominion production of footwear at 124,263 dozen pairs. During the war period Dominion production increased, though this was not evident in the industrial census figures of 1915–16, when production was shown as 122,624 dozen pairs.

The conclusion which may be drawn from a general review of these figures is that production last year did not markedly differ from the totals of previous years. When consideration is given, however, to the increase in population which has taken place even over a relatively recent period it is clearly evident that the local industry must now be supplying a much smaller proportion of the total trade than was the case prior to the war, or even in the immediate post-war years.

The production statistics of the industry over the past three years show that the total value of all products (which includes a small proportion of other lines in addition to footwear) did not fluctuate materially in the past two years, but show a decrease of £29,038 when compared with 1926 :—

	1926. £	1927. £	1928. £
Materials used ..	589,914	566,498	565,250
Wages	428,940	412,979	405,443
Total value of products ..	1,197,785	1,168,314	1,168,747

The accounts of fourteen representative manufacturers in the main centres which were investigated during the inquiry showed to the satisfaction of the Committee that only three were returning a reasonable rate of profit on capital invested, two were providing a moderate but insufficient profit, while nine were definitely unsatisfactory. We include in Appendix A a comparative statement of manufacturing statistics for the years 1911, 1916, and 1925 to 1928. The evidence disclosed by our inquiries shows that some firms have apparently lost trade to local as well as to overseas competitors. New factories have come into being in the Dominion, and, while there has been no very marked fall in the total Dominion production, the business has been spread between a larger number of producing units. The number of factories* recorded in 1910–11 was seventy-four, while in recent years the number has been eighty-one.

Employment.

The total number of employees engaged in the industry in the undermentioned years was as follows : 1925, 2,074 ; 1926, 2,078 ; 1927, 2,018 ; 1928, 2,048.

The number of employees on short time for the year ending 31st March, 1928, was—Males, 246 ; females, 400 : total, 646.

The number of hours short work for same period was—Males, 64,010 ; females, 25,055 : total, 89,065.

Statistics show that the number of weeks on short-time work per factory during the year was greater in the boot industry than in any other industry in the Dominion, the number of weeks being sixteen.

Importations.

A review of the import statistics brings into prominence the increased trade done by overseas makers in recent years. By reference to the export statistics of the United Kingdom (our main overseas supplier) it will be found that imports of footwear wholly or mainly of leather have increased as follows :—

	Dozen Pairs.	Per Capita. £ s. d.
1913	100,000	1 2 10
1923	145,000	1 6 2
1924	107,000	0 19 0
1925	132,000	1 3 0
1926	117,000	1 0 0
1927	118,435	0 19 9
1928	129,179	1 0 6

Prior to 1928 the Dominion's import statistics were not compiled on such a basis as to give a clear view of the position, and non-competitive footwear (such as slippers and rubber goods) was to some extent grouped with competitive lines. While the total imports of footwear (other than gum boots) have increased from 138,000 dozen pairs in 1913 to 222,000 dozen pairs in 1927 and 260,203 in 1928, a very large proportion of this increase is due to larger importations of children's sizes and of slippers and rubber footwear.

A comparison of the six months ended 30th June, 1929, with that of the corresponding period of last year shows that a decrease of 5,997 dozen pairs, of a value of £14,954, has taken place in that class of footwear classified as " all leather " for Customs purposes :—

	Dozen Pairs.	Value. £
1928	42,697	276,539
1929	36,700	261,585

* " Factory " is defined as an establishment engaged in manufacture, repair, or preparation of articles for wholesale or retail trade, or for export, which employs at least two hands or uses motive power.

The population of the Dominion has increased by approximately one-third since 1911. Careful consideration of the available statistical information in respect to the classes of footwear made in the Dominion shows that the total trade has hardly kept pace with the increase in population. Over *all* classes of footwear, both imported and locally-made, however, the increase in trade appears to be approximately in line with the increase in population.

The foregoing will serve to show that—

(*a*) There has been some slight loss of trade by local makers in favour of overseas supplies.

(*b*) Imports have supplied the whole of the increase in trade resulting from increased population.

(*c*) Consequently imports now supply an appreciably greater proportion of the trade than in pre-war years.

(*d*) The total demand for classes of footwear made in the Dominion has not increased in proportion to the increase in population.

Manufacturing Difficulties.

(a) Multiplicity of Designs and Small Orders.

We have been struck by the remarkably high cost involved, apparently as a result of the diversification of the output of most of the factories, and more particularly of those engaged in women's shoes. It is evident, of course, that manufacturers must meet the market requirements in regard to fashion-changes, and the expenses involved in rapid fashion-changes affect both imported and Dominion-made footwear. There remains, however, the outstanding fact that local manufacturers working independently are bearing a relatively heavy charge in respect of the cost of designing and making patterns for a range of samples many of which go into production to a very limited extent. Indeed, production from some designs is apparently never acceptable to the trade. Many of the factories, and even those of comparatively small output, are forced through competition from overseas, to put out from 150 to 300 new designs per annum. Ten factories for which reasonably accurate figures are available are preparing a total of approximately 1,700 designs per annum. It must not be overlooked that many of those designs are subject to some alteration at the wish of retailers, and the number of designs is accordingly in effect increased for that reason. A large proportion of the production of the factories above referred to is apparently based upon some more or less standard designs for both men's and women's wear, and it is only in respect of a portion of the output that this designing-cost is forced upon the trade. We are informed that the cost of designing and cutting patterns for each design would amount to a few pounds. Much of this cost cannot be directly recovered, and must be spread over the whole output. Moreover, the cost of this wide variety of samples reflects itself throughout the whole course of production through the factory. The offering of this multiplicity of designs is in itself an inducement to the retailer to spread his purchases over a wide range of styles and among a large number of factories. It may even lead to the accumulation by the retailer of many odd lines of " dead " stock. The factory selling-cost is increased, and overhead and record costs are affected. Stock costs are also forced up both in respect of multiplicity of materials and of patterns necessarily carried.

By comparison with import business the expense borne by the local industry must in total be very heavy, and any possible advantage secured over imports by the prompt submission to buyers of new designs does not appear in any measure to meet the disadvantage of the competition at lower prices at which imports can be offered for forward delivery.

In almost all instances the new designs are adopted or drawn up from trade periodicals, and for this reason it seems inevitable that many factories are duplicating the work being done in other local houses. Manufacturers expressed the view that, while the cost of designing was heavy, they could see no possible means of reducing this item to any extent. The wide range of designs offered by overseas suppliers and featured in British and American journals made it incumbent upon the local manufacturers also to offer to retailers an extensive choice of designs and styles. It was quite common practice for the local manufacturer to submit to the retailer two hundred different designs in ladies' footwear, and business was lost if he failed to provide as extensive a range as that offered by overseas manufacturers.

(b) Small Orders and their Effect on Production Costs.

Multiplicity of designs is obviously one of the principal causes of small unit orders, which, we are convinced from the evidence submitted, is one of the main sources of factory losses.

From figures presented, the percentage of the total output that has to be put through the factory of one design in small lots—that is, six pairs or less—varies from 5 to 30 per cent. While there is considerable divergence of opinion among manufacturers as to what constitutes a reasonably adequate or economic manufacturing order, tickets for two dozen pairs would be generally regarded as quite sufficient to enable factories to get down to a satisfactory cost basis. From our observation two classes of factories may be discussed in this connection as being distinguishable—first, those factories which are sufficiently large and which have been compelled, by the amount of sales in each class of footwear manufactured, and also for other reasons dealt with under specialization, to take up a variety of different lines; and, secondly, those factories which are sufficiently small to enable them to concentrate on a few lines and which are enabled to sell their output direct to a few large distributing retailers. One fact becomes outstanding here, in that the small factory may have much larger manufacturing orders, and can therefore compete with the larger manufacturer.

The overseas manufacturer does on a large scale what some of the small manufacturers in New Zealand are able to do, from which we cannot but conclude that the relatively small basic manufacturing order and the relatively large number of small unit orders are large contributing factors to the

manufacturing expense of shoes in New Zealand. Manufacturers claim they have been forced into accepting these small orders, but it must be recognized that the fashion demand, which competition between manufacturers encourages, has been an important contributing factor.

We believe that the constant competitive issue by local makers of new designs is in itself a very strong force towards diversification of demand, and consequently of output. Any steps which can be taken to modify or control this apparently excessive propagation of new designs would undoubtedly tend towards increasing the average size of the orders handled by the industry. The market is undoubtedly at all times greatly oversupplied with designs. Small orders are the inevitable result, although total sales may be somewhat stimulated, and are seriously increasing factory production costs, and the stock risks of both factory wholesalers and retailers.

(c) Expenses involved in carrying Stocks of Diversified Raw Materials.

The expense under this heading is one which manifests itself in heavy capital charges, in cutting losses in the clicking-rooms, and particularly in writings-off of reduced values due to fashion-changes. So far as the first of these is concerned, we have noted with interest the wide variation in the value of raw stocks considered necessary in businesses doing the same class of trade. An example of this disparity may be given. In one instance the normal value of raw stocks is approximately sixteen times the weekly production in pairs, while in the case of another factory doing the same class of work the similar proportion is only four to one. Apart, however, from such comparative weaknesses, the total capital cost of the industry under this heading is very substantial.

The loss from wastage in cutting is perhaps a cost which is mainly due to changes in fashions and small orders, but it certainly reflects itself through depreciated stock-values. Here again the cost can be set down as one of the disadvantages of small-scale production.

Raw-stock loss or expense appears to be due mainly to depreciated values when manufacturers are caught with materials on hand from which fashion has moved away. When materials have been made up to a particular design or style the risk of stock loss increases; but even before manufacture the risk under this heading is appreciable, and is increased for the industry as a whole because each factory is working its stock requirements quite independently of others and each is bound to hold sufficient of each line to merit possible demands. The greater portion of the stock of raw materials which is subject to more frequent and sudden changes is fancy leathers, the bulk of which is imported. On account of this fact the individual manufacturer has to estimate what is a sufficient supply for the requirements to meet the season's demands. An overestimate of his requirements due in a large measure to a sudden change to other designs and fashions of women's footwear will result in an accumulated stock of material which has very little market value. The loss which arises through stocks of coloured upper-leathers becoming unsaleable through changes in fashion has been referred to the Department of Scientific and Industrial Research for an investigation as to (1) the commercial possibility of dyeing imported or locally produced undyed leather to shades as required; (2) the commercial possibility of New Zealand tanners producing suitable upper-leathers at present supplied by overseas manufacturers. We have been advised that some suppliers have agreed to carry stocks of materials, in which case the loss arising out of stock becoming excessive would be considerably reduced.

Further consideration of this question and a search for remedial measures is, in our opinion, highly desirable. It is suggested that co-operative buying on the part of manufacturers may possibly afford a solution of the difficulty, also initiative by local tanners.

(d) Costs and Losses in respect of finished Stocks.

As has been mentioned above, the risk of carrying finished stock is greater than with raw materials, and in classes subject to rapid fashion-changes the risk is so great that manufacturers generally refuse to make otherwise than for orders. In all instances the endeavour is to adopt the course which gives the best production economy with the highest stock risk compatible with trading safety. In all instances, despite the greatest care, stock losses occur. The position varies from factory to factory not only according to the class of goods produced, but also in relation to the system of sale followed. It is only to be expected, therefore, that the value of finished stocks varies considerably as between the different units. We are bound to say, however, that the evidence shows that manufacturers have apparently been inclined to err on the side of overstocking, and the businesses showing the least satisfactory financial results have often been placed in that position as a direct result of necessity of writing down stocks of finished goods. It appears, too, that the sales system of each factory has a bearing on this matter, and where the business is organized for distribution through main and branch warehouses the stock loss tends to be higher than when sales are effected direct from the factory to retailers.

This devaluation of finished stocks is not strictly a production loss, but is, however, intimately related to questions of improved production and the elimination of small "tickets" which otherwise burden the factory cost and general overhead.

Under existing circumstances this serious stock risk is one which manufacturers cannot entirely avoid, and is common to most industrial enterprises in New Zealand.

(e) Industrial Difficulties—Non-flexibility of Labour Conditions.

The conditions in regard to the employment of labour are very largely laid down by law, and more particularly by the award made under the Industrial Conciliation and Arbitration Act. The conditions surrounding the employment of labour in New Zealand are therefore much more rigid than in countries from where the main supplies are imported. These rigid conditions necessarily exercise a substantial influence on factory cost and production efficiency. It is difficult, despite efforts made

by the holding of meetings between the labour and employer representatives of this Committee, to arrive at agreements on the subject of the classification of labour into main sections—skilled, semi-skilled and unskilled—and defining for each the operations or duties that should be allocated and performed. It is felt that in the larger factories at least such a classification would be an advantage; but it is at the same time admitted that, owing to circumstances outside the control of the employers, they must, in order to ensure full-time employment, allocate duties to the skilled hands that could be performed by the semi-skilled or unskilled. Economies arising out of the detailed division of operations can therefore seldom be availed of, partly because of award requirements and partly because of the uncertainty of or lack of output.

The serious effort made to come to a recommendation on the point had to be abandoned, but recognition of the need for a change in the system of payment of employees without risk of a reduction in the ruling minimum wages was carefully considered. In the next paragraph this suggested system is detailed.

Appendix B compares the manufacturing-conditions of New Zealand with England.

(f) Systems of Remuneration of Employees.

The majority of factories in New Zealand employ the day-rate system of payment to employees. Some, however, employ the piecework system permitted under the award by special agreement with the employees of individual factories. Many factory-managers hold decided opinions against the practicability of employing any system of payment by results, but we are forced to point out that there is no question arising in this matter, since such systems are actually in operation and successfully so in some factories in the Dominion.

From papers put before us, also, it would appear to be the general practice in England to pay on a piecework basis, and the factor of small production units is the only one that affects the situation differently in New Zealand. This resolves itself into a question of rate-setting and the ability of the manager or his assistants to calculate accurately the time necessary to perform each operation. Rate-setting from costings as taken out in the average New Zealand factory is not sufficiently accurate, and it is urged that rate-setting from detailed study of each operation is the proper method of arriving at the prices for each operation. If the rate-setting is not done accurately, there comes the necessity, sooner or later, for making changes in prices to correct the inaccuracies found, and this, leading as it does to trouble from employees, is most assiduously to be avoided.

One manufacturer interviewed stated as his experience that the payment of wages by piecework was necessary for progress, and that working under this method tended towards efficiency of the operator.

Under this heading the Committee makes the following recommendations:—

(1) The payment by the principle of piecework in the boot industry, with proper safeguards.

(2) That the employees in any factory numbering sixty hands and over, including the office staff, should be entitled to negotiate with the employer in fixing piecework rates. Each department shall elect a committee to act with the employer in fixing such rates. Every factory employing under sixty hands may fix upon a system of piecework rates, provided that such rates are submitted to the District Council, with representatives of the employers and employees in the industry. Three members on either side shall form a quorum.

(3) In the event of any dispute arising as to the rate of piecework for any operation or conditions, such dispute shall, if no agreement has been reached between the parties after the lapse of fourteen days, be referred to the District Council for settlement. The District Council's decision shall be final.

(4) That in the event of piecework being instituted in any factory this special Committee is of opinion that it should be worked throughout all departments.

(5) When piecework rates are fixed for any factory it shall be understood between the employers and the workers affected, that unless the individual earnings are increased by 10 per cent. above award rates after the lapse of three months, then the rates fixed by the award be reverted to. Every endeavour during the period of three months referred to shall be made, as between the employer and the department concerned, to adjust conditions so as to enable the 10 per cent. extra to be earned. Before such revision takes place either party may appeal to the District Council for a further trial or a review of the rates. The decision of the Council as to revision or to continuance of the old or new piecework rates shall be final. That it is recommended that the employer shall decide the point as to whether or not his employees shall be paid on the basis of award rates or on piecework.

(6) That these resolutions, after they have been submitted to the Government, and if this course is approved, be forwarded to the Conciliation Council.

We attach as Appendix C a report on payment by results of employees, and Appendix D, "Method of Application of Payment by Results System."

(g) Manufacturers' Inability to Specialize.

In many respects manufacturers adopt a policy of specialization, but this is usually possible only to a very limited extent. Most of the larger factories are apparently forced for various reasons to seek business in practically all types of leather footwear. Men's heavy wear and the smaller sizes of children's goods are usually excluded, but a number of the factories make both men's and women's shoes. Even where the production is limited to either men's or women's lines it is evidently not possible, in all but a very few instances, to restrict the output to a particular type or process.

The financial need for turnover during slack seasons, the necessity of holding the factory staff together throughout the year, and the general need for turnover to keep down overhead and sales costs, are probably the main reasons which have forced manufacturers to do a business in more than

one line of production. At the same time, it has been possible for a few businesses to carry on quite successfully with only one class of product. This applies more particularly to men's heavy wear and to women's light and cheap goods. Either as a direct result of this degree of specialization or for other reasons, the firms adopting this policy appear to have met with a much greater degree of success than is found in the industry as a whole.

Contrary to the view generally held, it is not entirely necessary that a business doing only one class of work shall have a large output. It is, of course, desirable that production should be sufficient to enable a plant of effective and economic size to be operated up to a reasonably full capacity, and we do not intend to deny in any degree the economies of large-scale production. At the same time, a degree of specialization does not, as mentioned above, necessarily involve anything approaching large-scale operations. The competition between local manufacturers as well as the competition from overseas has in recent years been such that manufacturers have been forced further away from the ideal of specialization. To state the matter another way, it may be said that reduced output and small-scale operations and the general effect of competition have been such as to deny to manufacturers either the economies of large-scale production or the benefits which might be expected from even a moderate degree of concentration on one or two classes of work.

We have discussed this matter not only with the object of bringing it forward for any possible remedial action, but also in an endeavour to state what we believe to be the manufacturers' difficulty in meeting a point of common criticism.

(h) Over-capitalization.

We have noted several instances in which manufacturers are in difficulty partly, at least, for the reason that overhead capital costs are excessive in relation to turnover. We cannot, however, discuss this matter without disclosing the identity of businesses which we might be held to have adversely criticized without the fullest knowledge of all circumstances, and we can at present say only that manufacturing businesses which are in this unfortunate position must to that extent be excluded from any consideration of the general depression in the industry. These firms have, in effect, a serious handicap peculiar to their own position and in no way directly related to the conditions of the industry generally. So far as individual firms are so placed, it is, of course, quite impossible for the industry or the State to take any steps towards effecting an improvement other than may arise from a general improvement in the output of local manufacturers.

(i) Factory Sites, Buildings, Machinery, Layout, and Organization.

Consideration of the suitability or otherwise of any factory is necessarily bound up in the question of the output the plant was designed for, the number of employees engaged, and the class of output to be manufactured.

Among the factories visited, we came to recognize those which may be termed "modern and up-to-date" and others in varying stages all the way down to those which at the best could be defined as "congested and very poor."

Similarly consideration of the process layout of machinery used, and the path materials have to travel, shows classes which may be classified as good, bad, and indifferent, so widely do the factories visited differ. We feel that there is room for very considerable detail study in many factories. Each factory, however, is a problem in itself, inasmuch as so many factors enter into any determination as to its operative efficiency or otherwise. Generally speaking, there is no doubt that the modern factories either do produce or could be made to produce at the minimum factory cost, provided such conditions as sufficiency of orders or sufficient percentage of "manufacturing" orders are met. We have to state, however, that even poorly-laid-out factories, with congested conditions, when they have a sufficiency of orders are evidently able to make profits under existing conditions. This leads to the conclusion that, while economies in factory production are factors worthy of study and consideration, they are not the principal element in the present condition of the industry in New Zealand.

A further investigation under this heading was considered essential, and Mr. Spidy, Superintendent of Railway Workshops, kindly consented to undertake the work, assisted by officers of his Department. One of the more efficient factories was selected. Detailed analysis of factory conditions and layout of factory were shown on a chart as they appeared at date of undertaking the analysis, together with a revised layout developed during the course of the investigation in co-operation with the boot-factory manager. It was admitted that the revised layout would effect some saving.

The Committee considers that the services of an industrial engineer should be secured by the Government. The need in the opinion of the Committee is very real, and if the right type of engineer is selected—one possessing wide experience of general layout of industrial plants—the results will be very beneficial, especially in increasing efficiency and reducing costs. In this connection the Committee would like to make the observation that after his inspection of the Dominion's industries in May, 1926, Sir H. Frank Heath, K.C.B., Secretary to the Department of Scientific and Industrial Research, London, reported as follows:—

> "I suggest that the Department of Industries and Commerce should include upon its staff two or more well-qualified field officers of technical training and experience—one, say, on the engineering side, the other on the chemical—whose duty it should be to study the secondary industries of the Dominion at first hand and keep the Secretary informed of their technical difficulties and successes. The powers entrusted to the Department under the Act are so wide that some provision of this kind appears to me to be desirable in any case. If the industries are to be assisted scientifically by the new body, which will have many other scientific responsibilities upon its shoulders, this strengthening of the staff of the Department of Industries and Commerce appears to me to be necessary."

The Committee fully endorses this recommendation, and feels sure that such an appointment to the staff of the Department of Industries and Commerce would not only be welcomed by the footwear industry, but would be greatly appreciated by manufacturers generally. Mr. Spidy's work has clearly and unquestionably demonstrated the value of the work that can be accomplished by an engineer possessing the requisite qualifications and experience. The cost to the State should not be great, as it is contemplated that for the services rendered to individual factories some fee could be charged. The engagement should be for a term of years—not exceeding four or five—and the salary should be adequate enough to attract a first-class officer.

Appendix E gives further information regarding factory layout and organization.

The number of operations and handlings that are entailed in the manufacture of a single pair of shoes is about two hundred—varying, of course, according to design and type. It is very evident that lack of continuity on all successive operations involves loss of time at each change, and consequently the average speed of operatives is reduced in many instances. The work of supervisors of departments is thus also necessarily confined to the distribution of work and to the control of the quality of the work done rather than to the output and efficiency of each operator. As before, the relatively small quantity in each order is basically responsible for these conditions in the factories.

With regard to the quality of the work done in New Zealand, we may say that we are in no doubt that the highest-quality work can be and is being done in certain factories. The demand from the retailer appears to be, however, the governing factor. There are as many different processes of manufacturing shoes of different classes as there are large factories, and, while the high-grade and generally branded product is a true high-grade product, other grades are made to meet the demand and the competition from abroad.

The majority of machines used in New Zealand factories are the product of the British United Shoe Machinery Co., Ltd. Most of the principal machines supplied by this company are on the leasing system. Some manufacturers complain that certain conditions imposed by some of the leases are harsh and detrimental to the industry. From inquiries made we are of the opinion that, while the terms are in some respects forbidding, the lessors do not in practice insist on the strict letter of the terms. No doubt there are objections, theoretical and other, to the tying clauses and to other features of the system, but the evidence obtained does not warrant the conclusion that in order to ensure the prosperity of the industry restrictive legislation should at present be introduced to deal with these leases.

Machinery conditions in all factories evidently depend on the viewpoints of the respective managers. We are advised by the managers of some factories that the rental system is uneconomic, and by others that it is considered a fair system. It would appear that, provided only sufficient machinery is obtained to meet the output requirements of any particular factory, no undue penalty would be felt under the rental system. When, however, machinery was installed to take care of a production 50 or 100 per cent. in excess of that now obtainable the load of expense due to idle machinery becomes a distinct burden. We consider in this connection that generally there is room for study with respect to each machine or group of machines regarding the supply of material to each machine, storage of semifinished material, posture of workers, lighting of job, and such allied questions.

Generally speaking, there is a great similarity in the organization of factories having approximately the same number of shoes output. The range of factories visited was sufficient to show that each manager relies largely on his personal knowledge of his orders, his men, and all matters in the factory to assure himself that he is in a condition of relative efficiency. Foremen of departments are almost invariably working foremen, and, while many of them are depended on entirely to check the output of each worker and his relative efficiency, it is a question worth considerable further study as to whether a special planning-clerk associated with the manager would not reveal a very considerable amount of lost time that need not be lost.

Very good " follow-up " systems were in operation in some factories, and a small number are considerably advanced with methods of planning ahead designed to assist the factory directly, instead of depending on foremen, or " chasing up " when deliveries are late. As stated before, a preliminary survey such as we made did not permit of final conclusions in this respect, but it is very evident that much could be done to improve factory efficiency in the matters of layout, processing, and organization.

(j) Manufacturing-costs.

During the course of the investigation into layout and organization of factories it was shown that a considerable difference resulted from costings obtained by time-study methods and those obtained by the existing costing system. The disparity was so marked that further inquiries were made to account for the difference, which in one case was only one-half of the usual cost under the established system. It was submitted that small orders rather than inefficient methods were the greatest contributing factor accounting for the discrepancy. Small orders necessitate constant change of machine parts, resulting in time lost on unproductive but necessary work. A detailed report on manufacturing-costs is submitted under Appendix F.

(k) Duties on Raw Materials and Supplies.

Our attention has been drawn by several manufacturers to the disadvantage in competing with overseas footwear which is said to arise from the Customs duties on certain materials used in the industry. These are admittedly minor matters, but, in so far as the industry is working on fine margins, the effect of these duties is not entirely devoid of importance.

Welting.—This material is classified under Item 203 of the tariff, and is therefore subject to duty at 25 per cent. *ad valorem* if of British origin or manufacture, and at 45 per cent. *ad valorem* if of foreign manufacture. We are advised that for trade reasons welting is usually imported from America,

and to a lesser extent from Australia and the United Kingdom. About 1 yard of welting is used in the manufacture of a pair of men's welted shoes, and the foreign duty of 45 per cent. on this material represents an added cost of approximately 2d. per pair of shoes. Welting is now being manufactured by local tanners, and the position as to their ability to supply the requisite quantities and quality at competitive prices is being further inquired into.

Stiffeners.—Under the tariff existing previous to the revision of last year stiffeners if moulded were free under Item 260, but if not moulded were dutiable (at 20 per cent. and 35 per cent.) as leather manufactures n.e.i. (Item 269). Under the existing tariff stiffeners, whether moulded or not, are dutiable under Item 203 at 25 per cent. British preferential tariff, and 45 per cent. general tariff. Many of the larger factories have apparently for years past made most, if not all, of their own requirements of stiffeners, and we are advised that just prior to the recent revision of the tariff the production of stiffeners for direct sale was commenced in the Dominion. We are advised also that some manufacturers are using the product of one factory, price and quality being quite satisfactory. The new duty of 25 per cent. on British stiffeners (an increase of 5 per cent. on stiffeners unmoulded and of 25 per cent. on those imported ready moulded) therefore gives protection to local industry.

Suede Leathers.—The duty on these leathers was reimposed by the tariff of last year, and, although suede leathers are not now in general use, several manufacturers have mentioned that they are affected by the duty on suede linings and white suede (or " nubuck ") used for uppers. Any alteration in this connection would involve substantial administrative difficulties (as in the past) in distinguishing between leathers which can and leathers which cannot properly be classed as suedes. As the matter is, under present conditions, of only minor importance to the industry, it does not appear that any step can reasonably be taken to remove again the duty on this general class of leather.

Distribution.

The difficulties and costs arising in respect of the marketing of manufacturers' products have received our careful consideration, and we propose now to refer to certain aspects of this subject.

(a) Selling Organization and Expenses.

One of the most striking features of the results of our inquiries has made reference to the high rate of expenses involved in the marketing of output.

Different sales systems have been adopted according to the opinions held by the different controlling interests. In cases where factories are owned or controlled by firms doing business in other goods the products are sold through branch warehouses throughout the Dominion. In at least one instance a warehouse sales policy is adopted, and in two cases the goods are sold through retail shops controlled by the manufacturing firms. In the great majority of instances, however, the products are sold by the factory direct to independent retailers throughout the Dominion or in a limited area. This sales contact is effected through salesmen employed by the factory, or through commission houses, or by a combination of both methods. By reason of these differing sales methods it is not possible to make any complete comparisons of the cost of marketing the factory outputs, and we have not, of course, been able to give sufficient time to an intensive study of these costs in many of the businesses in respect of which fair comparisons might be made. We have, however, been able to secure sufficient general information in respect of some firms to indicate quite clearly that the selling-cost has in recent years shown a distinct upward tendency. In general, too, it appears that this increase in selling-cost has been more particularly due to an absolute increase in the total sales expenses than to a decline in turnover. In particular, the item of travelling-expenses of salesmen (including salaries and commission) has shown, where definite figures are available, a very marked increase, and the general information given by manufacturers shows that in an endeavour to hold turnover every effort has been made (by increased sales staff and otherwise) to secure business. Relatively unprofitable districts have been worked, and orders which cannot properly be regarded as profitable have been accepted.

We have been surprised to learn the number of salesmen who are constantly employed seeking business, and the total financial burden on the industry must be extremely heavy. Travelling-expenses in relation to turnover in the case of several businesses have been remarkably high, and even where the cost on the whole turnover has not resulted in a particularly high average the figures for particular districts have clearly indicated a serious economic and trading cost. This apparently arises from a desire to maintain the total factory output, and from a hope that improvement in the unsatisfactory districts may gradually be manifested.

This matter of sales expense appears to be influenced in some degree by the wide range of styles and samples which manufacturers submit to retail houses. We have already referred to the multiplicity of designs placed on the market, and desire to mention the subject here again only for the purpose of indicating that the cost of this wide range of goods manifests itself not only in the factory cost, but also in the expenses of marketing.

(b) Bad Debts and Credit Cost.

It is clearly evident that in competition with overseas suppliers local manufacturers are at a substantial disadvantage in relation to the cost of credit given to retailers and in respect of bad debt risk. As a direct result of the competitive position of the trade, manufacturers in the Dominion are often forced to give comparatively long-term credit to retailers. This is usually effected by means of promissory notes for terms extending from one month upwards. It should be noted, too, that the ordinary trade terms allow for the granting of credit for some weeks. The cash discount of $3\frac{3}{4}$ per cent. is forfeited by the buyer if payment is not made by the 10th of the month following the month of delivery, and promissory notes almost invariably carry interest at a rate of about 7 per cent.

The granting of credit on bills or promissory notes, involving as it does the loss of discount and the payment of interest, appears to result in no direct loss or cost to the manufacturer, since the true total rate of interest or gain to the manufacturer is appreciably higher than the rate which the manufacturer must pay for bank accommodation. At the same time, it involves the manufacturer in a very considerable capital outlay, with consequent restriction of his financial position.

Imports of footwear obtained by retail houses through agents in the Dominion are normally paid for on arrival, and the retailer is often virtually financing his importations as a result of the credit given him by local manufacturers.

The most serious aspect of this general question, however, has reference to the bad-debt risk involved in the granting of extensive and extended credit. Under present circumstances manufacturers carry a serious stock risk both in relation to raw material and finished goods, and when that risk is extended to the goods on retailers' shelves the position becomes even worse. Both by reason of general trade depression and the frequent changes in fashions, stock risks run high. Retailers are undoubtedly unable to gauge with more than a moderate degree of success the "saleability" of the goods which they purchase, and overbuying and injudicious buying are doubtless evidenced by the frequent offerings to the public of "dead" stock. It seems unreasonable that manufacturers should be forced to accept, through extensive credit, a serious proportion of this retailer stock risk. Moreover, the local manufacturer carries in some degree the risk in respect not only of his own sales, but also of the overseas lines handled by his retailer clients, who, having paid promptly for imports, remain indebted only to the local manufacturing houses.

This risk of depreciation of retailers' stocks is, of course, borne in the first instance by the retailer himself, and up to the limit of the retailer's financial ability to meet his commitments the manufacturer is protected. Figures which we have secured from a number of factories show, however, that manufacturers are increasingly called upon to bear the losses arising from the insolvency of retailers. In almost all instances it appears that bad debts have increased from being a minor item in the profit and loss account to a position of major importance. Several manufacturers are writing off bad debts at a rate of 2½ per cent. on turnover averaging around 6d. per pair on the whole output.

(c) Insufficient Turnover.

We have already touched upon the general question of the extent of the business done by local manufacturers, and little needs to be said in regard to the improvement which could be confidently expected to follow from increased production and sale. Many factories are running well below a reasonably economic production, and none of the factories are securing output which at all approaches the reasonable plant-capacity. The influence of this fundamental fact is already seen both in production and marketing, and costs are undoubtedly much higher than would be realized if output and sales could be appreciably increased. The constant endeavour to secure a higher turnover has led to some very unhealthy features in the trade, and business of an undesirable character is not only accepted but is eagerly sought after at high cost. The retail trader is in a position to impose upon manufacturers almost any condition he chooses in relation to designs, sizes of orders, and conditions of payment, and as a consequence the manufacturing industry, through both internal and external competition, finds difficulty in improving its general status.

An immediate improvement to the industry would be experienced by the retailer deciding to give reasonable support to the local manufacturer. Some retailers who definitely give support to locally-made footwear state that the financial results obtained, combined with the diminution of risks of depreciated and unsaleable stocks, justify this policy.

Conclusion.

The report presented herewith has dealt principally with the manufacturing or producing side of the industry, and to some extent with the difficulties of distribution. There remains a further and final report to be prepared on the distributing side, dealing more particularly with the sales policy adopted by distributors towards New Zealand footwear. Joint conferences of manufacturers and retailers, with representation from the Committee, could well be held in various centres for the discussion of the difficulties of both parties, for the elimination of uneconomic costs, and for the development of co-operation and good will between the manufacturing and selling interests.

In our opinion, the present causes of depression in the industry may be summarized as follows:—

(*a*) Unsatisfactory quantity output of factories as related to machinery and facilities.
(*b*) Multiplicity of designs of footwear manufactured in individual factories and manufacturers' present inability to specialize.
(*c*) Competition from overseas in footwear which could readily and economically be manufactured in the Dominion.
(*d*) Vagaries in taste and changes of fashion of women's footwear (a world problem).
(*e*) Apparent lack of cohesion and initiative among manufacturers, and failure on their part to discuss frankly and freely the problems and difficulties surrounding the production and marketing of footwear.
(*f*) Lack of co-operation in dealing with marketing problems.
(*g*) High cost of distribution from factory to consumer.
(*h*) Non-flexibility of present labour conditions.
(*i*) Lack of sustained national propaganda to assist sales and create good will towards local industry.
(*j*) Unsatisfactory layouts of plant and equipment and general planning of factories.
(*k*) Lack of satisfactory costing system.
(*l*) Inadequate control by management over factory operations.

All these matters have been discussed in the preceding chapters of this report. In their summarized form they may appear to be a serious indictment of the industry as a whole. The Committee, however, is of the opinion that, speaking in general terms, there is, in the circumstances, more to commend than to condemn, and that those engaged in the industry deserve praise for their past and present endeavours to develop the industry in face of extraordinary and frequent changing conditions.

It is undoubted that the footwear manufactured in the Dominion has reached a high standard of quality, and that the manufacturers quickly adapt themselves to changes. The industry is one of the oldest established in the Dominion, and to the official members of the Committee the history of the trade reads almost like an epic story. Some notable successes have been achieved, but there can be no doubt that the majority have suffered severe buffetings, and have carried on year after year, gaining profits for a time and then suffering losses. The same inquiry as has been conducted in New Zealand would probably reveal similar conditions in other manufacturing countries. Neither the manufacturers nor the workers should, therefore, regard this report as a reflection on the industry, but rather treat it, as it is intended to be, as a series of constructive suggestions for the betterment of the industry as a whole.

Briefly summarized, the recommendations for the improvement of the industry are as follows :—

(*a*) That " payment by results " systems be installed in factories to reduce unit labour costs :
(*b*) That factory layouts be analytically studied, and machinery and equipment rearranged to reduce lost motions between operations to a minimum :
(*c*) That routing of orders by a planning-clerk be established in factories in order to deliver work in correct sequence at least cost :
(*d*) That the method of settling local differences between employers and employees should be improved as suggested :
(*e*) That accurate detail costing of work is essential for manufacturing purposes, and that such methods should be installed :
(*f*) That an experienced consulting management engineer be made available to those in the industry and other industries as recommended :
(*g*) That, on account of the small size of New Zealand factories as compared with their overseas competitors, the question of amalgamation in respect of the small-order question and multiplicity of design be considered :
(*h*) That, as will be shown below, certain manufacturers having been able to operate on a satisfactory paying basis by disposing of their products through retail shops which they control or mainly supply, it is suggested that the question of co-operative action between manufacturers be considered with a view to the reduction of marketing and distribution expenses :
(*i*) Co-operative action between New Zealand manufacturers in the establishment of a purchasing centre for materials would reduce stocks of materials, particularly foreign leathers that now frequently become dead stock :
(*j*) That the question of manufacturers retailing their own products is indicated as a means of meeting competition from overseas products.

In addition to the above recommendations, the members of the Committee other than the official members unanimously adopted the following resolution :—

> " That the recommendations made above in this report cannot be effective without the safeguard of additional Customs tariff of 5 per cent. for a period of five years. The granting of this increased tariff would, it is felt, enable the manufacturers to adopt the recommendations by giving them the necessary increased output, and, furthermore, would enable footwear made in New Zealand to be sold without increase in prices."

Supporting this resolution, the employers and employees representatives submitted a statement commenting on the above recommendations for the improvement of the industry, and this statement has been included on the following page. The official members of the Committee decided that they would prefer to disassociate themselves from this policy matter, feeling that unless a special instruction were given by the Government they were not entitled to express an opinion. The official members, however, feel and have so informed their colleagues on the Committee, that the recommendations outlined above for the betterment of the industry should receive the full and careful consideration of both employers and employees. It has been demonstrated that considerable success has been achieved in at least two instances where boot-manufacturers have adopted a policy of disposing of their productions through retail shops which they control or mainly supply ; in another case a manufacturer has reduced his costs and consequently increased his output by the adoption of piecework.

We have the honour to be,
Sir,
Your obedient servants,

A. Trenwith	C. A. Watts	J. W. Collins (Chairman)
E. T. Arnott	J. W. Moore	Geo. Craig
H. Duckworth	F. M. Robson	E. Marsden
J. R. Luff	F. Jones	E. T. Spidy
(Manufacturers' representatives.)	*(Employees' representatives.)*	F. Johnson (Secretary).
		(Official Government representatives.)

STATEMENT SUBMITTED BY EMPLOYERS AND EMPLOYEES REPRESENTATIVES.

Resolution.	Comment by Trade Members.
1. The adoption of improved lay-out.	To carry out this resolution must entail expenditure and does not give any guarantee of increased orders, and the depression in the industry has left the manufacturer in the position that he cannot meet the added cost.
2. Changes in system which will enable specialization to a greater degree.	The lack of orders has compelled the manufacturer to accept any small line that the retailer chooses to offer. (Retailers state they are able to buy as required and save being burdened with stock.)
3. The adoption of production-control.	This, with Schedule, obviously entails increased clerical staff and overhead charges, and, given sufficient orders to enable full time to be worked, we believe can be worked efficiently.
4. The elimination of time lost cutting small orders.	See comment on No. 2, "Depression has allowed the control to remain in the hands of the retailer."
5. The elimination of waste in materials due to small range in sizes.	See comments on Nos. 2 and 4.
6. The reduction of high selling-cost per pair.	The condition of the industry has been such that manufacturers have been required to go after the smallest orders, and this can only be remedied by increased Customs duty.
7. The reduction of higher operation cost of rented machines.	Small orders entail continuous change and adjustment of machines. It is a common practice for the operator to be required to stop work on a line of goods and to have to change his adjustment in order to oblige the call of a customer. Small orders necessitate continuous change.
8. The adoption of piecework by co-operation of the manufacturer and operative.	Piecework efficiency demands adequate flow of work at rates which will ensure the operative a fair return for his exertion and continuity of employment. The operatives will not agree to intermittent piecework, and in order to obtain the reduction in cost suggested in Mr. Spidy's report (Appendix D) it is considered essential that quantity orders be the rule in the factory.

The resolutions all call for additional effort and expenditure on the part of the manufacturer, and in order to give effect to such resolutions it is essential that a period of time be allowed which might be termed the experimental stage, and it is the unaminous opinion of the members of the Committee other than the official members that such experimental period cannot be undertaken without the safeguard of additional tariff or restriction of imports of boots and shoes, and the improvements suggested cannot possibly be undertaken unless factories are operating to full capacity, and to be in this position they must have considerable extra business than they are getting to-day.

APPENDICES.

APPENDIX A.

NEW ZEALAND BOOT AND SHOE FACTORIES: PRODUCTION STATISTICS.

	Years ended 31st March,					
	1911.	1916.	1925.	1926.	1927.	1928.
Number of establishments	74	166*	81	81	81	81
Number of employees	2,072	2,257	2,475	2,541	2,376	2,338
Salaries and wages paid .. £	197,793	238,831	408,422	428,940	412,979	405,443
Materials used—						
Leather manufactured in Dominion £	334,880	441,292	309,414	306,246	291,776	311,850
Leather imported .. £			209,100	186,164	174,487	169,853
Other articles purchased .. £			78,858	97,504	100,235	83,547
Total cost of materials used £	334,880	441,292	597,372	589,914	566,498	565,250
Products.						
Boots and shoes—						
Pairs	1,324,477	1,332,929	1,372,777	1,363,690	1,317,362	1,311,665
Value .. .. .. £	571,640	714,607	1,181,122	1,149,191	1,100,963	1,065,830†
Slippers—						
Pairs	68,040	58,560	18,965	14,850	8,659	7,922
Value .. .. .. £	14,769	13,278	6,138	5,442	3,276	2,864
Shoettes—						
Pairs	98,644	79,977	34,085	42,833	79,811	134,351
Value .. .. .. £	11,538	15,265	9,275	11,808	36,670	66,960
Uppers for sale—						
Pairs	17,464	7,400	1,934	1,928	1,896	2,155
Value .. .. .. £	6,925	3,936	1,381	1,330	1,141	1,514
Leggings—						
Pairs	2,279	425	158	225	26,264	31,069
Value .. .. .. £	777	144	239	171		
Other products—Value .. £	14,224	54,342	27,543	29,843		
Totals, all products—Value £	619,873	801,572	1,225,698	1,197,785	1,168,314	1,168,737

* 111 individual. † 16s. 3d. per pair.

APPENDIX B.

REPORT ON MANUFACTURING CONDITIONS.

(Return prepared by E. T. SPIDY.)

The investigation made into the cost of manufacturing footwear in New Zealand shows that there is a marked difference in the conditions under which manufacturing is carried on in New Zealand as compared with that obtaining in England, both in regard to the classification of the labour employed and the wages paid, which operate in favour of the English manufacturer.

In order to show the differences the following statement has been prepared. Owing to the fact that no official Year-book was available showing English working-conditions, some difficulty has been experienced in drawing up the statement. Information has, however, been obtained from members in the trade who have worked in English factories, and from checks made I am satisfied the information shown is reliable.

Comparisons between New Zealand and English Conditions.

1. *Weekly Hours.*—

New Zealand: The regular hours for all employees are forty-four per week.

England: Forty-eight hours per week.

2. *Weekly Wages.*—

New Zealand: The rates of wages are fixed by the Arbitration Court, and apply to all factories. The minimum weekly rates are £4 8s. 11d. for journeymen and £2 10s. for journeywomen.

England: Weekly-wage rates are not uniform throughout England. District agreements are arranged between the Manufacturers' Federation and the employee unions. Many of the manufacturers outside the cities are not in the federation, and they make their own wage agreements with their employees. Rates paid to adults in the cities are as follows: Males, £2 12s. 6d. minimum; females, £1 12s. 6d. minimum.

3. *Basis of Payment.*—

New Zealand: With very few exceptions employees are paid on a weekly-wage basis.

England: With very few exceptions employees are paid on a piecework basis. It is established that all workers on piecework must receive at least 10 per cent. more than the recognized minimum weekly rates.

4. *Tradesmen (Definition).*—

New Zealand: Any worker who has been employed five years clicking or has operated a machine for that length of time, even though they have not been apprenticed, are treated as tradesmen.

England: It is not the practice now to apprentice lads to the boot and shoe industry. Special instruction classes for workers in the industry are provided by the technical schools, and the workers get the groundwork of their trade work at these classes, and qualify to be regarded as tradesmen by working through one of the main departments of the factory.

5. *Apprentices.*—

New Zealand: All apprentices are indentured. The Arbitration Court award has fixed the maximum number that may be employed as one apprentice to every three tradesmen or fraction of three.

England: Apprentices are not bound, and there is no restriction as to the number that may be employed in any factory.

6. *Cutting Linings, &c.*—

New Zealand: This class of work is done by clickers and apprentice clickers. As one apprentice cutting linings, &c., cannot keep pace with three clickers cutting outside materials, part of the linings, &c., have to be cut by tradesmen.

England: Linings, &c., are cut by boy labour.

7. *Boy Labour.*—

New Zealand: The employment of boys is definitely restricted by the award to a few specified operations and unimportant duties.

England: With the exception that some machines must not be operated by youths under eighteen years of age, there are no restrictions as to the number of boys that may be employed in the factory or the work they may do. It has been stated that in some factories away from the cities (apart from clickers) the majority of the staff are boys and girls.

8. *Paid Holidays.*—

New Zealand: Adult workers.—No payment for holidays. Journeywomen.—The Court award provides that after five years' services they are entitled to eight paid holidays per year calculated at the individuals weekly-wage rate. Female assistants (juniors).—Receive eight paid holidays per year and in addition receive full pay for all working-days the factories are closed. Apprentices.—Same conditions regarding holidays as female assistants.

England: In those districts where the workers have a working agreement with the Manufacturers' Federation holiday-payment funds are established. The employer and the worker each contribute the same amount to the fund at the following rates: Male workers, 1s. 2d. per week for forty-eight weeks; female workers, 8d. per week for forty-eight weeks. When factories are closed the workers receive from the fund amounts as shown hereunder:—

	Male Workers. £ s. d.	Female Workers. £ s. d.
Easter holidays (three days)	0 16 0	0 12 0
Whitsuntide holidays (three days)	0 16 0	0 12 0
August bank holidays (one week)	2 0 0	1 0 0
Christmas holidays (one week)	2 0 0	1 0 0
Total payment	£5 12 0	£3 4 0

9. *Overtime Rates.*—

New Zealand: The award stipulates that the first four hours overtime worked in any week shall be paid for at time and a half and any further overtime at double rates.

England: For ordinary overtime payment is made at time and a quarter. Time worked on Saturday afternoons and Sundays is paid at double rates.

10. *Overtime Exceptions.*—

New Zealand: No latitude allowed under New Zealand awards.

England: Time in excess of regular shop hours can be worked at ordinary day rates to make up time lost by operatives absent on account of sickness. Similarly, extra time may be worked at ordinary rates for periods not exceeding two weeks before and two weeks after Easter, Whitsuntide, August bank holidays, and Christmas to overtake accumulation of orders.

11. *Range of Work undertaken.*—

New Zealand: The majority of the factories undertake all classes of work in the same factory—that is, men's, women's, or children's.

England: The main factories specialize in one class of work, there being separate factories for men's, women's, and children's wear.

12. *Materials.*—

New Zealand: All fancy lines, and particularly kid leathers, for uppers have to be imported, as they are not made in New Zealand. Very few items are stocked by New Zealand warehousemen, and consequently the boot and shoe manufacturers have to anticipate requirements and place bulk orders four months before required, with little knowledge how shades will take on.

England: Boot-manufacturers can obtain supplies direct from warehousemen or makers as required, with no risk of having unfashionable materials left over at the end of the season. Being close to source of supply, they can bargain for a cut in price below the ruling rates for regular lines when large making orders are received by the factory.

13. *Disputes.*—

New Zealand: Wage disputes and working-conditions are settled by the Arbitration Court.

England: Disputes regarding piecework rates are settled by the District Councils in those districts where they are established.

A study of these comparisons bears out the contention of the manufacturers in New Zealand to us in our preliminary investigation in regard to the non-flexibility of labour dealt with in that report to the Committee. Quite apart from the fact that the English conditions apply to an industry that has twice as many factories in one town as contained in the whole of New Zealand, which in itself is an economic factor of the greatest value to England, the point cannot be overlooked that the shoe operatives' unions recognize the necessity of meeting the manufacturers' difficulties, brought about by fluctuations in orders received, by recognizing the necessity of keeping manufacturing-costs constant, and permitting some latitude in shop hours to meet holiday conditions and seasonal peak loads. In New Zealand the overtime-payment conditions are such as to prevent the manufacturers from obtaining any monetary benefit when seasonal rushes come that would normally provide an offset for the quiet periods, for which there appears no remedy. Again, the unrestricted employment of juniors, youths, and girls is an important advantage to English manufacturers. Were it possible for such conditions to obtain in New Zealand, the manufacturers here, in my opinion, would undoubtedly be better able to meet competition, and an avenue of employment for more youths and girls would result. It would be contended that this might increase adult unemployment in the country; but if it results in lower manufacturing-costs the reverse might quite logically result, by its being a means of securing more of the orders now placed overseas.

It would be a useful tabulation if it were possible to place an exact value on the various differences in conditions in New Zealand and England. All in the trade will appreciate that on account of the different styles, different methods of manufacture, and different sources and kinds of material each figure given would be subject to variation on the different kinds mentioned. During the investigation considerable cost data was collected, from which the following figures are extracted solely to give an idea of the relative positions:—

The wages rate per hour in New Zealand obtained by taking the minimum weekly rate and dividing it by 44 is 24·2d. per hour.

The comparative English rate divided by 48 works out to 13·1d. per hour, indicating that the New Zealand rate is 85 per cent. higher than the English rate.

By reason of being on piecework the English wage-earner would earn an average of 20 per cent. on his wages.

On account of specialized production on large-quantity orders, as obtains in England, the English manufacturer has an advantage of at least 10 per cent. over the New Zealand manufacturer on his labour cost.

On account of adopting good planning methods and having a better lay out in consequence, the English manufacturer has a further advantage which would amount to at least 5 per cent. on his labour costs.

It is obvious from the foregoing that the New Zealand manufacturer has a different set of conditions to contend with, many items of which are business conditions beyond his control at present. On the other hand, the labour conditions in New Zealand are not nearly so flexible as obtain in England, and the operators being treated as one class, with one minimum weekly rate, contributes to higher costs.

APPENDIX C.

PAYMENTS BY RESULTS: SOME CONSIDERATION AS TO THE SYSTEM TO BE ADOPTED.

By E. T. SPIDY.

While it is perhaps unnecessary to state the reasons for any system of payments by results, it clears the situation definitely to do so, because in all matters where the relations between employers and employees are concerned, if clear-cut methods and frankness do not exist, distrust and failure of the principles eventually result.

The necessity from the employers' point of view is summed up by the phrases "To reduce labour costs," "To enable competitive priced goods to be made," "To enable wages to be raised without increasing the cost of the product."

From the employees' point of view the individual workers who get increased earnings, provided a fair system is in operation, are in favour of such systems. Organizations in New Zealand usually oppose such systems on brotherhood or average-worker principles, which, unfortunately, do not follow economic laws.

If both sides mutually agree in the first place, the process of establishing such a system is not only materially assisted, but will accomplish much more in the way of results to both sides. It is desirable then first to get the support of employees, if possible, before starting, to get them to come in on the rate-setting, and for them to thoroughly understand all about the system.

The next question is, " What system is most suited to the industry ? " There are many systems in use these days, each of which has been developed to obviate certain evils that have put piecework, as practised years ago, into disrepute. The principal reason for the disrepute of piecework was the practice of rate-cutting, as is well known, and consequent sweat-shop conditions. Piecework can and is, however, worked quite successfully and fairly to-day under modern conditions, because the methods of rate-setting have become a matter of analytical investigation, not a matter based on previous records or past experience or judgment, which has so often proved to be at fault.

Rate-setting, however, is the difficulty that determines which system is most suitable. Rate-setting, done analytically, takes time, and where the operations vary and changes are many the rates cannot accurately be set before the job is started, and this is a most necessary condition in a payment-by-results system. Briefly, under piecework, if a rate is set inaccurately, either up or down, the worker receives more than he is entitled to or else less than he ought—both conditions being wrong and unsatisfactory. If rates are accurately set, with the usual provisions of the Act providing a guaranteed basic day-wage minimum, with the employer's guarantee that rates will not be cut, the employee is assured a fair deal and can earn according to his skill.

This rate-setting difficulty, which is a real one for all employers—and employers have come to realize that discontent in the factory costs them money—has led to the development of so-called premium or bonus system. Unfortunately, in New Zealand these systems appear to be little known, and therein lies an initial difficulty because the workers claim their wages are reduced, without having regard to the fact that they are getting the benefit of a system that is giving them a fair return for their labour.

The principle of premium or bonus systems is that a definite amount of work is assigned a definite time allowance. For every hour the worker can shorten this time a premium or bonus of 50 per cent. of that time at his hourly rate is paid additional to his regular pay. At this point, it might be added, there are many different systems of arranging the bonus payments—some increasing the percentage as the output increases, some with extra bonuses for extra high output, and so on. The difference between all such systems and piecework is that, whereas in piecework the wages cost per piece is the same to the employer, under premium or bonus the cost becomes gradually lower as the output increases, and the rate of earnings to the worker is not so high as under piecework.

Now, here is the important point. Because of this factor—that the cost is going down and the workers earnings do not so quickly become excessive (by " excessive " is meant excessive on account of the rate being wrongly set)—the employer can set with more confidence his rates, do it quickly, and not be worried by reason of wrongly-set rates.

From every one's point of view, except perhaps the employer himself, it would appear that rates ought to be able to be set accurately ; but from actual experience and years of analytical study of all the details it has been proved that neither workers know what they are capable of doing under corrected conditions, nor do employers realize the possibilities of their plant and men and the losses that are daily taken as part of the regular costs.

From the foregoing it is recommended that, whatever system is adopted, analytical rate-setting must first be taken in hand. This entails a detail study of all operations, reduced to elemental details in order to sift the necessary from the unnecessary operations at each stage of the processes. It may be found that once these elemental operations are correctly rated, and where conditions at each machine or point are brought up to a state of efficiency as to be considered right, the piecework systems would be favoured. Rates should not, however, be figured from the cost-books ; they may be checked from such as a means of understanding their relative value, but rates should always be set from the operations themselves. Not only is this the only way the worker can measure his output, but it is the only way to get uniformity in rate of work. The development of the office organization to check and pay the bonus earned presents no difficulties, whatever system be adopted.

APPENDIX D.

Method of Application of Payment-by-results System.

By E. T. Spidy.

Further to my previous report on payment-by-results system : The installation of a payment-by-results system in any factory is a procedure that requires to be done very carefully and according to a definite programme of progress. For the benefit of those that have no experience to guide them in this connection and who contemplate installing such a system, the following steps are suggested as practical lines on which to work :—

1. Decide which system is to be installed—whether piecework or premium.

From my knowledge of the shoe industry in New Zealand, on account of its small orders, I am convinced the premium system is most adaptable. On the other hand, it is only fair to state that piecework, properly applied, can be made to meet the situation ; and, additionally, there are established piecework rates in England that have been established by years of experience in their national agreements that are available to New Zealand manufacturers, and that country, being the competitive factor chiefly concerning New Zealand manufacturers, thus provides a valuable comparative set of rates in establishing piecework rates in New Zealand. Under the premium system all rates are in terms of time (so-many minutes per dozen pairs), and under the piecework system all rates are in terms

of money (so-many pence per dozen pairs). I shall proceed on the assumption that the piecework system is being installed, and then later on deal with the differences between that and the premium system.

2. Tabulate all the different processes used in your factory. It will be obvious that a separate set of prices is required to cover different classes of footwear manufactured, but no attempt should be made initially to group operations that appear to be similar. Later, when detail prices are proved, price schedules may be possibly condensed.

3. Tabulate every detail operation in each process employed in the factory. In doing this take the clicking, machinery press-room, making, finishing, dressing, and packing departments one at a time. Next make a detailed list of all the operations under each process in each department. These detail operations should be the smallest practical individual units that can be clearly defined.

4. Identify every detail operation by giving each a number or symbol that cannot possibly conflict with any other figure used either on this system or for any other purpose in the factory. A straight-out numerical system is as simple as any. As new styles are issued the numbers go up, and as styles go out certain numbers become obsolete. The numbers can be kept small, however, by prefixing the operation number with a letter, the letter representing a certain pattern or process. The means is not important, but having a clear identification of every price is very important, because every employee or piece-worker will record his output and you must be able to check positively with him any point that concerns his wages or earnings.

5. Determine the net time required for all detail operations. To do this the time-study method is the proper one, by reason that the majority of the many detail operations in the shoe industry are of relatively small duration, and are essentially repetitionary. In New Zealand trained time-study men most probably are not available, so the next best plan is for the factory-manager to select a man and train him as a rate-setter, or, alternatively, develop in each departmental foreman the methods of rate-setting.

The selection of a man as a rate-setter is one of the most important decisions ever made in a factory. He must be enthusiastic, studious, keen, capable of doing the work himself, and be mentally balanced to do the right thing by employees and employers and keep the respect of both. This is a high standard to expect, but it is necessary to have it. Successful working of any payment-by-results system means to the worker high wages and to the manager low costs.

Time-study work is really a stop-watch method, although not necessarily so. It requires that rate-setter (as I will now refer to this man) will study each operation separately as many times as is necessary to find out what is the minimum actual time required to perform every detail operation. He records on a simple form every study made, the "floor-to-floor" time of each operation, noting all elemental operations, irrespective of the number of pairs in the order. These elemental operations, such as "pick up shoe" and "set in machine" "adjust machine," "operate machine," "remove shoe," "replace in rack," will be recorded many times and subjected individually to a study as to necessary or unnecessary movements, accessibility of materials used, method of passing on, time spent sorting or getting, and so on, with a view to eliminating unnecessary actions and of improving any detail section of the operation.

When the minimum actual time is determined, then allowances for handling that the operator is required to do between jobs, allowance for personal comfort, &c., are added, usually in the form of a percentage. Each industry on its own peculiarities usually arrives at a figure up to 20 per cent. on this account. Finally, for doing the work at this rate the operator's piecework bonus is added to the previous figures. This, if done on a proper time-study basis, may be from 15 to 25 per cent. additional. The figure is higher as the fatigue factor comes into account. When piece rates are not time-study set, the allowances are usually less, because the rate-setter cannot have the confidence in his rates.

You will note that all rate-setting by time-study method must be done in times which need no conversion to money for premium working, but which for piecework must now be converted to money at the operator's own rate in order to give him a price on each operation.

Experience counts greatly on rate-setting work. The rate-setter becomes very expert in time. He gets to know every machine, each operator, and the materials, and when his data is complete he is finally able to set all new rates from the sample and specification with an accuracy that at first would seem impossible.

Before leaving this rate-setting question I would like to add a word of warning. This analytical method of rate-setting is a job for a serious man. It has been the means of revolutionizing manufacturing methods in all industries, and, conversely, has put those manufacturers who "know all about their costs," who "don't need new-fangled methods," into the second or last place in their industry.

To continue: It will be seen that considerable work has to be done in a factory that has heretofore not operated on piecework before any real start can be made. As the work develops, however, the totals for each pattern can be summarized, and a comparison is thus possible with other costings, so that at no stage is there a position of doubt as to actual results.

6. Get rates as determined agreed to by employees. Initially it is to be expected that the employees will not be able to assist, one way or the other, in accepting rates. Rates will appear too low, naturally, and an appeal for a fair trial and promise of a fair deal will have to be made. This at first will be difficult—it always is—by reason that there is a distinct difference in the speed of a piecework shop and a day-work shop. Time and patience will have to be expended in getting things right, in removing the causes of delays, which the operators will be bound to complain of. The only course for a manager to pursue is to be open and frank with the men, to explain how the rates are arrived at, and to appeal to them for their co-operative action. If you get it loyally, then their progress as well as that of the factory is assured. Eventually, from past experience, the men will thoroughly understand the process and method of the system and want to work no other way.

Whether the rates are submitted to an elected steward of each department or a committee as a whole from the shops matters little, so long as they have an opportunity to discuss with the management each schedule of prices as made. When preliminary arrangements are made, a method of handling future schedules and of handling complaints is soon developed. The award at present requires the agreement of operators with the management on price schedules, and it is a good system, too.

7. The method of issuing piecework jobs to the factory can be arranged in a number of different ways, depending on the clerical and accounting methods at present in use. It is desirable, if possible, to superimpose the new system without disturbing the routine and office-work. The condition to be met is that each operator must be given his work clearly defined, and the price he is to get for doing that work. One method is for each departmental foreman to be supplied with the complete schedule of prices for all operations in his department, and as he gives work out or assigns it he issues independent piecework dockets for each operation, giving the necessary identification and price of that operation. The operator keeps the docket as his check of his work, and enters on his daily sheet his output against order numbers or operation numbers, which is checked and passed by the foreman before sending to accountant.

Another method is for the office, in addition to attaching the usual order and instruction tag that accompanies each order, also to attach piecework tags which contain the complete piecework schedule of prices. These piecework tags are perforated between each operation, and as each operation is done the operator tears off the slip corresponding to the operations he has performed and turns these slips in weekly with his output sheet. In this case the operator will make a record of the slips for his own use, and the foreman only needs to check the work for quality and to distribute the work ahead of each operator expeditiously. This is the simpler system, and entails least work to departmental foreman, which is a desirable feature.

For the first few months at least (permanently would be most desirable) each operator, in addition to putting his shop number or name on the back of each slip, should enter his starting and finishing time. This enables the office to locate all operations on which no bonus has been made. For various reasons—machines not working right, material difficulties, trouble with findings, or incorrectly-set rates—it is essential that the actual cost should be able to be traced, with a view to accounting for same and for rectification. This may be dispensed with when everything is operating on a satisfactory basis, but it is essential in starting off and when first orders of a new pattern are put through.

8. The office end of accounting and paying needs no comment. Existing cost-cards can be filled in from summaries of piecework dockets. Wages paid can be summarized alongside the guaranteed basic wages, so that earnings can be seen progressively. It is essential that bonuses are earned, and the investigation into lack of earnings is most necessary.

9. Additional bonus for savings in materials can be arranged simply where it is desired to do so. It has been contended in some factories that the value of the material being cut by clickers is very greatly in excess of the labour value. This factor makes it desirable that the piecework price should include a footage factor in order that an added incentive to conserve material is obtained. To do this, with each clicker's ticket should be added the allowed footage for the number of pairs in each order. The bonus price should be arranged on a basis of the number of square feet saved, the price being either so-much per foot, based on the value of the skins, or it may be a straight-out agreed-upon amount per foot, covering the whole week's output.

Different factories will meet this situation without difficulty directly they are able to define the value of materials being used. Consider a saving of from 5 to 10 per cent. possible in fancy upper leathers. Ascertain what this saving is worth to you if attained by careful clicking, then determine what percentage of this saving you can set as a bonus, additional to clicking rate, in order to ensure the operator's interest.

10. The question of paying departmental foremen a bonus is recommended for consideration in factories where the foreman is not a factor in the setting of rates. It depends on the size of the factory and what you pay your foreman as to what this factor is worth, but you must avoid having foremen who get less money than is earned by the men or women in their departments. This becomes a sore point, often suffered in silence, and the remedy to stimulate interest and sense of fairness is to allow the foreman a weekly bonus, based usually on the average earnings of his whole department.

11. Rejections and repairs are not paid for, and a careful record needs to be kept of all defective work done, in order that the desired standard of work as required is maintained. Naturally, on a piecework basis a more rigid inspection during the progress of the operation is necessary, and this is the foreman's duty in allocating work.

12. The difference between premium-system working and piecework system as described in the foregoing is in the rate-setting. In paragraph 5 the method of determining operation actual base times was given, and under piecework it will be seen that 20 per cent. was finally added to this time as the piecework bonus. Under premium (fifty-fifty base) exactly double this percentage is added—that is, 40 per cent. instead of 20 per cent. is added—and this time is given to the operator, without conversion to money, as the "allowed time" for that operation.

The issuing of dockets and recording of works is the same under either system, with just this difference in the final accounting: For each operator all the "allowed time" dockets issued are totalled, and from this total is subtracted the actual number of hours the operator has worked. This gives what is termed the "number of hours saved" for the week. The number of hours saved is divided by two, and the operator is thus paid as a bonus half the total hours saved, at his own hourly rate.

From this it is seen that in the rate-setting 50 per cent. additional time is added to the allowed time and 50 per cent. deducted from the time saved. At first glance this appears superficial, but it is not so. Mathematically it results in a more gradual rate of increasing earnings and a gradual reduction in the net cost per unit after the 20 per cent. calculated bonus is attained. It also permits

bonus earnings to be made for less output than under piecework, thus creating greater incentive to less expert operators to earn bonus. It also permits greater tolerance to the rate-setter in setting rates, which factor in practice is a very necessary one where continued changes in patterns and small orders are to be contended with.

Concluding this section, I wish to point out that a study of the foregoing by the factory-manager with his principal foreman and men should be made first of all. The co-operation of all concerned is a valuable factor if it can be obtained voluntarily. The reduction of labour costs to be attained should easily reach 10 per cent.; more likely it will by proper co-ordinated effort reach 20 per cent. In New Zealand the objective is not to reduce staff, but to capture the market now in the hands of those who have already adopted similar methods to those contained in the foregoing.

APPENDIX E.

REPORT ON DETAIL STUDY INTO FACTORY BUILDINGS, MACHINERY, LAYOUT, AND ORGANIZATION.

By E. T. SPIDY.

Before going into details it is necessary to state that this detail study has been made chiefly in a factory which was classed as being among the best and most modern in New Zealand at the present time. As stated in the report, we came to recognize "modern and up-to-date" factories, grading down to those classified as "congested and poor" from the point of view of machinery, layout, &c. It obviously serves a useful purpose for only the "best" to be analysed, if any deduction therefrom is to have value in stating the position in New Zealand.

In making an analysis of a factory in all its details it becomes necessary first to pull it to pieces, as it were, for the purpose of analysis, and then to reconstruct it, so as to show that there is some advantage gained by so doing. All changes involve expense to some degree, and before any factory-manager can be expected to spend money he requires to be convinced he will get an adequate return for his expenditure. I am pleased to add here that at the factories that I have dealt with in this connection every assistance has been given me in all cases, and I feel assured that good results will in due course repay the time expended.

Factory Buildings, Machinery, and Layouts.

Dealing with factory buildings, machinery, and layout, in the first place an analysis of the whole actual processes employed requires to be made. Plans of each department were prepared, and all equipment and accessory machinery laid in to scale in its present position. Following this, routing diagrams were prepared to enable the sequence of operations on each of the different classes of shoes produced to be followed. These routing diagrams were then traced on the layout of each department, so that the course each order actually took was clearly indicated. It will be understood that these actual plans cannot be produced, as they represent the intimate details of factory departments of individual factories. They have, however, been studied by the official members of the Committee and the factory-managers concerned can vouch for their accuracy. The deductions from all the plans made showed that in all cases layouts could be improved.

Following this, new plans were prepared showing all machinery and equipment in rearranged sequence, giving the minimum movement of shoe-racks between operations. In a factory making shoes under several different processes (as the majority of New Zealand factories do) it becomes necessary to plan the layout to suit all the processes, in order to avoid duplication of machinery and in order to get the maximum use of each machine. These plans were completed with the assistance of the factory-manager and his staff, and resulted in a revised and satisfactory rearrangement.

With regard to buildings, it has to be taken into account when analysing any industry that ideal conditions would almost invariably demand a new building. This, for economic reasons, is almost impossible to get. Therefore, outside of extremely impossible conditions, the problem of increasing the efficiency of any factory lies in using existing buildings, or in improving them to the best possible utility and advantage.

From the various factories inspected, and the type that is mostly concerned in the majority of the shoe output of New Zealand, I am of the opinion that layouts can be improved without great expense, and with comparatively no building-changes expense. I commend the study of layouts to New Zealand manufacturers as being one on which considerable savings can be brought about.

Machinery.

With respect to the machinery employed on each operation, no attempt was made to carry the study beyond—

(1) Its relation to other machines in process:
(2) Position of operator in relation to the work:
(3) The time actually required to perform the operation:
(4) Its classification as to the amount of skill required to operate the machine efficiently:
(5) Its condition from maintenance viewpoint.

Since all the machinery employed is especially designed for its particular operation, questions of suitability are determined by the manufacturers own process, and by the condition of the old machine

as compared with its possible replacement by a later or newer model. This the factory-managers are obviously alive to, and finance considerations become finally the determining factor in the situation.

The introduction of new machines is undoubtedly one reason for the condition of existing layouts. Unless complete planning is done, the true situation is never apparent. It is obvious that new machines have been located with more regard to the nearest correct space available than to the exact location preventing any back-tracking of shoe-racks. It will be realized that a few alterations from the original plans can have a large effect in material movements.

Items (1) and (2) are factors considered in the revising of layouts; item (3) concerns costing processes dealt with in the cost section of this report; item (4) is dealt with under labour classification; and item (5) concerns general conditions of efficiency.

Material Movements.

Further study of the methods employed in the movement of all materials leads me to the conclusion that savings are to be made in this direction. Under this heading is to be considered all handling operations in the factory, from the arrival of raw materials to the delivery of the finished product. I am aware that the majority of handling operations are very small indeed; but small items are of great importance in this industry when it is considered that a reduction of 6d. per pair in manufacturing-cost is more than equivalent in money to an additional 5 per cent. to the protective-tariff duty. For instance, if a factory turning out, say, 700 pairs per week could save one second on each handling operation (taking 100 as the number of handling operations, which figure is very conservative) the saving made is more than ½d. per pair.

My deduction is that there is a considerable loss that can be prevented in the movement of materials in shoe-factories. I estimate that from 1d. to 2d. per pair can be saved by cutting down this source of loss. The material movements where this loss is apparent may be stated principally as:—

(1) Moving material from one operation to the next. In considering this each manager needs to consider—Who does it? What rate is paid for doing it? Is it necessary to pay that rate? Could it be done as well or better by some one especially assigned to moving only? and so on.

(2) The distances of material from the user, or in other cases the distance the position of one operation from the next, is often too far. This is a layout matter; but a point to be watched here is that adequate passage-ways, where perhaps certain movements only take place, require equal attention as the operation itself does, to prevent intricate routes being made.

(3) The practice in New Zealand of having each operator move his own materials or rack forward to the next operation or of having each operator find his own next job is a loss to production. It means that tradesmen's rate is being paid to move material, and is obviously uneconomical if it takes any appreciable time. Only if the factory layout is in a continuous sequence could the method be justified. If any back-tracking takes place, or if there are intricate distances between operations, or if the operator is concerned in finding urgent orders it is costly.

(4) The tools and appliances at certain operations where subsidiary operations are performed may be improved. By this is meant that at such places where solutioning is done, where lasts are removed, where lasts are put in, and so on, the bench may be in such a position that extra steps are necessary, that time getting going is unnecessarily lost. By study, a smaller bench located close to the machine, by moving a pipe-line over, and so on, savings are to be made.

(5) Facilities for storage of detail parts and getting them to the place required are sources for savings also. The use of petrol-cases is a common practice in New Zealand for heel-storage for temporary transport and other purposes; likewise for grinding and findings. Is this method of storage and distribution a source of waste time? Can it be improved? Do operators lose time finding or getting what they require? I consider they do, and that without any considerable expense these items can be located better, transported more simply by a study of each position.

(6) The movement of materials from department to department may be capable of improvement. Is it carried by hand? Would a wheeled trolly be better? Could a conveyer be used? Would a gravity chute assist movements? Consider each interdepartmental series of moves separately: What time is taken at assembly-benches? Can it be improved by a rack, basket, independent sticker stand, or other means? These are questions that will prove sources of savings if analytically studied.

(7) Associated with the reaching by the operator for his next job and the placing of the completed work down is to be considered the question of the position of the operator. In New Zealand the majority of seated operators sit on hard seats with no back-rests. Maximum output is bound up to some extent in the question of fatigue. Fatigue can be relieved by suitable specially-designed seats which are to be seen in New Zealand in some few factories. This item is commended for study, as effecting further economies in the operator's time per pair finished.

The above merely represents the scope of the study commended to those desirous of reducing manufacturing-costs. They are not complete. I realize that no one system can be laid down as a standard, because no two factories make the same class of goods. The improvement of each factory is a matter of individual study in design.

Tracing Orders in the Factory and scheduling or planning Method recommended.

As a result of the preliminary tour of inspection of the factories in the main cities it became obvious that planning or scheduling in the production or service sense was not carried out.

Every factory of any size has its system of recording the progress of each order through the factory by departments. This is done by issuing to the clicking department, in the first place, the work order, containing all particulars of the order, and this order is usually a long tag, which accompanies the work

from department to department to the final boxing, and each department as it passes the order into the next department detaches its part of the tag and sends it to the recording-clerk, who enters on his progress sheet yesterday's date or the date he receives the slip. This system is to be seen in various modifications, but the principle is the same in all.

The information obtainable by this system is only that the order is now in the clicking-room, machining-room, or other department, as the case may be. It is a follow-up system which becomes effective only when deliveries are late, when customers are chasing up their orders and it is necessary to find out where they are in order to hasten them through the factory to completion.

Planning work means that a system of control of each department is established whereby each department works on its orders in the correct order of urgency as laid down by the planning-clerk. If the clicking department do their work on the right date, and the machining gets done on the right date, making room on the right date, and so on, with a check on all operations not done, it will be readily seen that the final delivery will be made as promised and without any trouble. In other words, planning leads the work along.

Planning as developed for this industry in the course of this investigation will enable the following information to be given accurately and quickly:—

(1) It will provide each department foreman with a list of orders to be completed the next day in his department.

(2) It will show whether each foreman completed his list of orders for that day; what orders he did not complete, and why not.

(3) It will provide a "late list" for the manager each day, so that he can concentrate on these orders with the foremen to prevent further delays and make arrangements, if necessary, to catch up.

It will be seen from items (1), (2), and (3) that the principle involved is, Plan the first day's job for the first day, and do it; the second, third and so on, on their days, and do it—that the delivery date is automatically taken care of.

(4) On a planning-chart, that takes the place of the present record sheet, the following dates are to be seen for every order: First, the dates the order is planned to be started, followed by the dates it is to be completed in the clicking, machining, bottom-stock, making, finishing, dressing, and shipping departments; secondly, the dates it was actually passed from each of the departments enumerated; thirdly, the number of days any order in any department is late is clearly indicated.

(5) From the daily tally of progress as outlined in (4) the manager knows what orders are going to be unavoidably late (as when imported materials are late) and can so advise his customer, as opposed to the customer chasing him when deliveries are overdue. This is a "service" point.

(6) By this means orders are not passed to the factory before material is ready; neither are any more orders planned for each department beyond what it can be expected to do. The balance between departments is regulated, and banking in one place is avoided. Where, by reason of a rush on one class of output, difficulty is going to be met, the banking effect can be seen from the chart summaries two or three weeks ahead, thus enabling staff arrangements to be anticipated as much as possible.

(7) When the control of the department by this system is in operation, the speed of orders can be regulated in accordance with customers' requirements with great accuracy. The time between jobs will be reduced, and foremen, thus relieved of the duty of watching all the dates on all orders, will be able to give more time to efficiency of operators and quality of work.

The purpose, as will be obvious to factory-managers from the foregoing, is to take from the departmental foremen the duty of assigning the order work to be performed. By specializing this planning in the managerial office it can be done better and more efficiently by the planning-clerk, in conjunction with the manager, who has the whole situation both from customer and factory viewpoints before him.

Production-control System.

In order to establish this system of production-control the following steps for so doing are outlined:—

(*a*) Assign the duty to one person in the office, who will take charge of the control sheets. It is essential that this man be able to appreciate the idea and purpose of planning as given in the foregoing, and be capable of intelligently dealing with foremen as to the work in progress. In other words, the brightest young man available is required.

(*b*) Establish schedules for each class of shoes made, as basic standards. This requires to be done by the factory-manager in conjunction with the foremen. A sample schedule would be as follows:—

A.—Clicking department	1 day
B.—Machining department	3 days
C.—Bottom-stock department	1 day
D.—Making department	7 days
E.—Finishing department	4 days
F.—Dressing department	2 days

making a total of 18 working-days.

Having determined the shop days necessary for each type, production can then be planned.

(*c*) The next step is to draw up a production-control sheet on which to plan and record orders according to schedules. It should not be more than 12 in. deep. Horizontal lines are used for each order, the upper half to indicate the schedule planned, and the lower half the actual performance. The sixty vertical columns on the right of the sheet represent approximately two months (one day

to a column), and in these date columns are placed letters (indicating for convenience the different departments) corresponding to the date the order is due to be completed in each department.

Customer's Number.	Sample.	Order.	Pairs.	Date		Material checked.	May.											
				Ordered.	Promised delivery.		1	2	3	4	6	7	8	9	10	11	13	&c.
																		(Sixty columns in all.)

(*d*) Work-tags, made out in the ordinary way as at present, are dated on the different departmental sections to correspond with the schedule plan.

(*e*) Each afternoon the planning-clerk will take from the control sheets a list of all orders with letters appearing in column under to-morrow's date, and send a copy of each to the departmental foremen, placing a list in order of urgency. Orders late should be indicated by red underlining.

(*f*) Each morning slips from orders in progress, indicating work done in each department, will be posted on the schedule sheet. After this is done the list of orders not completed is checked with the different foremen as to reasons, and passed to factory-manager for his attention.

(*g*) Each day a total is taken of the number of pairs on the orders entered in each column as due from each of the different departments. The totals are to be kept progressively as far ahead as any work is planned, and as new orders are entered these totals mount until the total loading on each department is reached. The planning-clerk's purpose is to keep relatively the same number of pairs progressing through all departments, and by watching these totals he can regulate the different classes of shoes made, so as to maintain a steady flow through the factory, as it were, and thus prevent departmental banking.

(*h*) Staff-regulation, from the point of making adjustments up or down, and by transferring men from one operation to another, is equally as important when the factory is slack as when it is busy—perhaps more so when it is slack, as there is the greater tendency to make the work last out. By having accurate output figures from each department it can be arranged for each machine or man, if a manager wants it so: the manager knows his position accurately, instead of knowing it only generally.

Before leaving this planning section I feel it necessary to add that I have gone into some considerable detail in this report, with the purpose of giving more than just general statements. Planning in all industries is a money-saving, therefore a money-making, device. It does not concern the technique of the industry, shoemaking being a craft that requires years of experience to become expert in; but it does concern that common problem, the management of the industry, in just the same way as accountancy is common to all industries. In my experience it is always difficult to convince a manager that he does not fully control his factory in the production sense, and, apart from personal contact with each manager on his own factory-floor, the problem is a hard one, in New Zealand especially. In other countries the working of these planning details can be seen in any city; they are discussed at engineering, manufacturers, and other meetings, and are not novel or new in any way, being regarded simply as sound and accepted practice which in these days of specialized positions, has become necessary.

APPENDIX F.

Report on Manufacturing-costs in the Footwear Industry.

By E. T. Spidy.

It is not the practice in New Zealand boot and shoe factories to obtain the actual cost of each order as it passes through the factory. Manufacturers usually calculate the cost for each department for each style of shoe made on the past departmental costings of similar types, correcting the base prices for the leathers used in accordance with the rise or fall in prices at which the leathers are being purchased and adding allowances to cover new features embodied in the latest sample. Similarly, when wage rates are changed by order of the Arbitration Court, the factory labour costings would be duly amended.

I am satisfied that in most cases these standard departmental per pair costings were originally arrived at after careful investigation; but, nevertheless, their continued use is one that is unsound, having in mind the fact that competition among the manufacturers is keen and there is a temptation to cut prices to obtain business. A small undercharge even on one operation repeated many times

would amount to a substantial sum in the course of a year. When it is considered that 1d. per pair would, in the larger factories, amount to more than the salary paid to the factory-manager, the importance of small amounts is emphasized.

Having calculated the factory standard costing for each sample to be made, the costs are later used to judge whether the work done by each department has resulted in a gain or a loss. Each department's output for the week is costed at the factory standard costing, and against this is placed the departmental debit for wages paid and materials used. Even though comparisons by this method show that a profit has been made on the output as a whole, it is quite possible that there have been losses on some lines, such as small orders, that would not be disclosed.

The costing system of the factory should be so constructed that the factory-manager will definitely know each week what the operations in all departments are actually costing, so that he can give his attention to those operations that are costing more than the basic allowance.

It would appear that in some factories a fair attempt is made to ascertain the cost of the upper, but the same attention is not paid to the cost of bringing the shoe to completion. In regard to upper-making, clickers are required to show on a weekly sheet details of materials used and number of jobs done. The journeywoman operating the upper-closing machines also shows jobs done on a weekly-output sheet. In neither case do the workers show the time taken to complete each separate order.

In the bottom-stock, making, finishing, and dressing departments each worker's output is not recorded, nor is the cost of any of the operations recorded; consequently the departmental efficiency can only be judged in a general way by comparing direct expenses for wages, &c., with the output valued at rates shown on standard cost cards. By this method it is not evident when any operations are taking longer to perform than that allowed for when factory time was originally calculated.

At the present time labour charges amount to more than one-third of the total factory cost of making a pair of shoes in New Zealand, and when compared with English and American costs is obviously out of proportion. It has been authoritatively stated by one of the largest shoe manufacturers in America (*vide* the *Leather Trades Review*, 23rd January, 1929) that the average labour cost of a pair of shoes is close to 60 cents (2s. 6d.) per pair, and when it is considered that the average weekly earnings of the whole of the operatives in the American shoe industry is quoted at over £6 per week there is room for much improvement in New Zealand's manufacturing.

A close analysis of the individual operation times, made during this investigation, has disclosed that there is a great difference between the actual net operation times and assessed times as shown in factory costings. Even after allowing for setting up and adjusting machines, there is a great deal of lost time between operations, and its very existence points to the necessity of having a costing system that will uncover how much is being paid for non-productive labour and how much is lost due to low output from machines.

In the manufacture of a pair of shoes a large number of operations are necessary, and, as some of these only take seconds to perform, it would not be practicable to record the exact departmental times for each and every order that passes through the factory, because many orders are for such small lots. The factory efficiency can best be checked, and the cost of manufacturing any type of shoe can best be determined, by utilizing an "operation" costing system.

Before introducing an "operation" costing system it is first necessary to list all the different operations performed by each department, and assign to each operation or group of operations a distinguishing number. As illustrating this point the following statement is given:—

Cutting department—Operation No. 1, cutting outsides; No. 2, cutting linings, &c.
Machinery department—Operation No. 3, skiving; No. 4, branding; No. 5, solutioning; No. 6, edge-folding; No. 7, fitting; No. 8, seam-rubbing; No. 9, upper-closing; No. 10, trimming; No. 11, buttonholing and fastening.
Bottom-stock department—Operation No. 20, ranging and rolling leather; No. 21, cutting and preparing soles; No. 22, cutting and preparing insoles; No. 23, cutting and making heels; No. 24, cutting and making stiffeners.
Making department—Operation No. 30, attaching insoles; No. 31, inserting stiffeners; No. 32, puller; No. 33, side-lasting; No. 34, consol; No. 35, pounding; No. 36, staple-fastening; No. 37, removing lasts.
And so on.

Having completed the list of operations it is desired to keep separate, time studies should then be made of each of these operations on each of the main classes of shoes, so as to arrive at fair operation times per pair for ladies', men's, and children's boots and shoes. Having determined the operation times, it is a management function to see that in actual practice the times are not exceeded: any extension means just so much loss to the business.

Labour.—Each worker in the factory should render a weekly time-sheet showing the operations he or she is engaged upon each day, and time employed on each. The form may be made to suit the particular requirements of each factory, but should at least embrace the following:—

Day.	Pairs.	Operations and Number.	Ladies', Men's, or Children's.	Time worked on Operation.	Orders engaged upon.

Material.—In the cutting department each clicker should render a weekly sheet showing the material used on each order. Form to be as under:—

Customer's No.	Order No.	Sample No.	Pairs.	Description and Quantity.	Price.	Amount.
						£ s. d.

The foreman should enter price of material, so that value can be extended in the office.

In the bottom-stock department the foreman should render a weekly statement showing the following information: Weight of bends, bellies, and shoulders used, and price of each; weight of soles, insoles, heels, and stiffeners produced; amount of waste material from bends, bellies, and shoulders.

Factory Costs.—The factory standard cost sheet should show every operation necessary to manufacture the shoe. Against each item should be shown the average time required to carry out each operation in a satisfactory manner. The time should be costed at the average rate per hour usually paid to workers who undertake the particular class of work.

At the end of each week the weekly time-sheets should be extended at the worker's rate of pay, and a recapitulation then made of time booked to each operation and wages paid for same, so that rate per pair for each operation can be calculated and compared with value of such operations per pair as recorded on factory standard cost sheet.

Briefly summarized by such a system as this, which would have to be developed at each factory so as to use existing methods and forms as far as possible, a measure of performance is obtained that has a manufacturing value.

When you have what each operation or part ought to cost and what it actually does cost, you then know what you are losing, where you are losing it, who is losing it. With such information as this, you are at least in the position of being able to consider all the ways and means of saving some of the losses and bringing up the efficiency. Without such information—and this is the position as my analysis shows it—no one in the factory really knows the amount or extent of the losses going on in every direction. The manager and foremen can only have a general idea of it, and they attribute it to general causes, but their efforts to trace it are lost because their accounting system is at fault.

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