1926.

NEW ZEALAND.

PUBLIC WORKS STATEMENT

(BY THE HON. K. S. WILLIAMS, MINISTER OF PUBLIC WORKS).

MR. SPEAKER,—

Honourable members are aware that I assumed the office of Minister of Public Works only on the eve of the present session, whilst the operations of the Public Works Department, with which this Statement deals, relate to a period closing before my assumption of office. It will not be expected of me, therefore, that I should do other than present a statement of the works accomplished, with their accompanying accounts, during the past year of office of my predecessor.

The responsibility for the works planned for the ensuing year, and for which honourable members will be asked to make appropriation, as well as for the general policy to be followed, I accept as my own.

It is no mere sense of courteous duty which impels me to express appreciation of the invaluable work which has been carried through by my predecessor. During his term of office he succeeded in acquiring a close personal knowledge of the works in hand and in prospect, their position, and their objective. He, further, sought personal acquaintance with his staff and the employees of his Department, and studied their conditions and their personal welfare. His capacity for getting at essentials, both in work and in men, has led to the building of a human organization under vastly improved conditions, with the inevitable result—better work for the State. Better conditions mean better men and better work.

I hope the experience already gained in the development of new country will enable me to appreciate the merits of the proposed works, and a knowledge of what expenditure would be wise and what would be insufficiently profitable for the immediate benefit of the country, so that the best results may be obtained from works undertaken.

Public Works Fund expenditure should result only after a careful weighing of all the evidence. In dealing with proposals for expenditure on new works, whether they be in relation to what may be termed district works or inter-district works, it is my intention, as far as possible, to consider each with a view to connecting up with a larger scheme of works, and so prevent isolation; in other words, public works must be constructed where possible in accordance with a comprehensive scheme embracing the whole area. Careful consideration must be given to expenditure proposals which involve competition between road and railway, constructed or proposed. It is not fair criticism at this stage to condemn what may now appear to be errors of the past. The extraordinary development of motor traffic has changed the whole position, to the extent that it is necessary to investigate the question as to whether certain lines of railway should not be closed down altogether, for the reason that they cannot, under improved road conditions and resulting competition by motor traffic, pay their way. These railways in their day developed the financial resources of the district they served. That development has placed the district in a position to improve its roads to a degree enabling motor-vehicles to convey farm requirements from town stores to farm, and farm-products to town stores or main-line stations or ports. We have obviously arrived at a stage of development where the transport requirements of a district must be studied with the utmost care, and a constructive policy adopted which will provide the most economic means of transport without duplicating expenditure.

My immediate effort must be directed to acquiring a personal knowledge of the developmental work now in course of construction, its objective, and the planning of its enlargement in the future. The errors of the past which now confront us, and which have largely arisen out of altered conditions, are in themselves sufficient evidence of the necessity of comprehensive planning of public works.

I desire to acknowledge that in the staff of the Department which I have the honour to control there exists a body of public servants exceptionally well qualified in their duties, and imbued with a devotion to public service. No Minister can achieve real success unless he can inspire his men with confidence and the assurance of his support in their work. To the staff and employees of my Department I give this assurance, and I have no fear that they will fail to respond. Whilst I am with them I demand their best service, and I want their fearless judgment.

The change in Ministerial control may possibly raise a question as to the policy to be followed with regard to the employment of workmen on road, railway, hydro-electric, and other constructional works. As I see it, the position is clear. There are certain classes of work on which men can be employed only on day wages. There are other classes of work which, both in the interests of Department and men, can best be dealt with on the system of open contract, be it large or small, or on the co-operative contract system, according to the circumstances of the men concerned or the class of work, whichever, in the particular circumstances of the case, is the fairest way to both parties. The Department must secure fair value in work product for which it pays. I am not particularly concerned as to how that result is achieved. The resultant daily earnings must not be the deciding factor, but the cost of the work per unit of material dealt with. If parties of men, by their special effort, are enabled to double the day's wage-rate, then I shall be glad to know that our conditions of employment can attract such workmen, for such results pay the Department and encourage and profit the men.

The allocation of public-works funds for development works must necessarily be a vital issue. Applications throughout the country for grants from the Public Works Fund amount every year to a sum far beyond the resources available.

My predecessor evolved a system of automatic allocation based on essential factors, and, in furtherance, a system of authorization automatically relative to appropriation. Believing these systems to be sound in basis, I intend to adhere to them, though experience of their working-effect may suggest modification of detail application. My endeavour will be directed to perfection of a system of allocation of grants from the Public Works Fund which is based on the absolute economics of the application free of any other consideration.

My predecessor directed his policy in determined manner towards freeing the allocation of Public Works Fund moneys from any suggestion of satisfying political demands. I am no less determined to follow the same policy. The work which has been achieved during the past few years is self-assertive evidence of the wisdom and benefit of such a policy. I have no wish to discourage local and district ambitions, but I do insist that these ambitions, before they can receive any support from the Public Works Fund, must stand the test—that is to say, they must be found to be good and justifiable as part of a comprehensive plan or directly subsidiary to it.

The operations of the Department, and therefore its expenditure, have been temporarily enlarged during the last few weeks in order to provide work for unemployed.

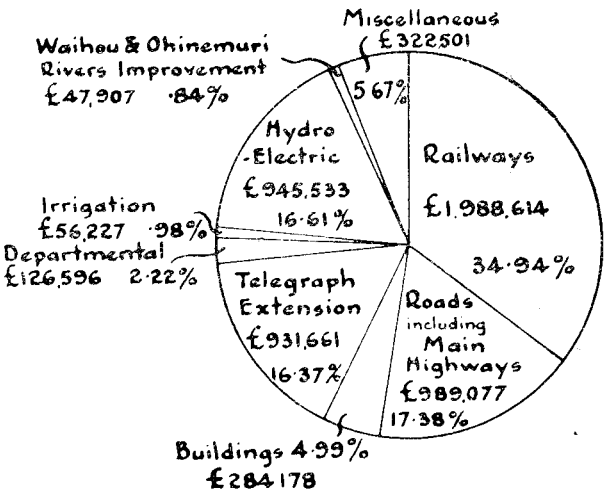
The unemployment problem, when it arises, is almost essentially seasonal—that is to say, it finds its peak in the winter, when many avenues of employment are restricted. I am not satisfied that the enlargement of the ordinary public-works activities of the Government, which should be conducted according to plan, is the proper remedy. Winter is admittedly the least suitable season in which to obtain the best results on public works. Public works should be carried on throughout the year with a trained and regularly adherent staff. The addition of large numbers of inexperienced and often physically incapable men at a time when only trained and experienced men are worth while is economically wrong.

It seems to me that unemployment difficulties due to, or emphasized by, loss of seasonal occupation should be met by the provision of employment seasonably suitable. I have been able to discover no occupation more suitable to the capacity of those usually unemployed in winter, and no avenue of expenditure more likely to give a better asset in return for expenditure involved, than reafforestation.

Its advantages are these: the work is not so arduous that it cannot be performed by any man who is willing to work; if intelligently planned and carried out the effort will result in the creation of a definite asset, an asset not only providing timber-supplies for the future, but correcting many of the evils resulting from ill-considered deforestation of the past; afforestation is definitely seasonal work, and is thus complementary to seasonal necessity in the way of employment.

RATIO OF EXPENDITURE.

The ratios which the various types of activities of the Department bear to the whole are indicated graphically in the diagram below.



RAILWAY-CONSTRUCTION.

During the last financial year a total length of 53 miles 20 chains of railway was handed over to the Railway Department for incorporation with the general railway system of the country. Details are as follows:—

	M.	ch.
North Auckland Main Trunk Railway (Whangarei Branch)	14	56
North Auckland Main Trunk Railway (Huarau–Waiotira Section)	15	36
Lawrence–Roxburgh Railway (Beaumont–Miller's Flat Section)	14	70
Orepuki–Waiau Railway (Tuatapere–Orawia Section)	8	18
	53	20

In addition to the lines handed over, rails have been laid on 22 miles 39 chains, and goods traffic has been carried on over a length of 52 miles, while traffic of all descriptions has been run by the Public Works Department over 111 miles 61 chains, the two principal sections being between Tauranga, The Mount, and Taneatua, and between Wairoa and Waikokopu.

The schedule attached gives a complete statement of the work on railways now in progress, and the extent to which it is anticipated it can be completed during the next two years, assuming that sufficient financial provision will be available.

North Island Lines.

A concentrated effort resulted in 30 miles 12 chains of line between Huarau, on the North Auckland Main Trunk Railway, and Portland, on the Whangarei Branch, being handed over to the Working Railways Department in November last, and in a goods and passenger service being granted to settlers over the unopened line between Waiotira and Pukehuia, on the Northern Wairoa River.

Good progress has been made with formation work and with erection of the several bridges on the Kirikopuni Section, including the large Wairoa River Bridge, which should be completed in about fifteen months' time, when it is hoped that the line will also be finished as far as the present terminus at Kirikopuni. Subsidences of embankments on some treacherous river-flats on the Kirikopuni Section have

caused considerable delay and extra work. The worst of these occurred on the long and high approach to the Wairoa River Bridge, where the embankment split in half longitudinally for a distance of 7 or 8 chains, one side sinking 14 ft. in a few minutes, the other half remaining stationary. Another filling, which had been constructed to a height of 16 ft. over an old river-flat, sunk and pushed up the surrounding country in waves almost as high as the top of the filling in some places.

Construction work was also commenced early in the year on Okoro Section, and earthworks are complete for over 2 miles beyond Okaihau Railway-station. Underground streams and springs are causing trouble on this section, and stone drains have had to be placed on the foundations of all large fillings to ensure their stability.

The principal works on the Auckland–Westfield Deviation, exclusive of the reconstruction of the Auckland station-yard, which is being undertaken by the Railway Department, are a heavy embankment with a strong stone protection wall across Judge's and Hobson Bays, large cuttings at Campbell's Point and Orakei, and the Purewa Tunnel. Spoil for the embankment is being obtained from the cuttings by steam-shovels and manual labour, and 34 chains of embankment have been completed at Campbell's Point and 38 chains at Orakei end. The stone protection wall is kept ahead of the earthwork, and almost half of the total quantity of stone required has been placed to date. A large amount of work has been undertaken in the big approach cutting at the northern end of Purewa Tunnel, and in the cutting at the southern end, and good progress has been made in the tunnel itself. Unless anything unforeseen happens the whole of the work which is being undertaken by my Department on this deviation should be completed on time.

The construction of the first 14 miles and last 6 miles of the Waihi–Tauranga portion of the East Coast Main Trunk Railway is being undertaken by the Department on the co-operative system, and the intervening length of 20 miles 78 chains is included in the contract entered into with Sir W. G. Armstrong, Whitworth, and Co. (Limited). Athenree Section is almost complete in every detail, and work is so well advanced on the next section (Katikati) that settlers have had the advantage of a goods and passenger service from Waihi to Tuapiro Stream for some time, and it is hoped to extend the service to Tahawai Station (13 m.) shortly. Both goods and traffic are also carried from Tauranga to 40 m. 5 ch., and goods service was extended to Wairoa River in January last. The contractors are making reasonably good progress with their length, but it is doubtful whether they will finish by the due date.

All classes of traffic are also being run by the Department from Tauranga and the Mount eastwards to the present terminus at Taneatua, a distance of approximately 59 miles. Included in the several bridges completed during the year was a large plate-girder span bridge on reinforced-concrete pile piers and abutments over the Rangitaiki River. The construction of the greater portion of this length of line, including station buildings and yards, is practically complete, and at the present rate of progress the remainder of the work should be finished at an early date as far as Taneatua.

The matter of a railway connection from Gisborne to Waikokopu has received careful consideration, and several surveys have been made. Plans and estimates are now being prepared, and as soon as definite figures are available a decision as to the route to be adopted will be made. The indications are that a route following the coast-line fairly closely will be adopted.

As mentioned last year, construction work on Tutira Section of the Napier–Gisborne line is of a heavy nature, but a concentrated effort, with the aid of a large quantity of machinery, has resulted in good progress being made, and it is hoped to be able to convey materials over the line within a few months for the large viaduct over the Waikoau. The foundations of this viaduct are being constructed, and should be completed by the time the steelwork for the superstructure arrives from England. Most of the light formation on Putorino Section has been completed, and the heavier cuttings are being manned.

Operations on Mohaka Section have been confined principally to culverts and to excavation of approach cuttings to tunnels. A commencement has also been made with the boring of one of these tunnels, as well as a tunnel on Waihua Section, where work during the year consisted almost entirely of the completion of the approach cutting to the tunnel. Formation work on the final section to Wairoa has been undertaken principally on a length of 2 miles adjacent to Waihua Tunnel, which, with the Wairoa River Bridge, is the largest job on the section. The northern

approach to the tunnel is completed, and the southern one is still under construction. Steel has been ordered for the Wairoa River Bridge. It is proposed to concentrate on this section, in order that materials for the heavy works at Mohaka and Wairoa Sections may be conveyed by rail from the Port of Waikokopu. The construction of the Waikokopu Branch is completed with the exception of two bridges, which are well under way, and a few other items which are receiving attention, and the goods service was continued throughout the year.

The construction of Matiere Section, at the east end of the Stratford – Main Trunk Railway, has been completed, and also main-track formation on most of Ohura Section. Considerable progress has also been made with construction of bridges, Ohura station-yard, approach roads, &c., on the section, and the railhead has reached 15 m. 71 ch. A goods and passenger service was continued for the convenience of settlers from the junction with the main line at Okahukura to Toitoi.

At the western end of the Stratford – Main Trunk Railway activities during the year were confined almost entirely to tram-line construction, erection of accommodation for workers, and preliminary work in connection with the tunnels on Raekohu and Haeo Sections. The construction, &c., of the main tram-line and the jig-line over No. 1 tunnel was completed, and a bi-weekly service has been run from Tangarakau to the terminus of the opened line at Tahora. The power-house has been erected, and some of the machinery which was transferred from Mangahao and Otira for tunnel-work is installed and running. A commencement has already been made with work in No. 1 tunnel. The township reserve at Raekohua has been laid out for a workman's camp, and a large number of both single and married quarters have been erected, and a water-supply provided.

The construction of the Opunake Branch Railway is complete, with the exception of three small items, and it was handed over to the Railway Department last month, prior to which a goods service was operated by the Public Works Department.

A commencement was recently made with the work of deviating the railway at Palmerston North for the purpose of diverting railway traffic from the centre of the town and to enable modern marshalling-yards to be constructed.

Work on the Hutt Railway duplication is proceeding satisfactorily. Double shifts were employed on formation work last summer, and the greater part of that portion of the work has been put in hand. When the large overhead crossing on the main Hutt Road was finished the permanent-way was laid, and connection established between the open and new lines. This enabled goods to be handled for factories which have been erected along the new line, and this traffic is developing rapidly. The construction of a double-track bridge, with footway, across the Hutt River is well advanced, despite delays caused by floods.

South Island Lines.

Work on the Glenhope–Murchison portion of the Midland Railway had advanced sufficiently in November, 1925, to enable goods traffic to be run over the Kawatiri Section, which is nearly 4 miles long; and that section was completed and handed over to the Railway Department in May last, with the exception of 2 chains at the far end, where a large slip occurred.

The question, however, of the further prosecution of this work will have to be seriously considered in view of the increasing efficiency of transport by road, and at present the Departments concerned are investigating the position with regard to this particular section. I hope that I will shortly be in a position to personally visit this district to enable me to judge of the requirements and the best methods to be adopted.

Formation and culverts on Cascade Creek Section of the Westport–Inangahua line are finished, and the rails are laid to Cascade Creek Bridge, at the end of the section, with ballasting almost completed. One of the several bridges on this section is erected and the others are in course of construction. A survey has been made and plans prepared for proposed coal-sidings at Cascade Creek.

The survey for the South Island Main Trunk Railway between Wharanui and Parnassus has been in hand for some time. The line, if constructed, would be an extremely expensive one, and it is a matter for serious consideration if the requirements would not be met by the introduction of a road motor service between railheads. When details are available relating to the traffic likely to be secured by this method, a decision will be arrived at.

The Miller's Flat Section of Lawrence–Roxburgh Railway was practically complete at the end of last year. The goods service was continued by the Department

until the section was handed over to the Railway Department and opened for all classes of traffic in December last.

Formation work, which was commenced on the next section to Roxburgh Township, is practically complete for 7 miles, and is in progress on the remaining length. The rails have been laid for almost 4 miles and ballasted for 3 miles. The culverting of this section is also nearly complete, and a Stationmaster's house and two platelayers' cottages have been erected at Roxburgh.

The Orawia Section of the Orepuki–Waiau Railway was completed by the Public Works Department, and opened for all classes of traffic in October last. The goods service which was inaugurated in September, 1924, was conducted by this Department until that date.

EXPENDITURE.

The total net expenditure under all votes and accounts appearing on the public-works estimates for the financial year ended 31st March, 1926, was £7,495,094. Of this sum £4,615,585 was expended out of General Purposes Account, and the balance, £2,879,509, out of special accounts.

A brief summary of this expenditure, as well as the total expenditure since the inception of the public-works policy to the 31st March last, follows in tabular form :—

Class of Work.	Expenditure for Year ended 31st March, 1926.	Total Expenditure to 31st March, 1926.
Railways—	£	£
New construction	1,146,292	33,180,728
Additions to open lines	842,322	15,250,391
Payment to Midland Railway bondholders	..	150,000
Roads	568,628	15,684,081*
Public buildings	284,178	9,604,988
Immigration	107,521	2,932,490
Purchase of Native lands	..	2,061,739
Lighthouses, harbour-works, and harbour defences	9,407	1,206,692
Tourist and health resorts	43,486	392,628
Telegraph extension	931,661	8,108,366
Development of mining	..	882,975
Defence works (general)	89,670	1,208,132
Departmental	126,596	2,293,023
Irrigation and water-supply	56,227	677,408
Lands-improvement	70,493	300,151
Minor works and services	..	312,607
Plant, material, and stores	34,471	384,632
Quarries (acquisition and operating)	12,351	14,166
Timber-supply and sawmills for Public Works Department	*Cr.* 9,892	4,174
Motor-transport services	4,994	33,635
Cost and discount, raising loans, &c.	297,180	2,340,952
Total General Purposes Account	4,615,585†	97,023,958
Aid to Water-power Works and Electric Supply Account	945,574‡	4,715,914
Waihou and Ohinemuri Rivers Improvement Account	47,907‡	482,489
Total Public Works Fund	5,609,066	102,222,361
Wellington–Hutt Railway, &c.—		
Railway	..	228,374
Road	..	101,658
Railways Improvement Account	..	641,275
Railways Improvement Authorization Act 1914 Account	881,441§	2,087,510
Loans to Local Bodies Account—Roads to open up Crown lands	..	697,408
Opening up Crown Lands for Settlement Account—Roads to open up Crown lands	..	206,626
Lands for Settlement Account—Roads to open up Crown lands	17,181	570,974
National Endowment Account	..	53,401
Education Loans Account	564,950§	2,451,993
Main Highways Account Construction Fund	422,456§	647,903
	7,495,094	109,909,483

* Includes £4,500 expended under section 16, subsection (1), Native Land Amendment and Native Claims Adjustment Act, 1923. † Does not include expenditure under the Ellesmere Land Drainage Act, 1905. ‡ Excludes interest during construction. § Includes proportionate cost of loan raised under these accounts.

WAYS AND MEANS.

	£
On the 1st April, 1925, the available ways and means for public-works purposes were	379,439
Additional funds were received as follows :—	
(*a.*) Transferred from Consolidated Fund in terms of section 12 of the Appropriation Act, 1925	500,000
(*b.*) Under Aid to Public Works and Land Settlement Act, 1922	1,084,015
(*c.*) Under Finance Act, 1923, section 2 (public works) ..	1,084,015
(*d.*) Under Finance Act, 1924, section 2 (public works) ..	2,065,893
(*e.*) Recoveries on account of expenditure of previous years ..	27,475
(*f.*) Ellesmere and Forsyth Reclamation and Akaroa Railway Trust Account receipts	1,671
	£5,142,508

	£
The net expenditure on works and services against the General Purposes Account for the year was—	
(*a.*) Under appropriations	4,318,404
(*b.*) Under Lake Ellesmere Land Drainage Act, 1905 ..	439
(*c.*) Under Lake Ellesmere and Akaroa Railway Trust Account	44
(*d.*) Under Aid to Public Works and Land Settlement Act, 1921 (stamp duty)	131
(*e.*) Charges and expenses of raising loans	297,049
(*f.*) Miscellaneous	20
Making a total of	£4,616,087

	£
This left a credit balance in the account for general purposes at 31st March, 1926, of	526,421
Legislative authority exists for raising a further	4,061,050
It is proposed to ask for further legislative authority to borrow, when required	5,000,000
Thus making available for public works, general purposes, a total of ..	*£9,587,471

The estimated expenditure under the account for the current financial year, including the transfer of £400,000 to Main Highways Construction Fund, is	£4,898,470

In addition to the requirements for general purposes, there are a number of special accounts for public works with separate ways and means. The most important of these are :—

Name of Account.	Balance available at 31st March, 1926.	Unexhausted Borrowing Authority at 31st March, 1926.	Additional Borrowing Authority to be sought during year.	Total available Ways and Means.
	£	£	£	£
Electric-supply Account	138,112	5,676,990	..	5,815,102
Waihou and Ohinemuri Rivers Improvement Account	21,710	95,000	100,000	216,710
Railways Improvement Authorization Act 1914 Account	280,662	958,310	2,000,000	3,238,972
Main Highways Construction Fund	120,104	2,500,000	..	2,620,104
Totals for these special accounts.. ..	560,588	9,230,300	2,100,000	11,890,888

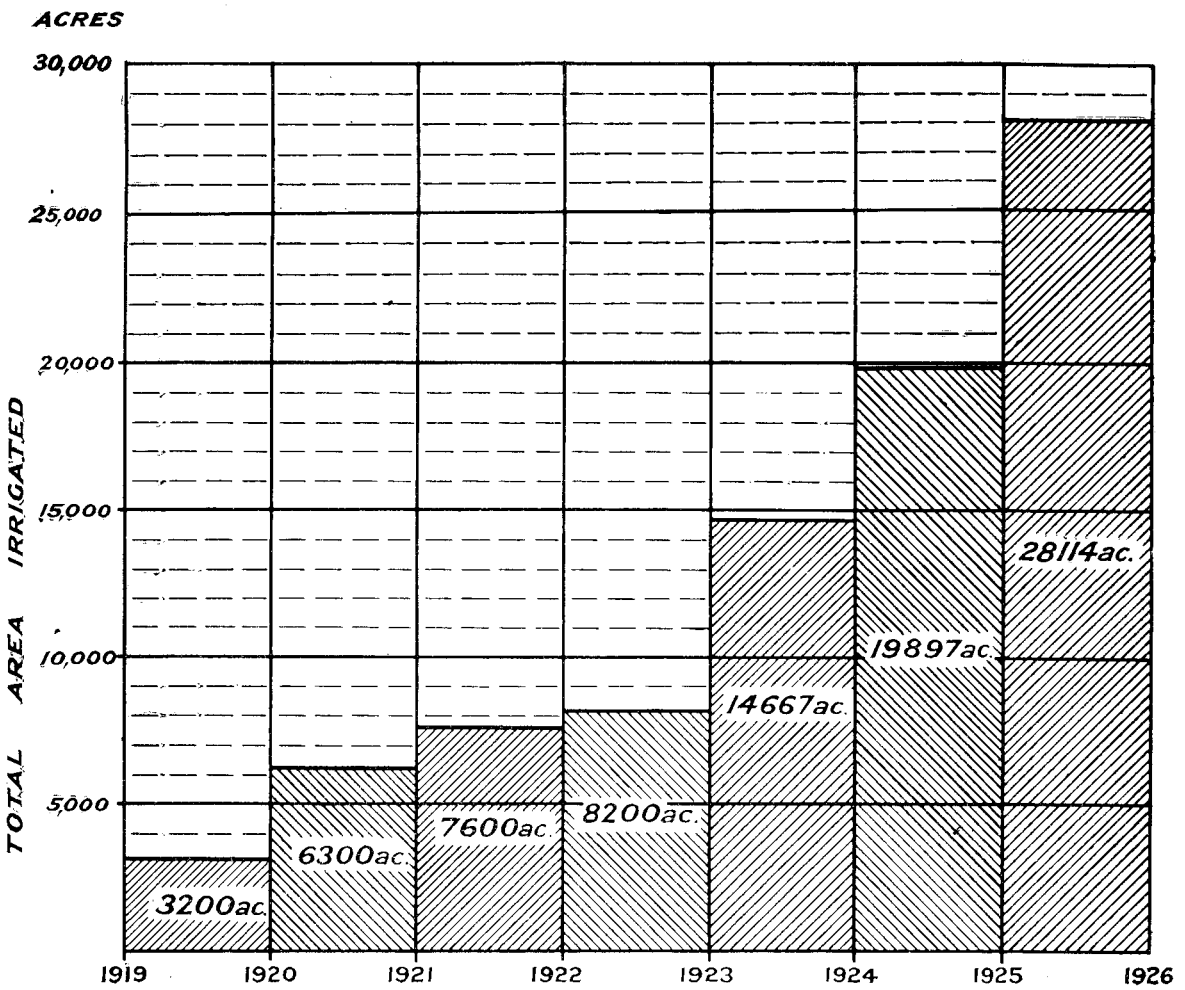
* In addition, surplus revenue as available will be transferred from Consolidated Fund up to £1,000,000.

	£
From the foregoing figures it will be observed that at the end of last financial year the unexpended balance of the Public Works Fund for general purposes, plus existing and proposed authorities for raising further moneys, amounted to	9,587,471
While the balance at the same date in respect to some of the more important public works, under special accounts, plus existing and proposed legislative authority to raise additional loans, amounted to	11,890,888
Or a total of	£21,478,359

IRRIGATION AND WATER SUPPLY.

Two new schemes—Arrow and Hawkdun—were commenced. The actual area irrigated under all the Government schemes was 28,114 acres, divided among 279 settlers, as against 19,897 acres with 239 irrigators in the previous year.

The graph below shows the growth of irrigation under the Government schemes for the past seven years :—



Ida Valley Scheme.—The Bonanza flume was replaced with a twin siphon ; weirs were constructed on the Upper Bonanza and German Hill Races.

Manuherikia Scheme.—The third line in Chatto Creek siphon, and construction of distributary races, were completed. A demonstration plot of 10 acres for the information of intending irrigators was laid down.

Earnscleugh Scheme.—A pipe-line and necessary races were completed during the year. A demonstration plot of 15 acres was laid down under the border-dyke system. Half has been sown in permanent pasture, and the remainder will be sown in lucerne.

Last Chance Scheme.—This scheme was practically completed so far as new works were concerned. Maintenance work was rather heavy, and more than the usual amount of repair is required before the next season's operations are undertaken.

Tarras Scheme.—This scheme was completed, and practically all settlers supplied with water. The work done consisted of 5 miles of main race and 12½ miles of distributory race.

Teviot River Scheme.—This scheme was completed, and water supplied to thirty-five settlers.

Hawkdun Scheme.—Repairs to the Eweburn reservoir were completed, and the Wedderburn siphon was built. A survey of the distributary races is in hand, and should be completed during the spring; 72 miles have been laid off in this connection.

Arrow River Scheme.—Surveys have been completed, agreements obtained from settlers relative to water-supply, and construction work put in hand.

Upper Manuherikia Scheme.—A committee consisting of representatives of the Public Works, Lands, and Agriculture Departments has been set up to view the land in detail, and interview the settlers before any scheme of construction-works is undertaken. Tenures of land, size of holdings, texture of the soil, existing water-facilities, and generally an investigation as to the nature of the product which could best be raised on the lands affected is to be undertaken. The results of the committee's inquiries will determine the Government's attitude to the proposed scheme, whether it should be constructed or not.

Plans of the Upper Manuherikia dam area have been completed, the reservoir-site resurveyed and plotted, and the site tested with pits sunk thereon. Further information relative to the race-line from the dam-site to Hills Creek Saddle has been obtained, and is now being tabulated. Preliminary estimates for Roaring Meg scheme have been prepared, and an alternative scheme reported upon. Plans of the Luggateburn and Pisa Creeks schemes have been completed, and estimates are in course of preparation. Similar remarks apply to the Miller's Flat scheme. A preliminary report has been prepared relative to the Mareburn scheme.

The schemes which were in whole or partial operation when the last Public Works Statement appeared are still being operated.

Officers sent Abroad.

Mr. F. W. Furkert, Engineer-in-Chief and Under-Secretary, left the Dominion early in April of this year for the purpose of a general investigation of engineering matters in the United States and the Continent of Europe. While abroad he will attend the Fifth International Roads Congress at Milan.

Mr. E. Bold, Principal Land Purchase Officer, left for England early in April last, and while abroad will inquire into the procedure in respect to legislation affecting the acquisition or interference with private lands, and also relative to proposals for schemes of public utility, and will report to the Government on his return towards the end of the year.

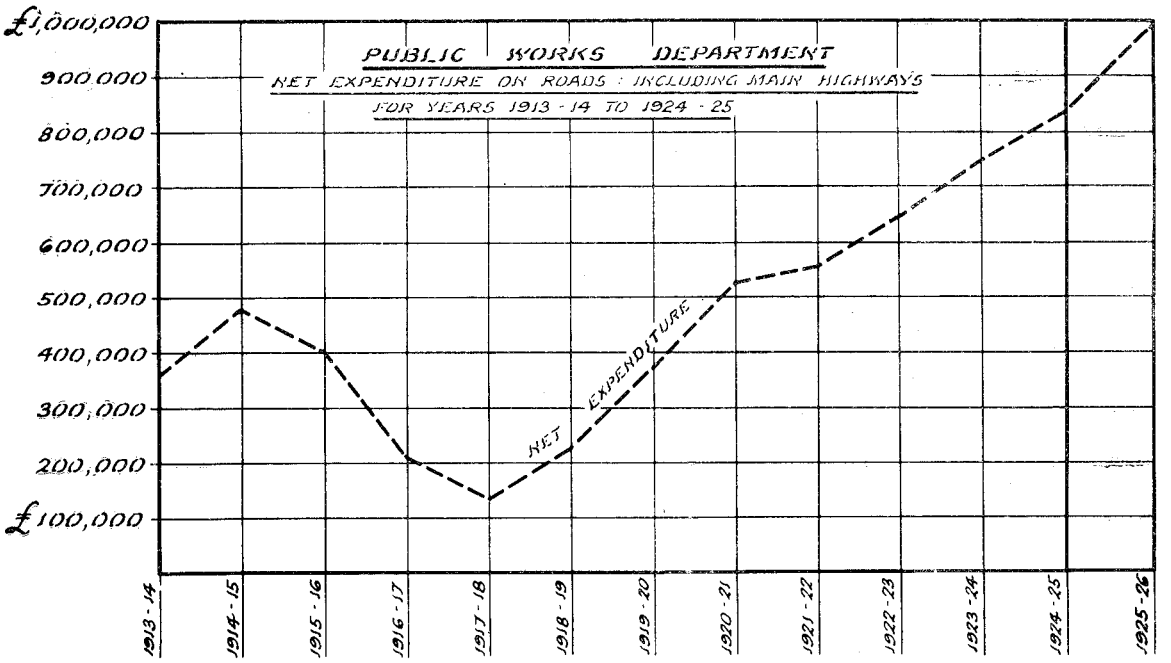
ROAD-CONSTRUCTION.

The expenditure on road-construction has been steadily increasing from year to year, and during last financial year it has again constituted a record for this branch of the Department's operations. The diagram on the following page shows the trend of the Department's roading programme since 1913–14, and it will be seen that the £1,000,000 mark has nearly been reached.

The primary development in any country must, of course, be by roading, and very great progress has been made in this direction during the past year both in materially improving existing roads by widening and improvement of alignment and grades and in constructing new roads.

The expenditure of the parliamentary appropriations for this purpose has been carried out both by the Public Works Department and by local-body organizations in accordance with departmental requirements. Particular attention has again been given the question of constant and sufficient maintenance of roads, and no

opportunity has been lost of impressing on local bodies generally the urgent necessity of protecting capital expenditure by means of adequate maintenance. It is pleasing to note that local bodies are themselves moving in the right direction so far as this most important question is concerned. As mentioned in my predecessor's Statement covering the previous financial year, the Department has adopted the principle, before giving its approval to any comprehensive metalling scheme, of investigating the ability of the district concerned to bear the subsequent maintenance charges, and local bodies are now required to satisfy the Department, by special resolution, that arrangements have been made to provide and set aside annually sufficient funds to efficiently and effectively maintain the road. Investigations in this direction have in several cases indicated conclusively to the settlers that, although they could possibly finance the original loan for metalling purposes, the subsequent maintenance charges would be quite beyond their financial ability, and consequently they have been advised, pending further settlement and development of their district, to concentrate their efforts on improved upkeep of their existing roading facilities. The annual roads estimates were again prepared in accordance with each district's claims for consideration in respect to area, population, rating, loans for roading, value of undeveloped lands suitable for



settlement, and estimated amount required to fully complete all legal roads. This system is proving particularly satisfactory to both the Department and the local bodies, but it is hoped during the present year to effect certain improvements in the method of arriving at each district's just allocation which will make it still more satisfactory.

The policy under which each District Engineer confers with each local body in his district with a view to arriving at a mutual agreement as to the respective importance and urgency, in relation to the amount of available funds, of the various items for which application for Government financial assistance has been made is proving of considerable assistance to the Department and to the local bodies generally. The total amount applied for by local bodies in the way of financial assistance greatly exceeds the amount of funds that can be made available in any one financial year, and by such discussions between the departmental officers and the counties' representatives items of first importance receive priority.

The expenditure on restoration of roads and bridges damaged by exceptional floods has again been fairly heavy. In very many cases the cost of restoration has been quite beyond the means of the local authorities, and substantial assistance from the Government has been necessary. The granting of Government aid for repair of damage of this nature is very closely controlled, and no assistance is granted unless it is quite apparent that the local body concerned cannot finance

the work from available funds, or, on account of existing heavy rating, cannot avail itself of the empowering provisions of section 7 of the Local Bodies' Finance Act, 1921–22, whereby with the prior consent of the Hon. Minister of Internal Affairs and without approaching the ratepayers it may proceed to raise a loan covering the cost of the necessary repairs.

On the 24th March last year the regulations for the classification of roads for the use of motor-lorries, under the provisions of the Public Works Amendment Act, 1924, and the Motor-vehicles Act, 1924, became effective. To the end of March, 1926, fifty-eight local bodies had submitted their classifications, and since then five additional classifications have been received. Of these, forty-eight classifications have so far been approved or amended and gazetted. In certain districts, however, advantage has not been taken of the power given by these regulations, and it would seem desirable both in the interests of local bodies themselves and motor-truck owners that classifications should be made, otherwise there may be a danger of isolated classifications becoming effective which may constitute a barrier to the uniform use of roads by motor-lorries in a given district.

Main Highways.

The amending legislation of last year permitted the Main Highways Board to subsidize maintenance of main highways to the extent of half the cost of the local authorities. Under the original Act the contribution of the Board was one-third of the cost, and the effect of the improved rate of contribution by the Main Highways Board was to induce local authorities to provide larger sums as their quota towards the maintenance of main highways, and thereby ensure a better surface on the highways for the use of the travelling public.

A pleasing feature in the actual maintenance operations of main highways is the introduction by local bodies of modern roadmaking-plant methods which are strongly advocated by the Board itself. It is only by the employment of up-to-date methods that the needs of modern road transport can be economically satisfied, and the adoption of such methods by all local bodies is strongly advocated.

Enhanced contributions by the Board for major deviations of main highways, construction of bridges, and repair of extraordinary damage brought about by floods or other causes was also provided for, and the benefit to local authorities has been substantial in a number of cases where, owing to great damage by floods, the resources of local authorities were seriously affected.

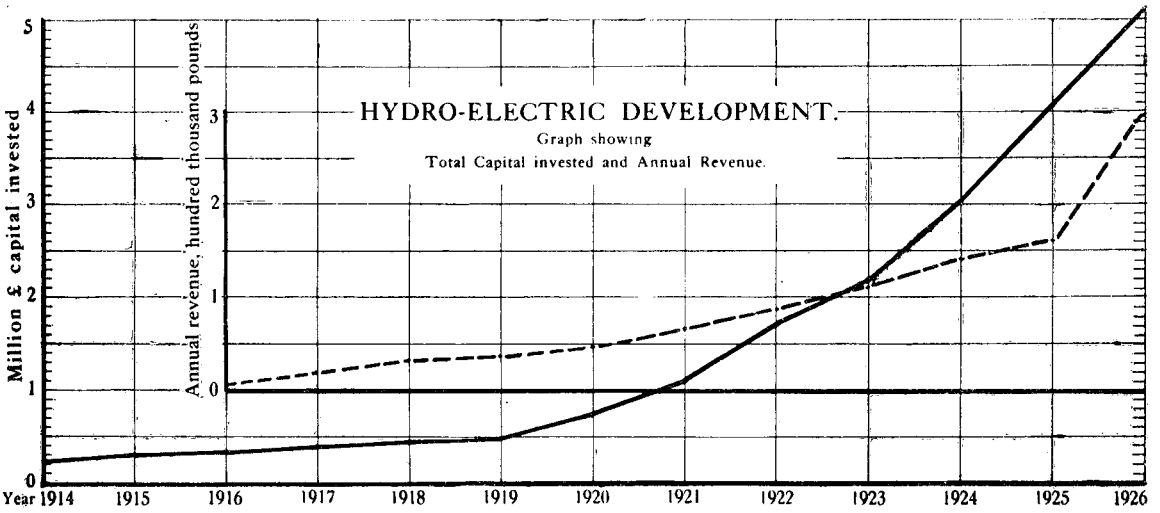
A number of roads have been added to the main highways during the year, with a corresponding advantage to the local authorities. The Board's relations with the local bodies continue to be of a very satisfactory nature. It has been successful in obtaining more substantial contributions from some local authorities towards the maintenance of Government roads, being portions of main highways, than was formerly the case, and local bodies are showing that they are earnestly striving to meet the requirements of the Board relative not only to ordinary maintenance of main highways, but construction and reconstruction on an improved scale to that formerly obtaining.

It is here remarked that all reconstruction schemes are thoroughly investigated by the Highways Board, and the necessity for local bodies to prove the economic soundness of their schemes tends to regulate local-government borrowing.

HYDRO-ELECTRIC DEVELOPMENTS.

The year just completed represents the fifteenth year since construction work on the Department's first hydro-electric development was commenced, and, as I am now taking over this work from the Right Hon. Mr. Coates, it would appear opportune to briefly review the progress to date. The Aid to Water-power Works Act was passed in 1910, authorizing the Government to borrow £500,000 for hydro-electric development, and construction work was started on the first scheme at Lake Coleridge in the following year. Further authorizations were made by the Electric-power Works Loan Act, 1919 (£6,830,000), and the Finance Act, 1920 £3,500,000).

The expenditure on works is shown on the attached graph :—



From this it will be seen that the capital expenditure at the 31st March, 1916, the first complete year of supply, was £362,000; at March, 1921, it had grown to £1,072,000; and by March, 1926, to £5,134,000. The growth in annual revenue is also shown on the same graph, indicating in 1916 a total annual revenue of £8,518, in 1921 of £66,178, and in 1926 of £287,942 per annum.

FUTURE DEVELOPMENTS.

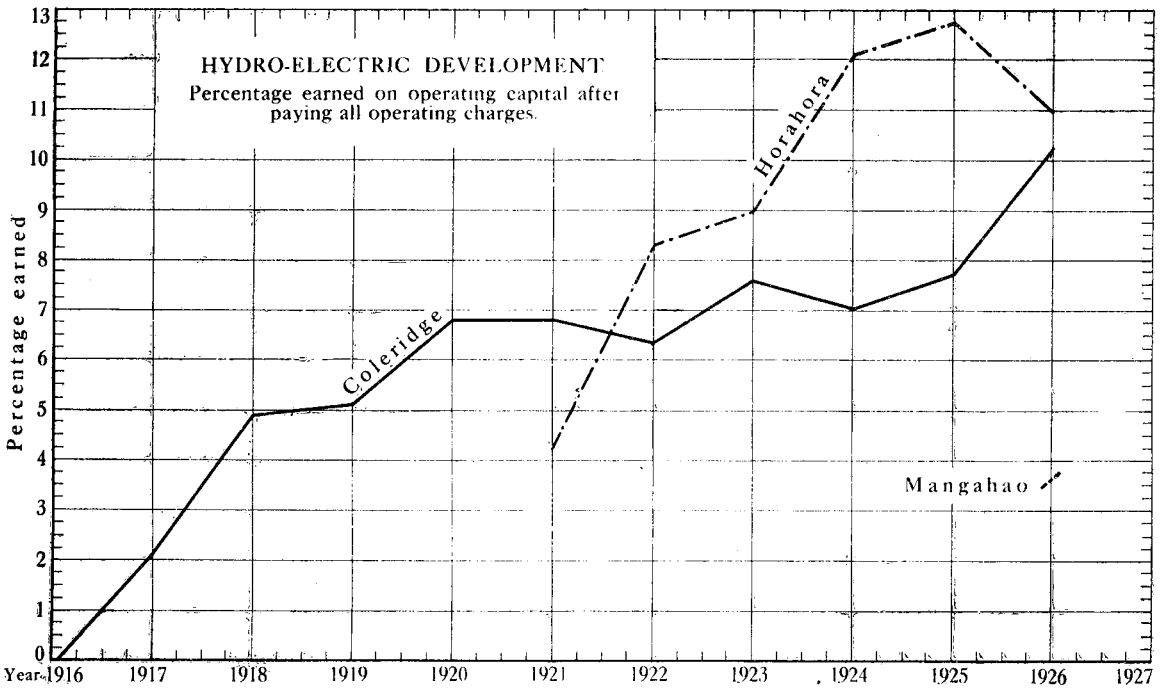
The completion of the large works at Arapuni and Waikaremoana, with consequent extensions to transmission-lines and substations, and provision of extra plant at Arapuni, will require very heavy expenditure for the next three years. In addition to this the growth of load on the Lake Coleridge system is such that it will apparently be necessary to make a start with the construction of an additional source of power in the South, probably within about a year's time. These developments will call for an expenditure of at least £1,000,000 per year for the next four years; and although there is little doubt but that the hydro-electric development carried out to date has been an unqualified success, it is doubtful if the country would be justified in continuing expenditure for a much longer period at this high rate. This is all the more evident when we remember that for every pound expended by the Government on generating-works, an equal or greater sum has to be expended both by the distributing supply authority and by the actual consumer before the power can be fully utilized.

It is true that in the North Island in particular the Government rate of expenditure can be very considerably reduced after the three main key stations are in operation—there will be extensions to be made from time to time; whilst in the South Island there will still remain further sources to be developed before we can attain to the ideal of making power available to every one within the Dominion who can be put within reasonably economic distance of the transmission system. We may permit the annual expenditure to be reduced after about four years' time, but as far as can be seen at present it cannot be allowed to stop, and must continue at somewhat reduced rate for many years to come.

The construction of power-supply system on modern lines involves very heavy initial expenditure on headworks and transmission system designed to meet considerable future increases in load. It is only to be expected in such cases that there will be difficulty in earning a high percentage return on the capital invested in the earliest years of operation. The schemes already in operation have indicated this very clearly, and the two older schemes have now reached a stage where there are sufficiently high percentages to be able to offset the initial losses. The percentage earned on operating capital, after deducting full operating-expenses, is shown on the attached graph for the hydro-electric development to date.

As the Government scheme of supply provides generally for bulk supply to local authorities and leaves the actual distribution and sale of power to those

authorities, the capital expenditure indicated on the previous page is only a part of the total capital involved in the actual distribution of power to the actual consumers. Thus in 1916 the supply authorities connected to the Government supply had a capital investment of £200,000, in 1921 £600,000, and in 1926 £6,500,000, approximately.



OPERATING RESULTS.

Lake Coleridge.

The total capital has been increased during the year from £1,008,491 to £1,366,951, of which about £360,000 represents duplication works which had not gone into operation at the end of the financial year. The financial results for the year can be summarized as follows:—

	£
Capital investment	1,366,951
Revenue	123,354
Operating-expenses	27,035
Balance	£96,319

This balance has been used in paying interest charges together with 2 per cent. depreciation, and has left a profit on the year's operations of £26,646. This has been used in wiping off the accumulated deficiency on the Profit and Loss Account, amounting to £17,739, and has in addition enabled a contribution of £8,907 to be paid to Sinking Fund Account. This scheme now has a Depreciation Fund of £111,526 and a Sinking Fund of £8,907.

The water-supply to the lake has been well maintained throughout the year, the water being practically at overflow level continuously. The power-station plant, in spite of almost continuous overloads, has given very little trouble. The maximum load during the financial year has been 14,430 kilowatts, representing an overload of 20 per cent. on the installed plant capacity. From the end of the financial year until the end of June overloads of this magnitude have occurred on many occasions, and in addition power to the extent of 1,000 kilowatts has been carried by arrangement with the Christchurch Tramway Board on its steam plant. Consumers generally have assisted the Department by endeavouring to limit their loads during the hours of heaviest overload, but now the additional unit has been put into operation we are in a position to again supply all load that may come on the system without outside assistance.

There was one serious interruption to the Christchurch supply during the year: this extended over 6 hours 58 minutes, and was caused by an exceptionally heavy snowstorm on the 7th and 8th August, causing insulator failures. As all telephone circuits were down, and as transport was very seriously held up by the snow, repairs occupied a much longer period than would otherwise have been necessary. Considerable damage was also done and poles were washed out on two of the lines by exceptionally heavy floods in the Hawkins and Selwyn Rivers, though service was maintained over the third line.

There were two serious and numerous minor interruptions to the supply to South Canterbury: the first was caused by the same heavy snowstorm in August which resulted in a good deal of damage in the snow area between Rakaia Gorge and Methven; the second was caused by heavy floods in the Opihi River washing out a pole. Provision has been made to have river-crossings carried on towers with piled foundations and long spans, to obviate recurrence of these troubles.

The provision of a second independent circuit to Timaru, now almost complete, should considerably improve supply to this district in the future.

Horahora.

The financial results on this plant have again been very satisfactory, though, on account of the considerable increase in capital charges, the profit has not been quite so great as in the previous year. The position may be summarized as follows:—

	£
Capital investment	735,091
Revenue	85,830
Operating-expenses	19,612
Balance	£66,218

The balance has been used in paying interest and depreciation, and has left a profit of £21,348 for the year. This has been used in paying £11,342 to Sinking Fund Account and a further £10,006 to reserves.

This scheme now has a Depreciation Fund of £46,444, a Sinking Fund of £28,939, and a Reserve Fund of £30,554.

Two additional units, each 2,000 kilowatts were brought into operation early in the year, and the whole station has given little trouble throughout the year.

Transmission-lines to Auckland, to Rotorua, to Hangatiki (Waitomo Power Board), and to Pukekohe (Franklin Power Board) were put into operation during the year. In addition a line was built from Waikino to Aongatete, to enable supply to be obtained from the McLaren's Falls plant of the Tauranga Borough Council, and a supply of 1,200 kilowatts has been obtained from this plant. The maximum load on the Horahora plant during the year has been 11,400 kilowatts.

There have been rather more than usual interruptions to the main lines during the year, in the main caused by exceptionally heavy winds bringing down branches of trees.

Waikaremoana.

The small initial plant (1,000 kilowatts) at this scheme has been leased to the Wairoa Power Board, and is being operated by them, pending being taken over again by the Department when construction work on the main development is well under way. The capital outlay is £80,564; capital charges, interest, and depreciation amount to £5,949; the revenue received has been £1,901; leaving a loss of £4,048 for the year.

Mangahao.

This, the latest Government station, went into regular operation at the beginning of the year, and, considering the magnitude of the initial development and the high costs ruling during the period in which it was built, has had a successful initial year.

The total capital expenditure to date has been £2,022,315, of which about £520,000 represents expenditure on extensions, and substations which had not come into operation at the end of the financial year, and on the third dam, which is not yet complete or in operation. It is also to be noted that a considerable portion of the expenditure on transmission-lines and substations on the Hawke's Bay and Wairarapa side of the range is in reality an advance part of the expenditure necessary to provide load for the Waikaremoana scheme.

The financial position may be summarized as follows:—

	£
Capital	2,022,315
Revenue	76,857
Operating-expenses	21,865
Balance	£54,992

The balance has not been sufficient to pay interest and depreciation charges, and leaves a deficiency of £67,291. The balance represents a payment of about 3·65 per cent. towards capital charges, which is considerably more than was paid by the Lake Coleridge scheme (now quite successful) in its first or even second year of operation, and must be considered satisfactory.

The load on the plant has developed very rapidly. The peak load to the end of the financial year was 13,960 kilowatts, but since that date a maximum load of 18,100 kilowatts has been carried. The water-supply has been well maintained, enabling the plant to carry considerably more than its rated capacity without the third dam. To the end of the financial year it was not necessary to call on any of the connected fuel plants to carry part of the load, though since the end of the year it has been necessary to get the Wellington and Palmerston North plants to carry part of their load for a few days on two different occasions during continued dry spells with heavy loading. When the third dam is completed, which it is anticipated will be during the coming summer, the water capacity will be considerably increased, but even then if we meet an exceptionally long continued dry spell it may be necessary to get assistance from the fuel plants for short periods. Arrangements have been made with some of our customers who have fuel plants for a supply of power to meet these conditions.

Before supply was given from this plant contracts were made with the various supply authorities requiring power, and it was a condition of such contracts that the supply authority should guarantee to take within five years the amount of power he desired to be allocated to him. That the demand has exceeded the estimates of most of the Boards is evident from the fact that in some cases the demand has already exceeded the total allocation, and the peak load on the station has already been only a very few per cent. below what the various consumers' guarantees indicated as the probable load on the station at the end of five years.

CONSTRUCTION WORKS.

Lake Coleridge.

An expenditure of £358,460 has been made in connection with the extensions to this plant. The contractor for the tunnel has completed this work, although a serious accident during the progress of the work resulted in the loss of two men, who were buried under a fall from the roof of the tunnel. Despite serious delays in the delivery of the power-house plant, the first of the new 7,500-kilowatt units was put into operation during July, and the installation of the second is well forward. An extension to the main substation at Addington has been completed, a new 6,000 kv.a. synchronous condenser installed there, and work is well forward on new switch-gear which has become necessary to deal with the ever-increasing loads. An additional 5,000 kv.a. transformer bank has been installed, and orders have been placed for an additional 12,000 kv.a. bank. A second transmission-line between Hororata and Timaru is now nearing completion, and additions and alterations to accommodate this have been made to the substations at Hororata,

Ashburton, and Timaru. A transmission-line is also being erected between Timaru and Oamaru, and will be completed well before the end of the year. This new line between Hororata and Oamaru is being built so that it may at a later date be operated at 110,000 volts and serve as a main interconnecting-link between future possible power sites in Canterbury and Otago. In the meanwhile it will be operated at 66,000 volts, as in the case of the existing lines from Lake Coleridge.

Horahora.

The expenditure during the year has been £206,218. The work of extensions to the power-house and the installation of two additional 2,000-kilowatt units was completed during the year. The new concrete weir across the river above the head-gates has been almost completed, and the three regulating-gates to control the flow of the river have been installed. Construction work has been completed on the following transmission-lines: Hamilton–Penrose, 70 miles, being part of the main 110,000-volt line between Arapuni and Penrose; Waikino–Aongatete, 17 miles; Arapuni–Ngongotaha, 32 miles; Te Awamutu–Hangatiki, 19½ miles; Bombay–Pukekohe, 5 miles.

Construction work is in hand on the main double-circuit tower line between Arapuni and Auckland, and on a 50,000-volt line between Penrose and Takapuna.

Substations have been erected at Bombay and Ngongotaha, and are under construction at Hangatiki, Henderson, and Takapuna.

Practically the whole of this work on transmission and substations is really an advance part of the Arapuni scheme.

Mangahao.

The expenditure on this scheme has been £128,141 during the year. The main expenditure has been on completion of erection of the power-house machinery, and on preparation work and excavation for the upper Mangahao dam. The main transmission-lines have been completed as far as Wanganui, Ongaonga, and Masterton, and an extension to Napier is almost complete. Substations have been completed at Wanganui, Dannevirke, Mangamaire, Ongaonga, and Masterton, and the substation at Napier is under construction.

Arapuni.

The expenditure during the year has amounted to £329,624, mainly on the contract for headworks being carried on by Sir W. G. Armstrong, Whitworth, and Co. (Limited). Fair progress has been made during the year, though progress has been retarded somewhat by severe flooding in the Waikato River. The main diversion-tunnel for diverting the river during construction of the main dam has been completed, and a portion of the river has recently been turned into this tunnel. The quarry and ropeway for delivery of stone to the dam has been put into commission, and, as a good deal of the preparation work has now been completed on most of the sections, substantial progress should be noted during the present year. The excavation for the main power-house has been practically completed, and some of the power-house plant and machinery is beginning to arrive on the site. No unforeseen difficulties have been met with, and, although it does not appear that the contractors will be able to complete by the specified date—August, 1927—they should not be delayed very much beyond that date.

Waikaremoana.

Consequent on the rapid growth of load on Mangahao system, a start has been made on construction work on the main scheme at Waikaremoana. Tenders have been invited for the main items of the plant, which will consist of two units each of 20,000 kv.a. capacity. Surveys of transmission-lines to connect with the Mangahao lines at Napier are almost complete, and are also in hand between Waikaremoana and Gisborne. A programme of work has been drawn up, by which it is hoped to have this scheme in operation by about the end of June, 1929. To augment the existing construction plant, which has been supplying power to the Wairoa Power Board, a second-hand unit of 1,000 kilowatts capacity has been purchased from the Dunedin City Corporation, and will be installed by the end of the year in an extension of the existing temporary power-house.

Surveys, etc.

Investigation work on various possible sources of power in South Canterbury has been continued during the year, and is still continuing. Detailed investigations have been made at Lakes Tekapo, Pukaki, and Ohau, and at various possible dam-sites on the Waitaki River. The results of these surveys are being plotted and tabulated for comparison of various alternatives, and it is hoped that we will be in a position during the present year to make a pronouncement on the next source to be developed for additional power-supply to the Canterbury and North Otago districts.

A license has been granted for a large power development between Lake Manapouri and Doubtful Sound. This license has been issued to a syndicate of business men, who propose to endeavour to raise capital in the English market to develop this source of power for the manufacture of nitrates. The conditions of license amply protect the interests of the Crown in all respects, and provide for the license lapsing if adequate progress with complete investigation and construction work is not made within a reasonable time.

In addition to this the Department is itself making a fairly complete survey of the power possibilities in the country between Lakes Te Anau and Manapouri and the western Sounds. The purpose of this is not so much with the idea of immediate development for ordinary commercial and industrial requirements, but to enable definite information in regard to these large potential sources of power to be placed on record and published, with a view of attracting outside capital that may be desirous of establishing any special industry requiring large blocks of very cheap power. The country is exceedingly rough, and the climate exceptionally wet, so that progress on survey work has been slow. It is hoped during the coming season to obtain the services of the Defence Department to carry out aerial photographic survey of portions of the area.

POWER BOARDS, ETC.

The various Power Boards buying power in bulk from the Department have continued to energetically carry out their various schemes of reticulation, and have very materially assisted the Department in its general aim of making an adequate power-supply available to everybody within reasonably economic range of its lines. The Department recognizes that these electric-supply authorities are really partners with the Government in its general scheme of making power available generally throughout the country, and appreciates the co-operation that is being exercised and the stimulus that is being given to the load on the Government power-stations by the energetic policy of load development that is being carried out by most of the Boards.

I regret that considerable publicity was given during the year to statements, made by persons of consequence in the financial world, criticizing the Government's policy in allowing Power Boards to borrow so extensively in connection with electric works, the borrowing being classed in many cases as reckless and likely to become a serious burden on the ratepayers, to say nothing of prejudicing the country's credit in other directions. The suggestion was made that all proposals for loans for electric purposes should be scrutinized and revised.

These statements might give the impression that the Government was failing in its duty to the country, and that its scheme of electric distribution was wrongly conceived. However, a consideration of the true facts of the case, and knowledge of the vast amount of good that has been done already, would, I think, have prevented such sweeping statements having been made. It is, unfortunately, true that one or two of the Power Boards have not been as successful as others or as they might have been, but even these are fulfilling a useful purpose and supplying the general public with power at prices which compare favourably with those charged elsewhere. The increase in the use of electricity in the last few years has been phenomenal, and it would have been nothing short of miraculous if no mistakes had been made in the early days. That so few mistakes were made must surely be taken as an indication of the sound common-sense which has, in the main, governed this question. Such defects as have been made manifest are being rectified from time to time.

The whole question of Power Board finance and the prospect of success is now carefully reviewed by the Government, and only such Boards allowed to proceed as are considered to have reasonable prospect of success and such as are designed and constructed to fall into the general scheme of development decided upon by the Government.

The annual conferences of electric-supply authorities and of their clerical and technical staffs are doing much to clear up many of the difficulties that have existed in the past, and must do much good for the business generally. They are tending to produce more uniformity in the operation, and undoubtedly the interchange of ideas will do much to strengthen the weaker Boards. Such conferences are also welcomed by the Government, whose officers have much to gain by a frank discussion of difficulties that may have arisen in dealing with the many problems that arise between Government as supplier and supply authorities as customers throughout the year.

RULES AND REGULATIONS.

With the enormous increase that has taken place during recent years a revision of the rules and regulations governing installation and supply is urgently needed. Though the administration of the regulations is the function of the Government, through the Public Works Department, there is no doubt but that other sections connected with the electrical industry are vitally interested. With this fact in view I have set up an honorary advisory committee, with the Chief Electrical Engineer of the Department as chairman, to go through all rules, and get out a complete revision of rules relating to overhead lines and installations on consumers' premises. This committee is composed of two representatives from the Public Works Department, two from the electric-supply authorities, and one each from the Post and Telegraph and Railway Departments, Electrical Federation, Fire Underwriters' Association, and the Electrical Workers' Union. The committee has met regularly throughout the year, and hopes to issue the new regulations at an early date.

WIREMEN'S REGISTRATION.

The Wiremen's Registration Act passed during last session is now being administered by the Board set up under the provisions of that Act. It is considered that the standard and uniformity of wiring-work throughout the Dominion will be much improved as a result of the control and regulation given by this Act.

RAILWAYS.

Additions to Open Lines.

The expenditure out of the Public Works Fund amounted to £842,322, under the heads of provision of additional rolling-stock, tarpaulins, Westinghouse brakes, steam heating and electric lighting for cars, workshop machinery, improvements and additions to station buildings, extension of sidings, bridge-work, cranes, weighbridges, additions to tablet, telegraph, and telephone facilities, additional dwellings, signals and interlocking, and purchase of land.

Railways Improvement Authorization Act, 1914.

The expenditure under the Railways Improvement Authorization Act, 1914, amounted to £534,662, including the sum of £37,812, the Department's proportion of the cost of raising the loan. The works provided by this expenditure were—new stations and station-yards, goods-sheds, and terminal facilities at Auckland, Wellington, Christchurch, Addington, Lyttelton, Paeroa, and New Plymouth; duplications, Newmarket–New Lynn, Penrose–Papakura; grade easements, Penrose–Mercer; new lines, Auckland–Westfield; workshops and locomotive-workshops equipment; deviation, Pelichet Bay–Ravensbourne–Burke's; interlocking and safety appliances, and electric lighting.

WAIHOU AND OHINEMURI RIVERS IMPROVEMENT.

Work on the Mangaiti–Tirohia section was completed. On the Tirohia–Ngararahi section both stop-banks were completed. No. 1 dredge was placed in commission on the lower Waihou River, and is still engaged there. The concrete retaining-wall at Netherton has been completed, and the construction of a flood-gate is in hand. Works on the Hikutaia Stream and Ohinemuri River were continued. Generally the plant engaged on the works, consisting of dredges and drag-lines, has been maintained in good order.

PUBLIC BUILDINGS.

At Whangarei the necessary provision was made in the new Public Trust building to accommodate other Government Departments.

At Auckland the provision of yard and storage accommodation at Penrose for the Public Works Department was in hand, and the necessary buildings will be completed this year.

Land was acquired in Taumarunui to provide for the erection of residences for departmental officers.

A site was acquired and a building erected as a residence for the District Engineer at Stratford.

At Wellington a substantial addition to the main departmental Buildings was made by the erection of an annexe in the courtyard at the rear of the main building, thereby providing accommodation for a number of Departments. Additional accommodation for motor-cars was provided at Pipitea, and the old garage at the Government Buildings demolished. Additions to provide additional accommodation for the Land and Income Tax Department were completed.

COURTHOUSES.

New buildings were erected during the year at Balclutha, Te Puke, and Whakatane, and additions and alterations made to existing buildings at Gisborne, Wanganui, Palmerston North, Christchurch, Cromwell, and Invercargill. The usual necessary repairs and renovations have also been carried out where required.

PRISON BUILDINGS AND WORKS.

Considerable progress has been made during the year by the utilization of prison labour on building construction and prison works. The quarrying operations at Auckland have again shown profitable results. The location of the quarry being within the confines of the prison makes it especially adaptable to the class of prisoner necessarily detained at Mount Eden Gaol. Good progress has been made on the Rangitoto Island Road. Further improvement has been effected at the Waikeria Farm. A successful programme of draining has been pursued whereby considerable areas of swamp land have been brought into cultivation. It is hoped to extend activities in this direction, as it is realized that this class of occupation offers the greatest scope for reformative work. At Hautu and Rangipo farm camps progress has been maintained. Results have proved fairly conclusively that this country has great potentialities, and it is hoped to enlarge the area under development. The essence of success in dealing with this class of country is a plentiful supply of labour, hence it is ideal for a prison undertaking, as it provides a healthful outlet for prison labour, and by bringing waste land into productivity is increasing the sum total of the assets of the Dominion. Splendid results have been achieved in connection with the road-construction works in the Waimarino district. Recently the Raurimu Spiral Road was completed and opened for traffic. Road maintenance work has also been carried out by prison labour on the Waimarino–Tokaanu Road. Sawmilling activities at Erua were continued, and several capital improvements effected; but owing to the difficulties connected with the marketing of the timber and the accumulation of the stocks, it has been decided to discontinue milling operations.

The construction of the new prison at Mount Crawford, Wellington, shows every prospect of completion within the coming year. An alteration has been made in the plans, which will effect a considerable saving on the original estimate. Good progress has been made with the demolition and excavation of the Wellington Terrace Prison site for education purposes. Several alterations have been made at the brickworks at Trentham, but these works have not proved a financial success for some years, and it is proposed to concentrate on the draining and development of the farm. Extensions have been made at Point Halswell Borstal Institution, and it is hoped in the near future to erect accommodation to enable industrial work to be embarked upon. Constructional work has proceeded at Paparua, the administrative block being nearly completed. A curtailment of the original plans has been made owing to the heavy expenditure already incurred at institutional buildings there.

Satisfactory progress has been made in connection with the drainage and reclamation work at the Borstal Institution farm at Invercargill. A bath-house has been constructed for use by the inmates.

Police-stations.

New police-stations were erected at Kawhia, Morrinsville, Otira, Rimu, and Island Bay (Wellington); additions were made at Bull's (motor-shed), Christchurch (quarters), Feilding (office), Nightcaps (quarters), Nuhaka (stable), Taneatua (office and lock-up), Te Araroa (stable), Wanganui East (office), Ohakune (office), Rahotu (stable), and Raetihi (office). Houses and land for use as police-stations were purchased at Point Chevalier (Auckland), Anderson's Bay (Dunedin), and Havelock North; and sites for police-stations were acquired at St. Heliers Bay (Auckland), Te Karaka, Castlecliff, and Wataroa. Provision is being made on this year's estimates for the erection of new stations at places where they are urgently required to replace existing buildings which are beyond repair, or rented premises which are unsuitable.

Post and Telegraph Buildings.

The ever-present need for increased accommodation for the conduct of the Department's business at different places throughout the country serves to reveal in a most unmistakable manner the healthy and steady growth of the Dominion. The difficulties which are at times encountered in providing additional accommodation in existing buildings show all too clearly how little the designers of the original buildings anticipated the growth that would take place in the business of the Department. The rapidity of growth could not possibly have been foreseen. Needless to say, it is the present policy, when preparing plans for new buildings, to make provision for future additions which, when necessary, can be made with much less trouble than is now the case.

The Christchurch Post-Office building may be cited as one which, owing to the expansion of the city, required extensive alterations, especially in that portion of the building in which the public transacts its business. With the additional accommodation now provided the Christchurch Post-office building should meet requirements for a number of years.

Not only in the heart of Christchurch City was an improvement effected, but a fine post-office building was erected at New Brighton, the old building being altered to serve as a residence for the Postmaster.

The growing marine suburb of Eastbourne, Wellington, also was provided with a new edifice in keeping with the requirements of the district.

New buildings at Paeroa and Marton are in course of erection.

The extensive alterations to the Chief Post-office building, Gisborne, referred to in the last year's report, are now completed.

The increase of business at Darfield and Hawarden necessitated the erection of post-offices at those places. Formerly the work was handled at the railway-stations.

It was found necessary to build garages at Cambridge, Gore, Kaikohe, Otautau, Taupo, and Waimate, and to increase the garage accommodation at Wanganui. At Kaikohe a workshop was erected in conjunction with the garage,

while at Wanganui a blacksmith's shop was added to the building. Pending the erection of a suitable building at Auckland, a temporary workshop was built at Newmarket.

A list of new buildings and of alterations to existing buildings which it is considered will be required in the next decade has been carefully compiled, and the work will be carried out strictly in order of urgency.

While there is still much lee-way to be made up in the provision of buildings, the work is proceeding steadily. In addition to the buildings already mentioned, structures were erected at Ohau, Okaihau, Ruawai, Tuatapere, Waitahuna, Awakino (lineman's residence); and the Department contributed towards the costs of erecting and agreed to meet the cost of maintaining a new building at Maungatapere.

Additions were made to the post-office buildings at Albany, Hanmer Springs, Hikurangi, Matata, Moray Place (Dunedin), Newmarket, Patetonga, Queenstown, and Raetihi.

At Castlepoint a building belonging to the Marine Department, and at one time used as a lookout station, was removed to a suitable position, and fitted up as a post-office.

In order to provide for future expansion, additional land was purchased at Wanganui and Pahiatua. For storage purposes, land was acquired at Port Ahuriri.

Extensive additions and alterations to the Chief Post-office building, Palmerston North, are in hand. Provision has been made for a new building at Auckland for the accommodation of stores and workshops. Alterations to the buildings at Hastings and Masterton are also contemplated to meet increased work, while provision will be made for several automatic-exchange buildings and for additions to existing automatic-exchange buildings.

Plans for a new post and telegraph office at Dunedin, in which provision will be made for housing other Government Departments, are now in course of preparation. Owing, however, to the necessity to secure accommodation elsewhere for Departments at present housed in the old Post-office building, and the need for testing the foundations for the new building after the existing building is demolished, it will not be possible to invite tenders until about June next year. A new post and telegraph office at Napier is required, for which plans are now in course of preparation.

Mental Hospitals Department.

At Auckland, alterations and renovations were carried out and a new bakehouse provided. Laundry machinery is being installed.

At Tokanui a new female admission block was completed and occupied; renovations of the buildings on the property (excepting Unit No. 1) were carried out; additional implement-shed and stable were erected; additional lavatory accommodation was also provided. Renovations were carried out at the Superintendent's residence, and to sundry cottages, as well as at the laundry and milk-store.

At Porirua five villas have been erected for accommodation of patients, and the erection of a new residence for the Medical Superintendent is in hand; two new day-rooms and additional lavatory accommodation, and a three-storey additional building have been erected. A new kitchen and dining-room were provided; street lighting installed in the grounds; and the foundations for a neuropathic unit completed.

At Hokitika a new villa to accommodate thirty-eight patients has been erected, with the necessary furniture and fittings. Improvements at B and F Wards have been authorized.

At Nelson alterations and improved lavatory accommodation at El Nido Ward were completed.

At Stoke a new closed villa was completed, and the dam for water-supply was repaired and enlarged. An outfall sewer was constructed, and two reservoirs for water-supply were relined with concrete walls. General renovations to farm buildings and attendants' cottages were carried out, and motor-garage was enlarged.

At Sunnyside additions and alterations were made to laundry and entrance lodge.

At Hornby a contract was let for the erection of a new unit for nervous afflictions.

At Seacliff old single rooms and attendants' room in B Ward have been replaced by a new structure.

All exteriors at Waitati have been renovated and general maintenance carried out.

Buildings for Department of Agriculture.

At Lumsden and Roxburgh residences have been erected for the use of Inspectors of Stock. Residences and farm buildings were provided at Galloway, Puwera, and Waimaunga Experimental Areas. Electric lighting and power have been installed at the Weraroa Central Development Farm. At Green Island land and buildings were purchased for a poison-mixing depot, and when the necessary machinery has been installed all South Island supplies will be distributed from this depot. Plans are in preparation for buildings for a dairy laboratory, and also for a small butter and cheese factory for demonstration purposes.

Hospitals and other Institutions.

Additions and alterations at St. Helens Hospital at Gisborne were completed. At Pukeora Sanatorium substantial additions and alterations were carried out and additional machinery installed. At Otaki Sanatorium additional shelters and cubicles were provided, while the dining-room and recreation-room were added to and altered. The culinary department also received attention, while arrangements were made to provide a new water-supply for domestic and fire services. Necessary action to provide for electrical change-over to Mangahao current was taken. The principal works proposed are a new St. Helens Hospital at Christchurch, a new Nurses' Home at Queen Mary Hospital, Hanmer, and a Maternity Ward at King George V Hospital at Rotorua.

Educational.

A progressive policy of erecting new primary schools, remodelling and adding to existing schools, and replacing worn-out schools has been pursued, prior consideration having been given to the provision of accommodation in country districts where none previously existed.

The following is a list of the larger schools completed during the past year: Epsom, Newmarket, Brixton Road, Point Chevalier, Westown, Eltham, Tawhero, Bunnythorpe, Napier South, Mahora (remodelled), Dannevirke South (remodelled), Dannevirke North (remodelled), Kaiwarra, Mount Cook, Christchurch West, Richmond, Lyttelton Street, Southbridge, Kumara, Caversham, St. George, and Invercargill North, while work is in progress at Napier Street (Auckland), Papanui, and Invercargill South.

A system of consolidation of small schools has been inaugurated at Piopio, Lower Mangorei, and Oxford, where small neighbouring schools have been closed and schemes put into operation for the conveyance of the children to and from a larger central school.

In order to bridge the gap between the primary and secondary schools, and to make better provision for vocational training, the junior-high-school system has been introduced. Junior high schools have been established at Kowhai, Matamata, Whangarei, and Waitaki, where accommodation has been provided by alterations or additions to existing buildings.

Training college buildings have been completed at Auckland (first portion) and Christchurch. The second portion of the Auckland building is now under construction.

New high schools have been erected by the Public Works Department at Whangarei, Hastings, Hutt Valley, Wellington East, and Invercargill, and additions to existing buildings at Thames, Gisborne, and Timaru. Under the same arrangement, additions are being carried out at Whangarei and New Plymouth. Other works completed are the Napier Boys' High School, Boys' High School at Riccarton, and Balclutha Boys' High School.

Additions to Hamilton Technical School, and new workshops at the Wellington Technical School are also being carried out.

The Auckland University (Arts Building) has been completed, and the new Medical and Dental buildings at Dunedin will soon be ready for occupation.

Lighthouses.

The light on Tiritiri Island was converted from an incandescent watched fixed light to an unwatched automatic acetone flashing light, thereby enabling a reduction of two to be made in the number of lightkeepers employed. The automatic light was first exhibited on the 30th April, 1925.

During the year an automatic unwatched light was erected on Matakaoa Point, near East Cape. This light was first exhibited on the 29th August, 1925.

Apparatus to enable the present lights at Cape Foulwind and Kahurangi Point to be converted to automatic lights arrived during the year, and it is expected to have the alterations made at an early date.

A small automatic light has been obtained for erection at the mouth of the Piako River.

During the year the catadioptric apparatus which has done service since the 1st August, 1865, in the lighthouse at Dog Island was replaced by the installation of the new incandescent apparatus.

Wireless-telegraph stations were installed at two lighthouses—namely, Puysegur Point and Stephen Island. An automatic radio direction-finding beacon apparatus has been procured, and it is hoped to have it in operation at Cape Maria van Diemen within the next few months.

Orders have been placed for two diaphone fog-signals of the latest type, and as soon as they are received it is proposed to install one at Godley Head and the other at Pencarrow, in place of the present signals of the explosive type.

Harbour-works.

All buoys and beacons in harbours under the control of the Department have been regularly attended to by the s.s. "Tutanekai."

Subsidies were paid in respect of the following works: Cow Island light (Coromandel Harbour); wharf at Big Omaha; dredging in Wade River; wharf at Stirling, Matakohe.

Grants were paid to various local authorities for the following works: carlanding at Kohukohu; wharf and shed at Silverdale, Wade River; snagging Mokau River; repairs to wharf at Elmslie Bay; landing and road at Bruce Bay; wharf-shed, Port Charles wharf; protective works, Waikouaiti River.

Tourist and Health Resorts.

The expenditure on tourist and health resorts showed a considerable increase as compared with that of the previous financial year, occasioned by the largely increased tourist traffic to various resorts in which the Department is interested.

Substantial additions to huts on the Milford Track were provided; the Department's hostel at Lake Te Anau was virtually re-erected, and substantial additions thereto were made. Extensions to the Lake House at Waikaremoana were completed, and electric light installed. The site for proposed new hostel at Waitomo was excavated, and electric light was installed in the caves there. Launches and boats for Milford Sound, and the Waimangu round trip, Rotorua, were purchased.

TELEGRAPH EXTENSION.

The capital expended during the year ended 31st March last in improving the existing facilities to meet the standard of modern requirements, and of extending the telephone exchange, toll and telegraph plants to provide for additional business, amounted to £931,661. That this expenditure was fully justified, and that the year was one of exceptional progress, is evidenced by the fact that the telegraph and telephone revenue showed an increase of £146,642 over that of 1925—the previous best year in the history of the telegraph and telephone service.

Of the works upon which heavy capital expenditure was incurred during the year the following were the more important:—

The laying of the submarine cable for inter-Island telephone communication.

The provision of a comprehensive telephone and telegraph network in the North Auckland district.

The improvement and extension of the telephone facilities between certain groups of exchanges in the King-country, Waikato, Wanganui, and New Plymouth districts.

The improvement and extension of the telephone facilities between Christchurch and Dunedin and the intermediate stations.

The reconstruction of a portion of the arterial line of telephone communication between Dunedin and Invercargill.

The conversion of the Central Telephone Exchange, Wellington, and the Devonport Exchange, from manual to automatic working.

Preliminary work in connection with the installation of the automatic switching system at Christchurch, Dunedin, and Napier exchanges.

The partial completion of a comprehensive system of underground telephone cables in Christchurch to replace the present defective and obsolete aerial system.

The establishment of seven new telephone exchanges in country districts.

The extension of the switching facilities at fifty-seven exchanges.

The installation at various places throughout the Dominion of twenty-eight public call offices (coin-in-the-slot telephones).

The providing of telephone-exchange facilities for 13,368 new subscribers.

In the matter of pole-line and wire, the foregoing and other works carried out during the year represented the erection of 1,776 miles of pole-line and 15,640 miles of open aerial wire. In addition 270 miles of lead-covered cable were laid for subscribers' circuits, containing 73,700 miles of wire.

Of the four services—telephone exchange, toll, telegraph, and wireless, respectively—the telephone exchange showed the greatest development.

As a result of special efforts having been made during the year to overtake the arrears of telephone subscribers' services a new record was established in the matter of new connections, the total for the year, 13,368, being sixty-four in excess of the number connected during any previous year.

Due probably to the further recognition by the farming community of the great value of telephone service, and also to the favourable conditions offered to country residents of securing telephone facilities, particularly by means of the party-line system, which enables backblock settlers ten to twenty miles distant from an exchange to obtain telephone-exchange connections at rates comparable with those ruling for exclusive connections in the cities, the development at country exchanges equalled the combined development of the city and main provincial exchanges, the percentage rates of increase during the year being 14·2 and 14·1 respectively.

The number of deferred applications on hand at country exchanges on the 31st March last was 890, and at other exchanges 190, as compared with 1,591 and 2,031 respectively on the 31st March, 1925.

Prominent among the works of magnitude upon which it is proposed to concentrate during the coming year is the conversion to automatic working of the Dunedin and Christchurch Exchanges. The switching systems at both these exchanges have long been obsolete, and it has only been by improvized methods and the employment of auxiliary apparatus, more or less costly to install and maintain, that the period of usefulness of the present switchboards has been extended. A stage has now been reached where further extension by expedients of the nature referred to is impracticable, and there is no alternative but to replace both switching-systems with apparatus of a modern type capable of meeting present-day and future requirements. These two works, together with the installation of automatic switching-systems at Napier, Hawera, Dannevirke, and Stratford, the renewal and reconstruction of the cable system at Christchurch, and the extension of the cable system at Invercargill and other large exchanges, will comprise the more important of the year's telephone-exchange operations.

In the matter of toll and telegraph extensions, one of the most important works in view is the erection of a metallic circuit between Blenheim and Christchurch, and the installation at Seddon of repeating-apparatus, so that the fullest use may be made of the new Cook Strait telephone-cable. Other works in view are a rearrangement of the toll circuits in the west coast of the South Island with a view to improving their efficiency, the completion of the reconstruction of the arterial line of communication between Dunedin and Invercargill, the installation of machine-printing telegraph apparatus at Napier and New Plymouth, and the conversion to metallic of a number of earthworking lines in districts where power lines are being reticulated.

WORKS FOR DEFENCE DEPARTMENT.

During the past year considerable progress has been made with the development of the mobilization base and training-camp at Waikato Camp, Ngaruawahia. Four magazines for big explosives and the earthworks for others have been completed. Three married quarters and one single men's quarters (ten men) have been erected. A kitchen and two mess-rooms, capable of accommodating a thousand men, have been provided, and were in full use in February. The water-supply system, consisting of a pumping plant on the banks of the Waikato River, which pumps from a large filtration-chamber to an 80,000-gallon reservoir, with reticulation therefrom to the training-camp area, is now complete, and is giving every satisfaction. Surface drainage and roading has effected considerable improvement to the camping-area. Large areas badly infested with noxious weeds have received thorough attention. The construction of the large Ordnance Depot buildings for reception of stores is now being undertaken.

In view of the development of Waikato Camp, little money was available for works elsewhere, although many of these are of considerable importance. Several new drill-halls are urgently required, while mess-room accommodation, married quarters, and store-rooms at Burnham Camp are very necessary.

It is hoped to complete the more urgent of these works this year, but the majority must be delayed pending the completion of Waikato Camp. Another urgent work similarly affected is the development of the important, recently acquired aerodrome-site at Hobsonville, Auckland.

MECHANICAL APPARATUS.

The economical prosecution and early completion of construction-works depends firstly upon the early provision of suitable labour-aiding machinery, and secondly upon the efficient maintenance of such plant. This side of the Department's activity is always looked at from the viewpoint of the field officer, hence a sincere endeavour is made to deal promptly with requisitions for plant and for renewable parts.

Two years ago a plant-register system was adopted, whereby each Engineer in charge of a district obtains regularly an up-to-date record of the " days worked " by each plant article. As was anticipated, one direct result has been the more frequent transfer within the respective districts of idle plant, which in turn has, on occasions, avoided a request for the supply of a similar new article.

The transfer of expensive and efficient plant from one district to another—even to a greater extent than would at first appear advisable—can be justified, and is constantly taking place. Apart from this factor, there is, of course, a demand for up-to-date machinery, and a need for the replacement of worn-out plant, which during this year has occasioned the purchase by competitive selection of the following items: Seven air-compressors, one bitumen-boiler, one bitumen-sprayer, ten concrete-mixers, one conveyor, three electric motors, four excavators, eight light locomotives, four machine tools, eleven motor-trucks, one motor-velocipede, two oil-engines, two oil-winches, ten pumps, three road-graders, fourteen rollers, one steam piling-hammer, three stone-crushers, one sweeper, five tractors, two trailers, and one welding-plant; while fifty-eight ballast-wagons, also thirty-eight other vehicles for train-running, were purchased from the Railway Department.

SUMMARY.

To state in brief the operations of the Department, I would point out that in the past seven years £7,486,719 has been expended on railway-construction, and during that period a length of 317 miles of railway has been brought under traffic, of which 153 miles have been handed over to the Railways Department for working, while 164 miles are being operated by the Public Works Department for the carriage of goods and passengers. The cost of the lengths handed over to the Railways Department was, including Otira Tunnel, £5,423,149, a considerable portion of which was expended prior to 1919.

On the various classes of roads, including main highways, a total of £4,673,570 was expended, and during the seven years considerable improvements in road-construction methods have been introduced. Further extensive work has been done in the direction of additional construction and improved surfacing of roads.

In the sphere of hydro-electric development, 66,233 horse-power has been developed and transmitted to centres of demand, at a capital cost of approximately £3,900,000, an average cost of £59 per horse-power. 20,000 additional horse-power has just been brought into operation at Lake Coleridge.

An area of 28,114 acres has been irrigated, the expenditure during the past seven years amounting to £509,961. This sum includes expenditure for supply of water to further areas when construction operations are sufficiently advanced.

Another activity involving considerable expenditure from the Public Works Fund is telegraph extension, the expenditure on which during the last seven years has been £4,284,767, distributed annually as follows: 1919–20, £249,379; 1920–21, £336,468; 1921–22, £590,981; 1922–23, £501,575; 1923–24, £717,409; 1924–25, £957,294; 1925–26, £931,661.

Mechanical plant has been largely availed of, and has proved satisfactory on works where such can be advantageously used; at the same time the Department has been able to employ more manual labour than in earlier years. The introduction of mechanical plant and labour-saving appliances has been advantageous, allowing of large operations being entered upon without reducing the number of men required.

The housing of the workers still continues to receive the same attention as hitherto from the Department: the provision of huts in place of tents has proved economical in places where camps for workmen were established.

The Department's main operations consist in providing increased transport both by rail and road, aiding the producer and distributor alike.

The development of water-power resources, thereby making electricity available in many areas, has been a very prominent feature in the Department's operations over a decade. Further development works in this connection are still in hand, the major operation being the harnessing of the Waikato River at Arapuni, while the large undertaking for the utilization of power from Lake Waikaremoana has been commenced on a substantial scale. The advantages accruing to settlers in the backblocks as a result of improved roads, telephonic communication, and electric lighting and power, cannot be overestimated, and these benefits have been brought about in a comparatively short period.

The provision of suitable buildings for the operations of State Departments must continue to be made as the population increases and the activities of the State expand. The erection of buildings to accommodate many Departments has been aimed at in all large centres, enabling a concentration of offices which have been distributed over wide areas with a corresponding disadvantage to the general public.

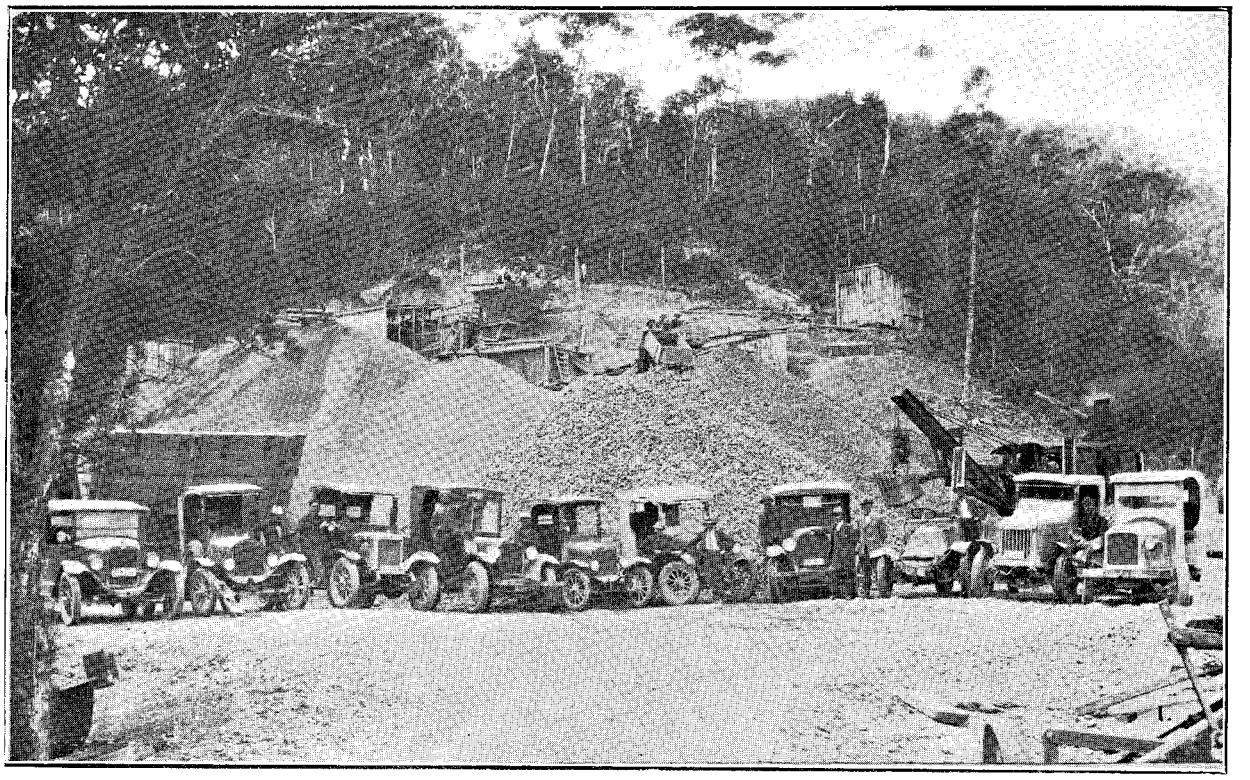
The provision of adequate water-supplies for irrigation purposes in areas where the rainfall is small and the production affected thereby is a development of recent years. Central Otago has received attention hitherto, but there are other districts in the Dominion where similar conditions are found, and the Government, when the occasion arises, will extend its operations to meet the demand.

As appendices to this Statement honourable members will find full details of the principal works carried out by the Department, in the reports of the Engineer-in-Chief, Government Architect, Chief Electrical Engineer, and Main Highways Board, respectively.

Schedule showing Particulars of Railway-lines under Construction at 1st April, 1926.

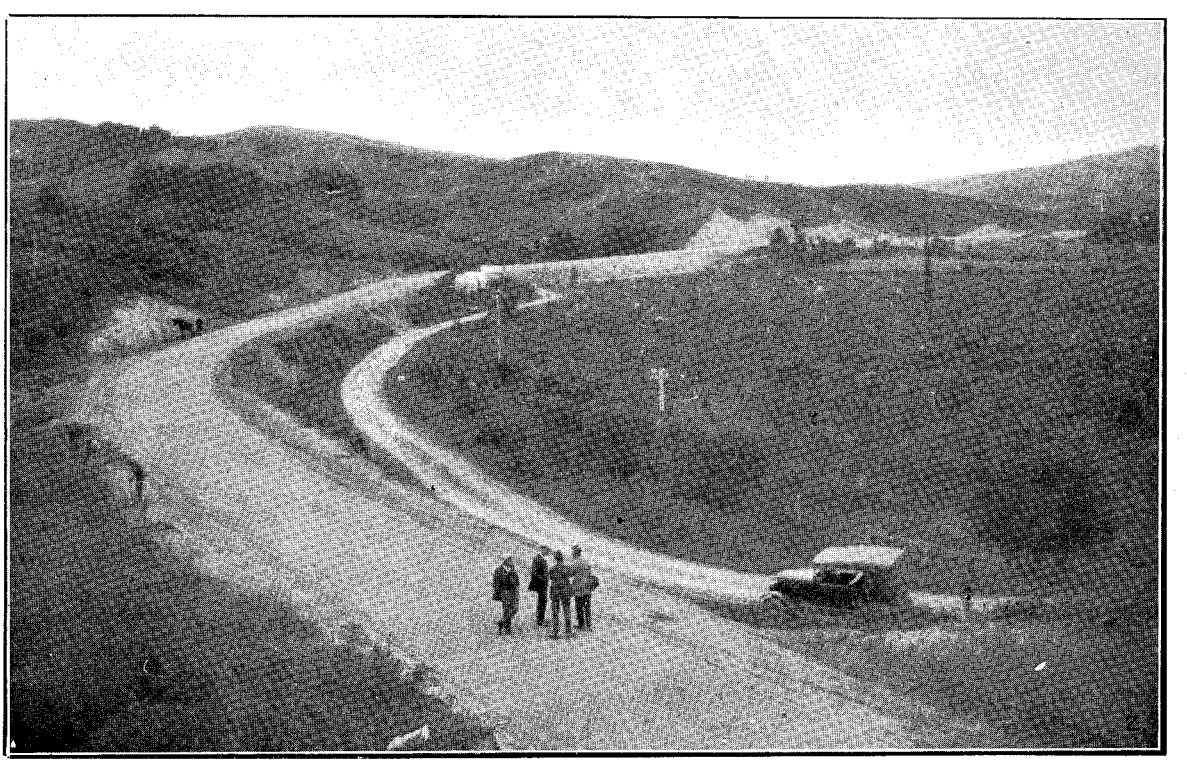
Railway.	Length of Section.	Length under Construction.	Handed over to Railway Department during Year ended 31st March, 1926.	Rails laid during Year.	Length over which Traffic is being run.	Length over which Goods Traffic only is being run.	Length ready for handing over to Railway Department.	Ready for handing over to Railway Department within One Year.	Ready for handing over to Railway Department within Two Years.	Amount spent to Date.	Estimated Amount to Complete.
	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	£	£
North Auckland Main Trunk and Branches—											
Whangarei Branch	14 56	..	14 56	..	..	..	..	..	..	..	3,000
Okaihau–Mangamuka	30 0	4 0	..	0 36	..	..	..	..	..	71,771	900,000
Huarau–Waiotira	15 36	..	15 36	..	..	..	..	..	..	..	3,000
Waiotira–Kirikopuni	14 0	14 0	..	2 20	..	12 0	..	12 0	14 0	763,584	207,000
Kirikopuni–Dargaville	18 40	..	..	..	..	..	..	..	..	10,602	342,000
Auckland–Westfield Deviation	9 67	9 67	..	..	..	..	..	..	..	146,022	450,000
Paeroa–Pokeno	42 0	..	..	..	..	..	..	..	..	4,759	1,018,518
East Coast Main Trunk and Branches—											
Waihi–Tauranga	38 25	38 25	..	6 71	..	17 0	..	14 0	38 25	694,732	310,000
Tauranga–Taneatua (including Mount Branch)	63 12	63 12	..	1 52	63 12	..	..	..	63 12	1,297,383	88,500
Taneatua–Opotiki	25 0	..	..	..	..	..	..	..	..	3,312	500,000
Gisborne–Wairoa	70 0	..	..	..	..	..	..	..	..	120,795	1,500,000
Wairoa–Eskdale	58 10	58 10	..	3 10	..	..	..	..	..	581,588	1,270,000
Waikokopu Branch	24 58	24 58	..	..	24 58	..	..	24 58	..	550,616	40,000
Stratford–Main Trunk—											
Tahora–Ohura	24 0	4 0	..	..	..	..	..	..	..	82,750	750,000
Ohura–Okahukura	19 0	19 0	..	..	16 0	..	..	..	..	580,546	137,000
Opunake Branch and Manaia Branch	28 49	28 49	..	0 74	..	23 0	23 0	..	..	438,411	25,000
Rimutaka Deviation	13 24	..	..	..	..	..	..	..	..	..	970,000
Wellington–Tawa Flat Deviation	8 0	..	..	..	..	..	..	..	..	3,128	1,100,000
Hutt Valley Railway	..	3 0	..	..	..	..	..	..	..	94,826	..
Midland—											
Glenhope–Inangahua	55 0	6 0	..	3 37	3 71	..	3 71	..	..	149,098	1,300,000
Westport–Inangahua	22 0	4 0	..	2 2	4 0	..	..	4 0	..	141,301	530,000
South Island Main Trunk—											
Wharanui–Parnassus	83 0	..	..	..	..	..	..	..	..	17,243	2,000,000
Lawrence–Roxburgh—											
Beaumont–Roxburgh	24 0	9 10	14 70	1 57	..	..	..	..	..	38,756	60,000
Orepuki–Waiau	8 18	..	8 18	..	..	..	..	..	..	..	..
Totals	..	285 71	53 20	22 39	111 61	52 0	26 71	54 58	115 37	5,791,223	13,504,018

Note.—Estimates to complete include amounts required for maintenance and running traffic where traffic is being run.



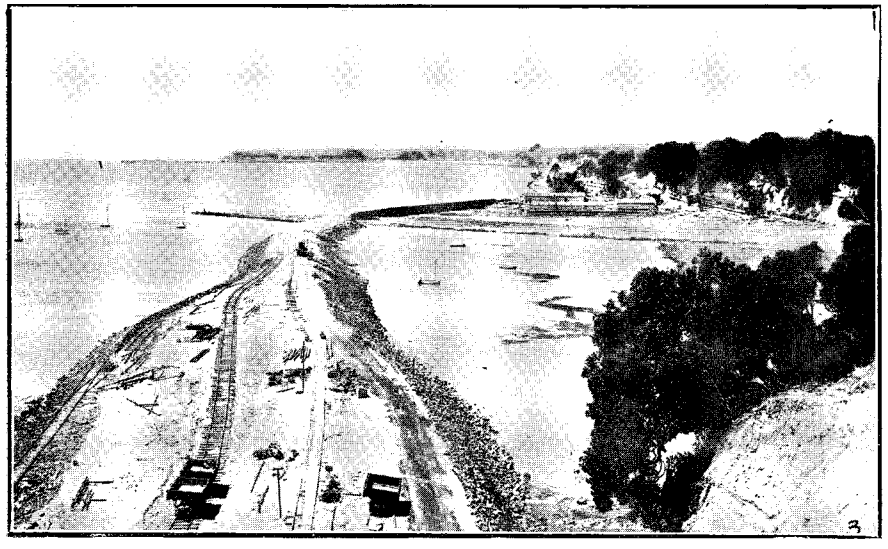
OAKLEIGH–WAIPU ROAD.

Allison's Quarry, near 12-mile peg.

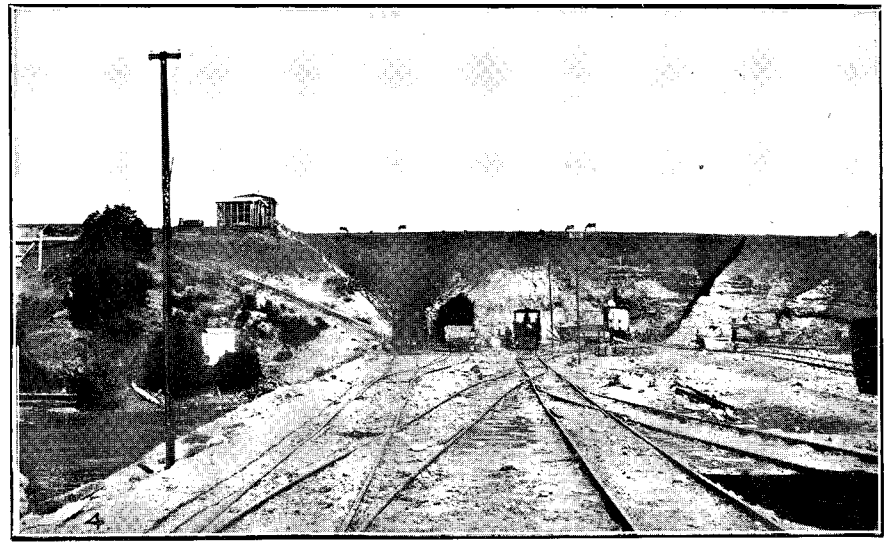


KIRIKOPUNI–PARAKAO ROAD.

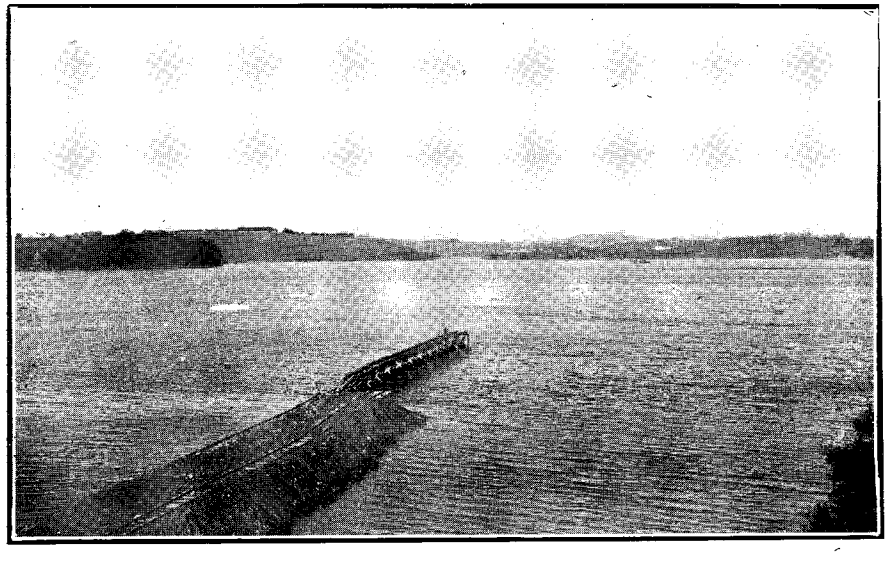
View half a mile from Kirikopuni.



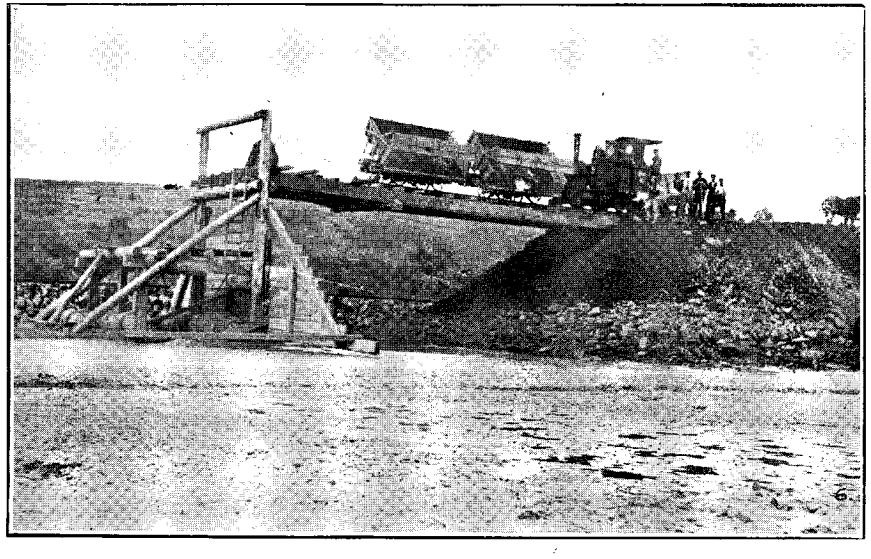
FORMATION AND STONE PROTECTIVE WORK AT SOUTH END OF NEW AUCKLAND STATION-YARD



EXCAVATION FOR ORAKEI STATION-YARD AT 2 M. 60 CH.
Cutting 132 ft. wide, 70 ft. deep; 200,000 cub. yd.

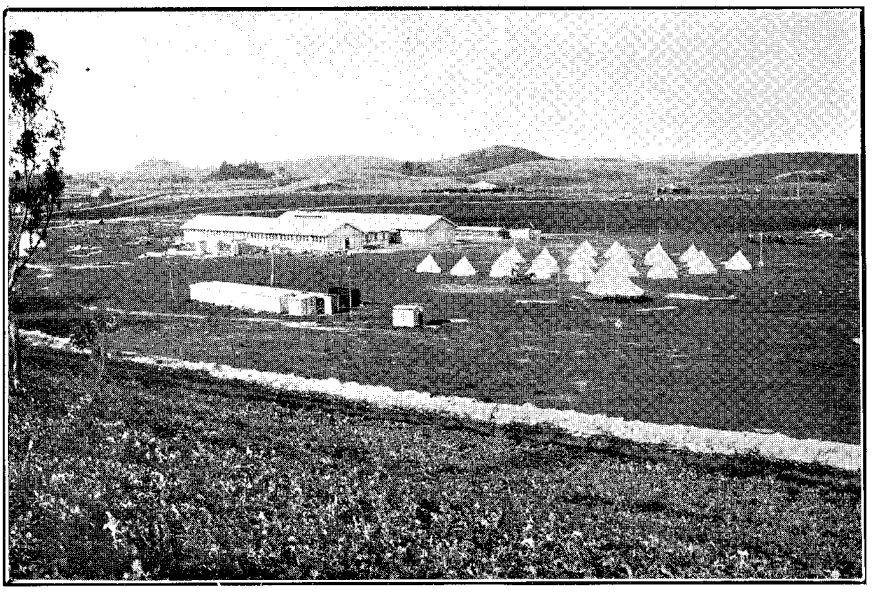


HOBSON BAY EMBANKMENT AND TEMPORARY BRIDGE.

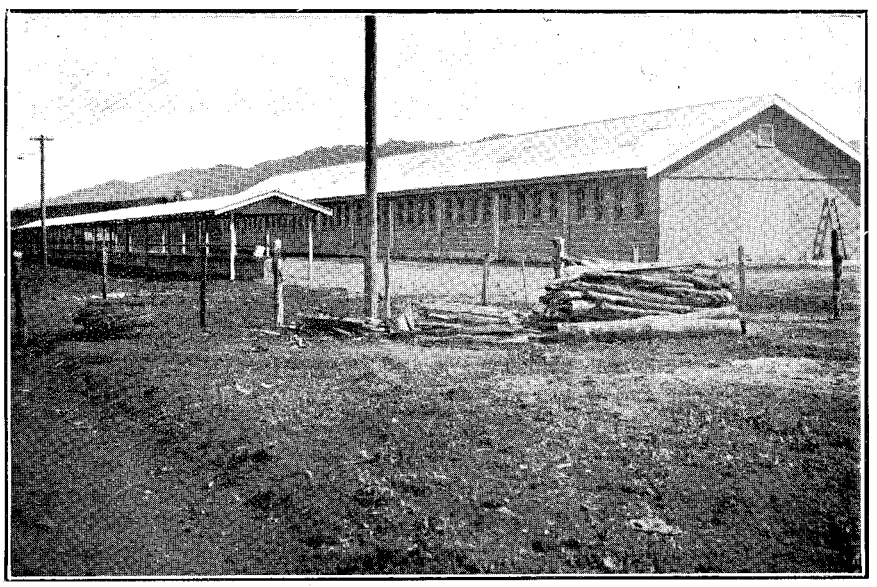


MOVABLE TRESTLE FOR HOBSON BAY EMBANKMENT.

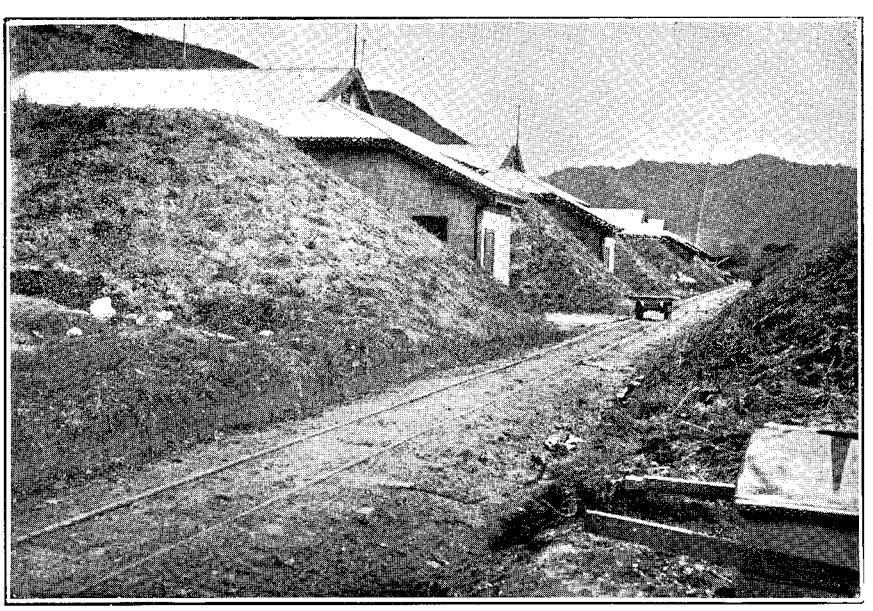
AUCKLAND–WESTFIELD RAILWAY.



General View of Buildings.

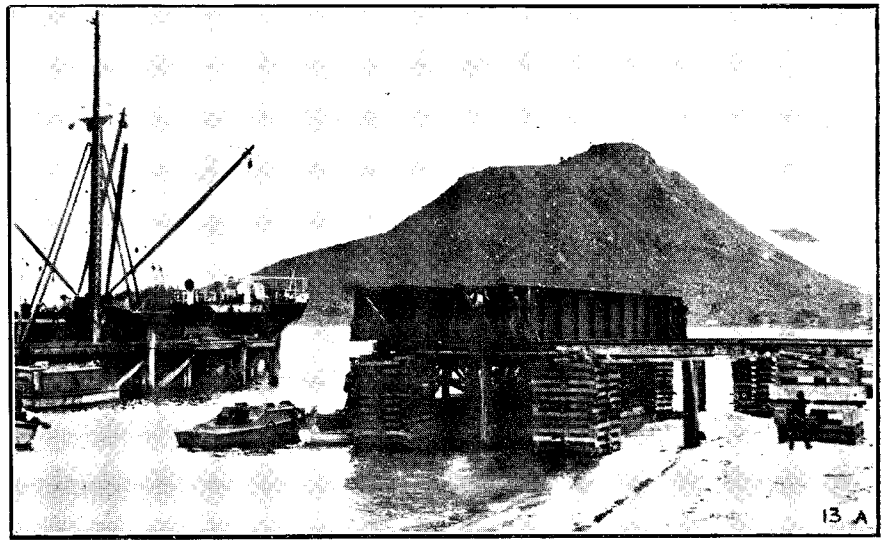


Ablutions, and one of the Dining-halls.

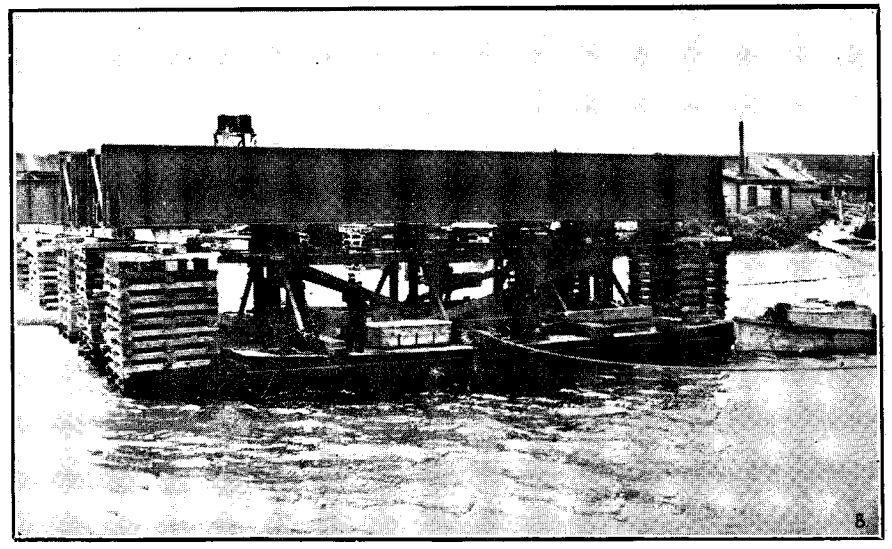


Looking along Traverse: No. 1 Magazine in foreground.

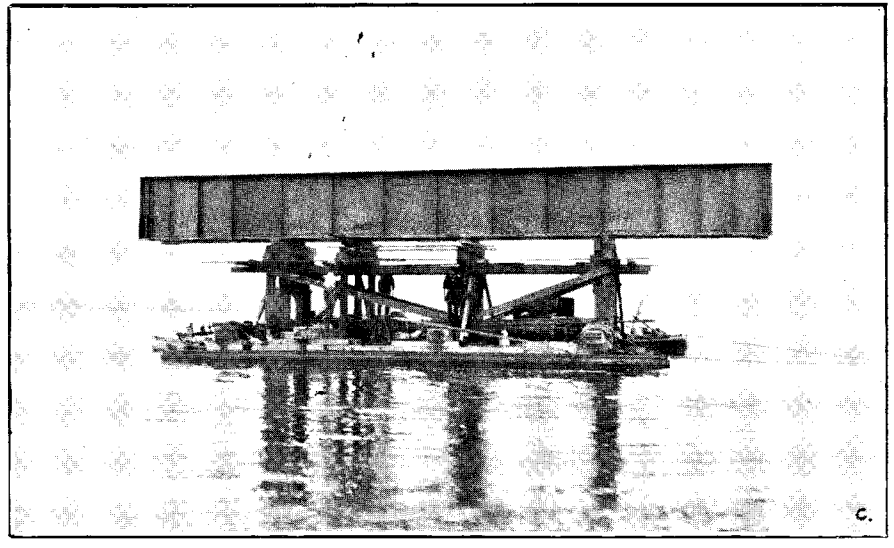
NGARUAWAHIA MOBILIZATION BASE.



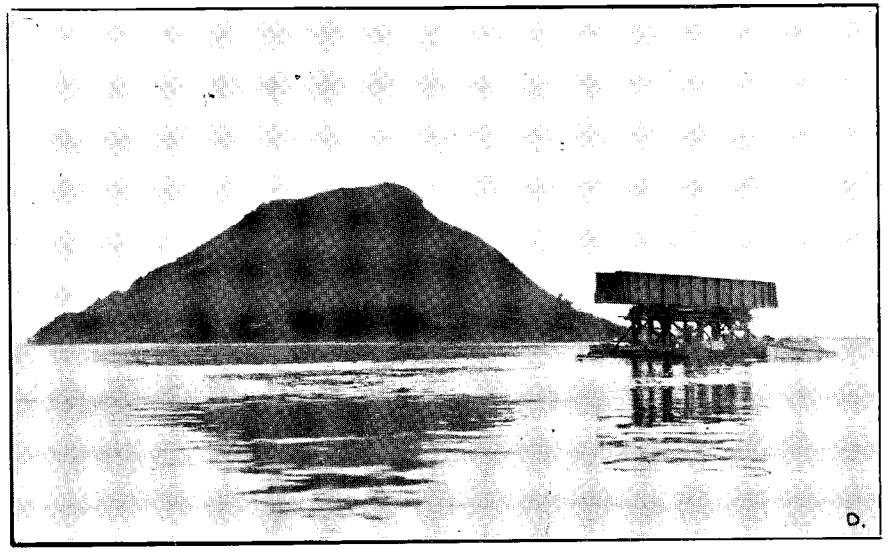
GIRDERS ON SKIDWAY AT MOUNT MAUNGANUI.



PONTOONS UNDER GIRDERS READY FOR LIFTING.



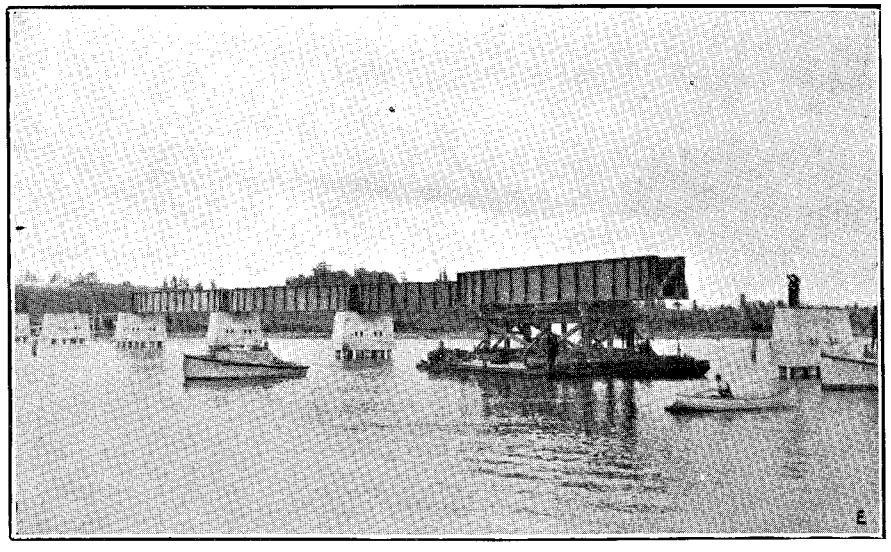
GIRDERS AFLOAT.



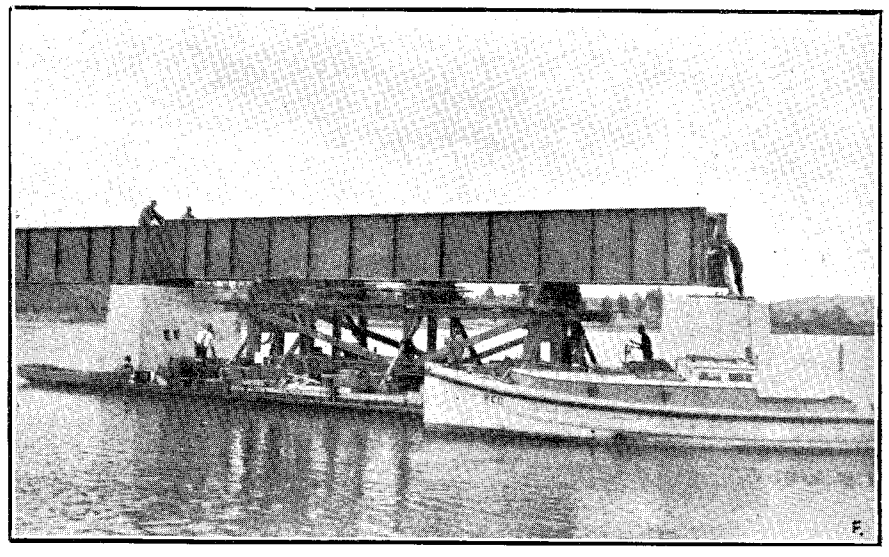
GIRDERS BEING TOWED ACROSS TAURANGA HARBOUR.

EAST COAST MAIN TRUNK RAILWAY — TAURANGA WESTWARDS: WAIROA RIVER BRIDGE.

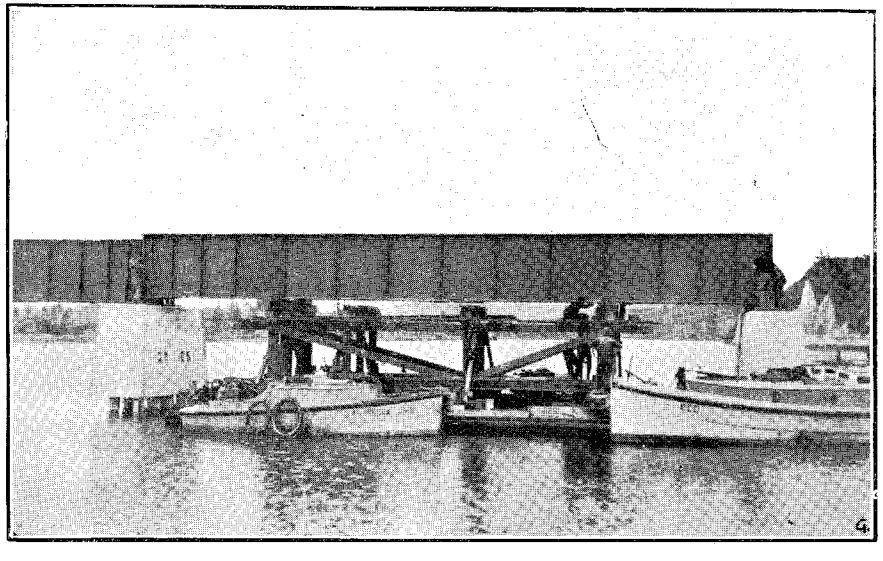
Views showing method of transporting and erecting Plate-girder Spans. The rise of tide is used to lift Girders into position.



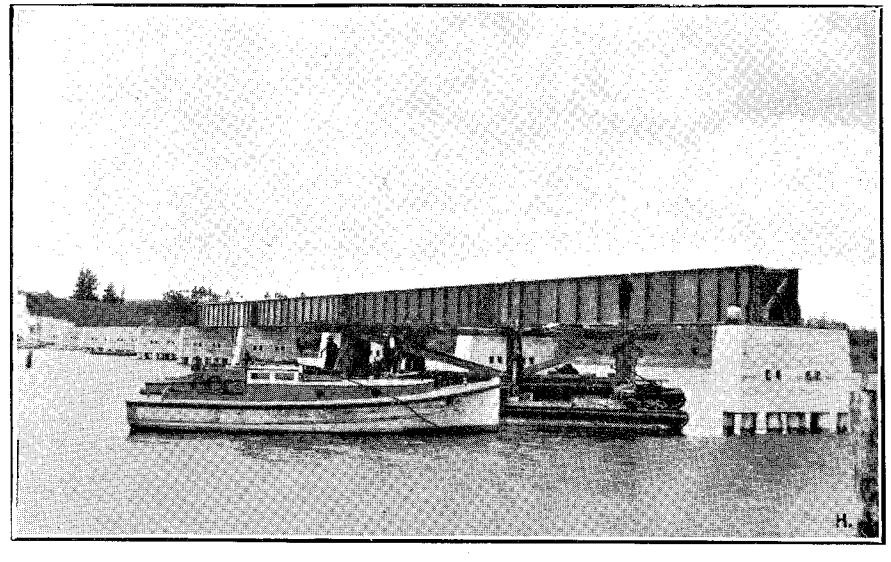
Approaching Bridge-site.



In position ready for lowering.



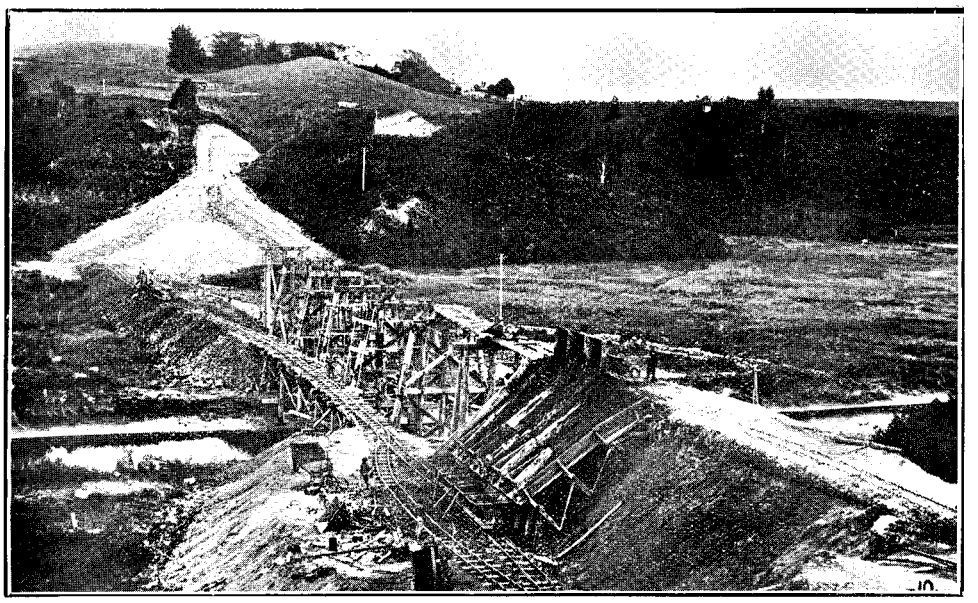
Girders being lowered into final position.



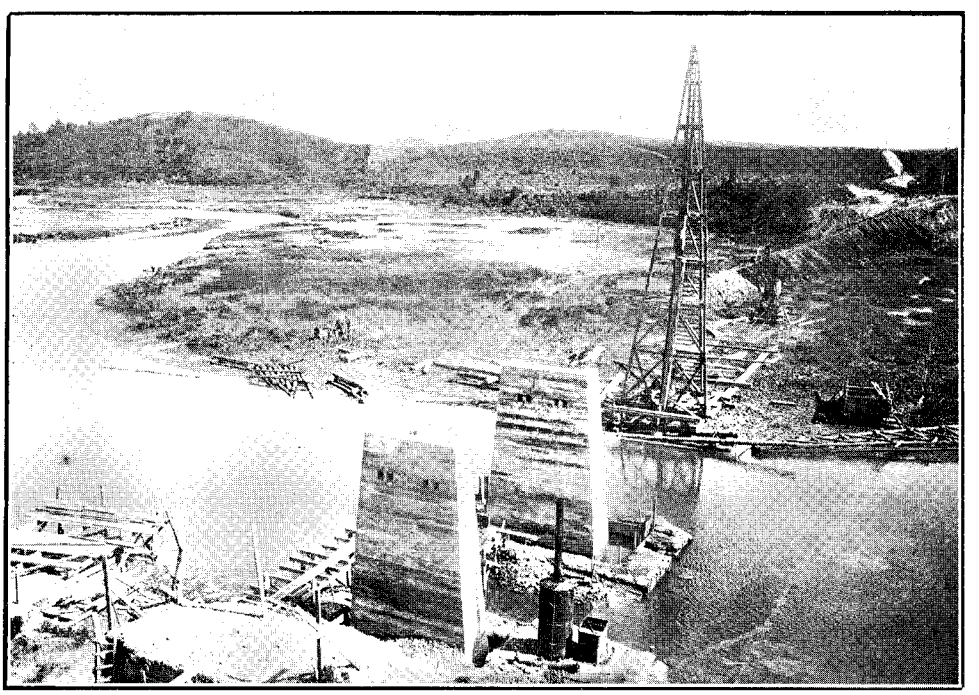
Girders in final position: Pontoons being taken away.

EAST COAST MAIN TRUNK RAILWAY — TAURANGA WESTWARDS: WAIROA RIVER BRIDGE.

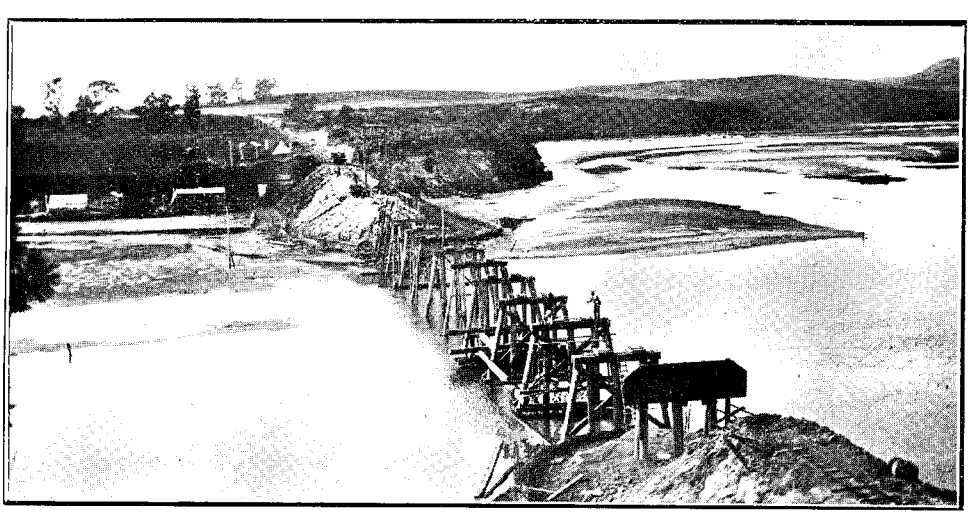
Views showing method of transporting and erecting Plate-girder Spans. The rise of tide is used to lift Girders into position.



Apata Section: Wainunui Bridge and Fillings at 23 m. 3 ch.

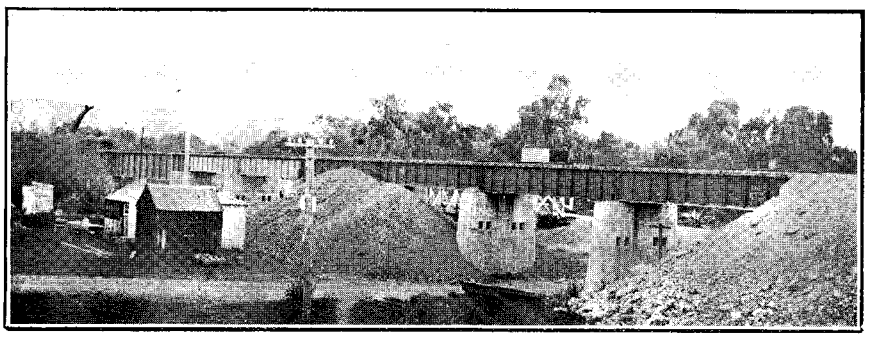


Te Puna Section: Waipapa Bridge at 29 m. 29 ch.

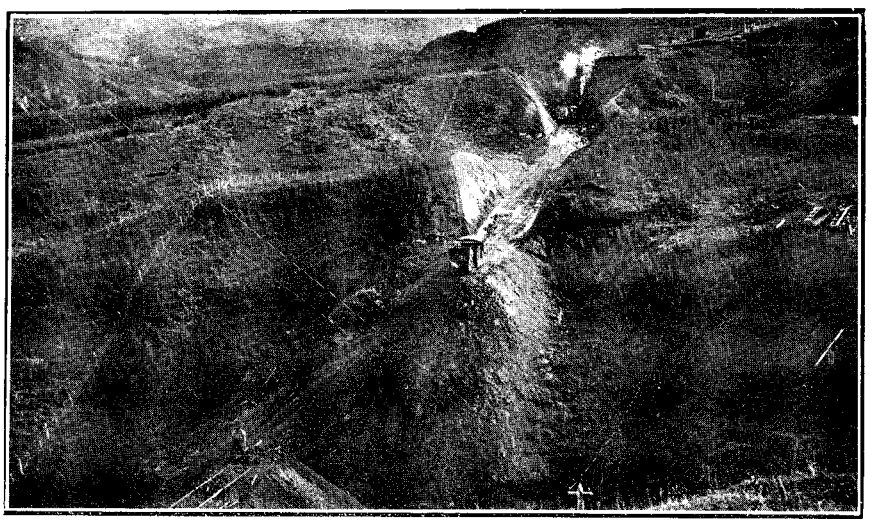


Te Puna Section: Bridge at 32 m. 8 ch. ready for placing Girders.

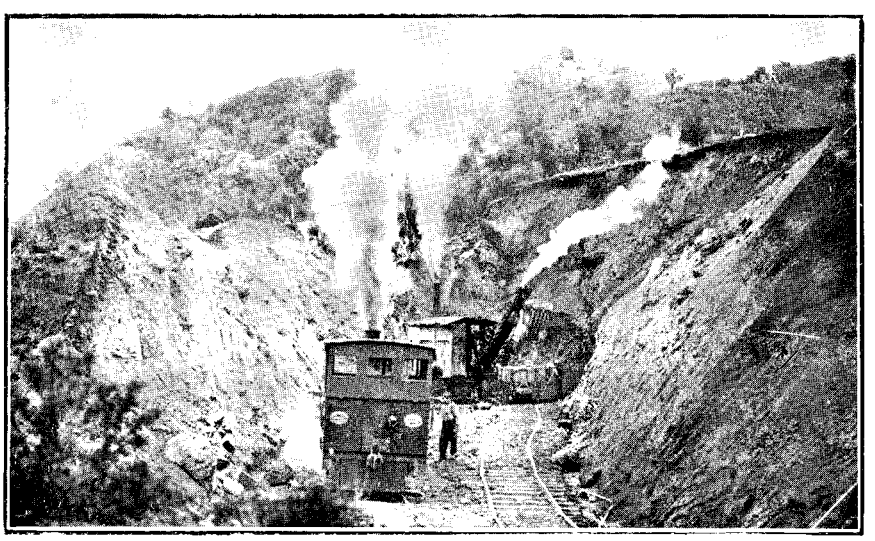
EAST COAST MAIN TRUNK RAILWAY.



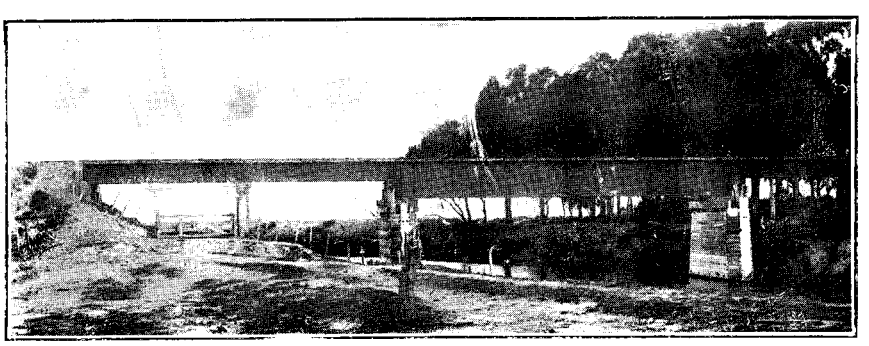
East Coast Main Trunk Railway, Rangitaiki Section: Rangitaiki River Bridge at 87 m. 77 ch.



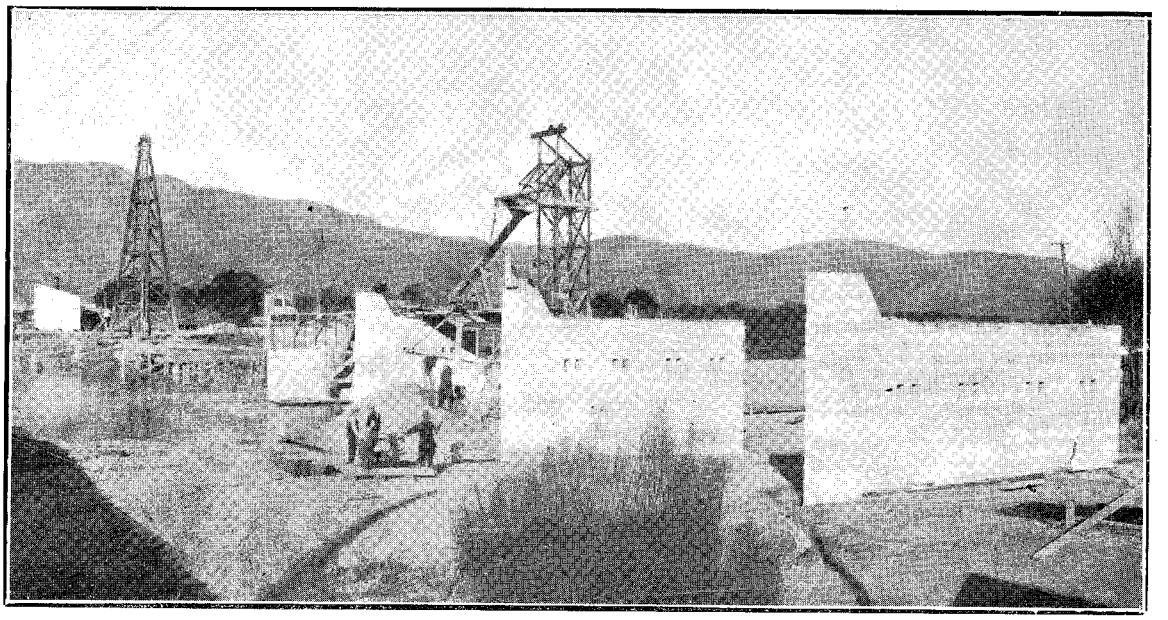
Napier Wairoa Railway, Tutira Section: View at 19 m., looking northwards.



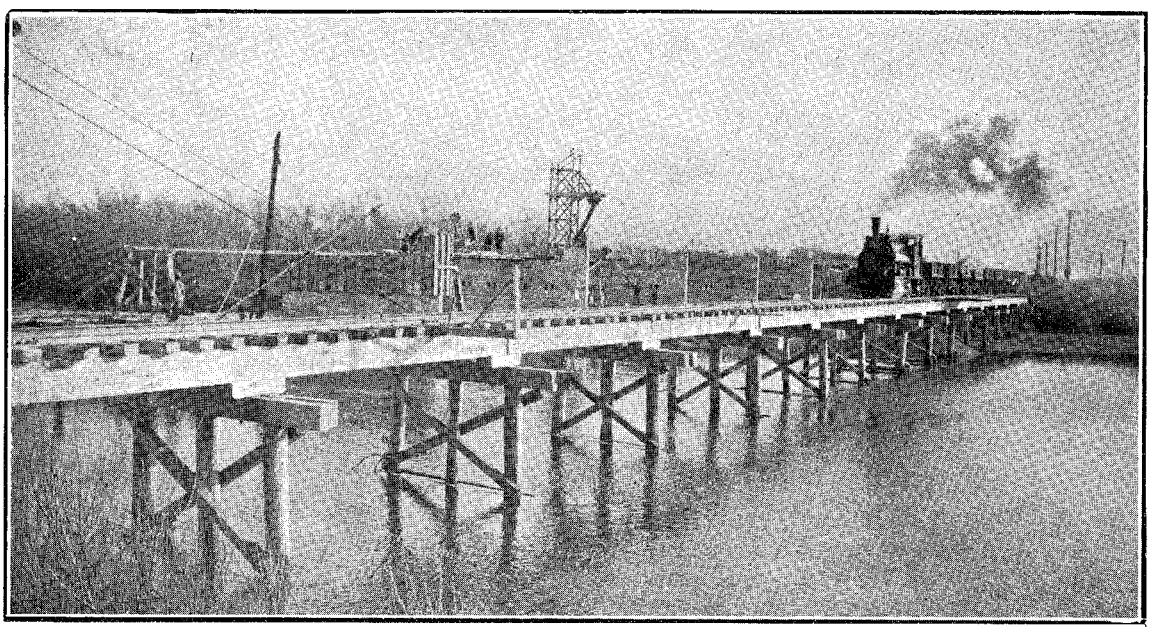
Napier–Wairoa Railway, Tutira Section: Steam Shovel and Locomotive at 19 m. 70 ch.



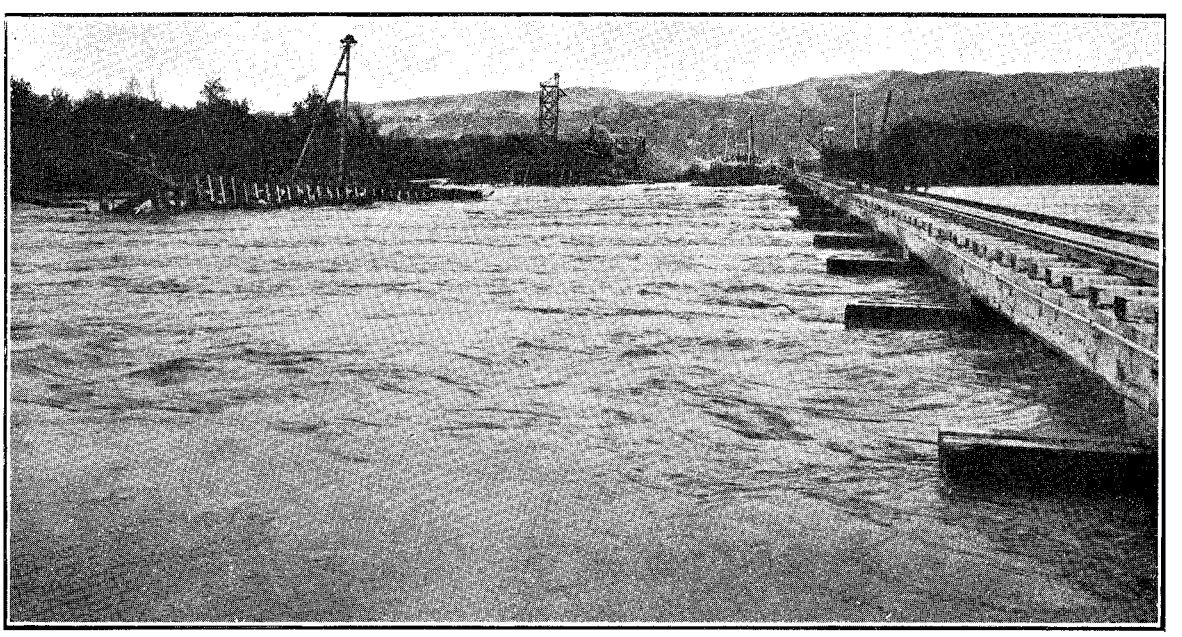
Napier–Wairoa Railway, Waikokopu Branch: Tahaenui Bridge at 13 m. 62 ch.



CONSTRUCTION OF PIERS.

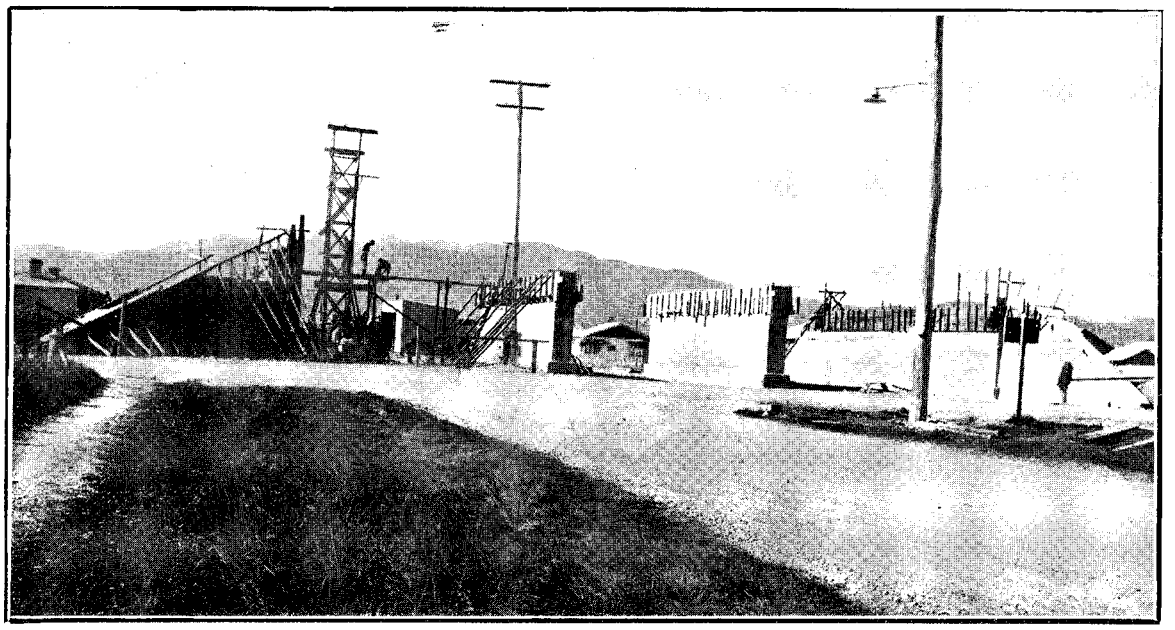


TEMPORARY BRIDGE IN FOREGROUND.

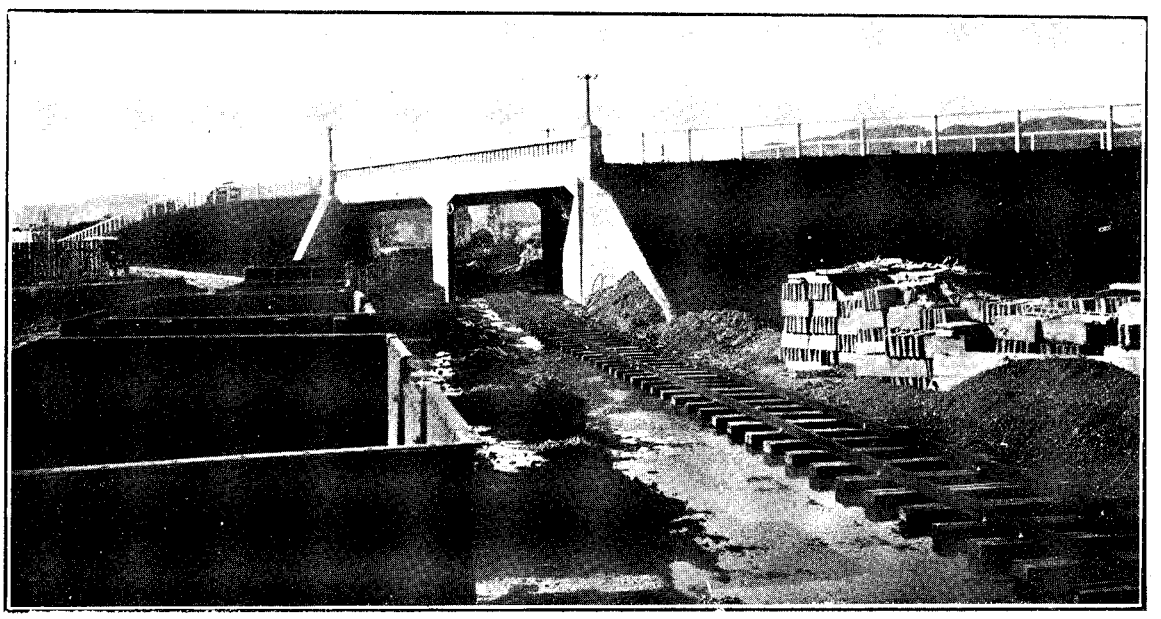


RIVER IN FLOOD.

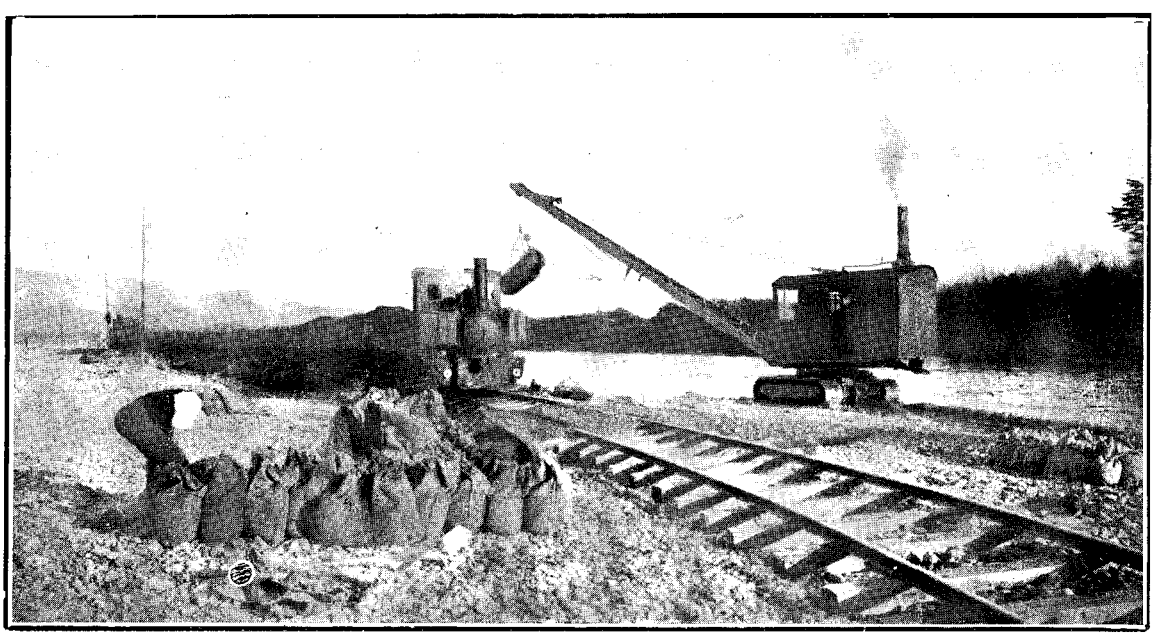
HUTT VALLEY RAILWAY: HUTT RIVER BRIDGE.



CUBA STREET OVERBRIDGE, UNDER CONSTRUCTION.

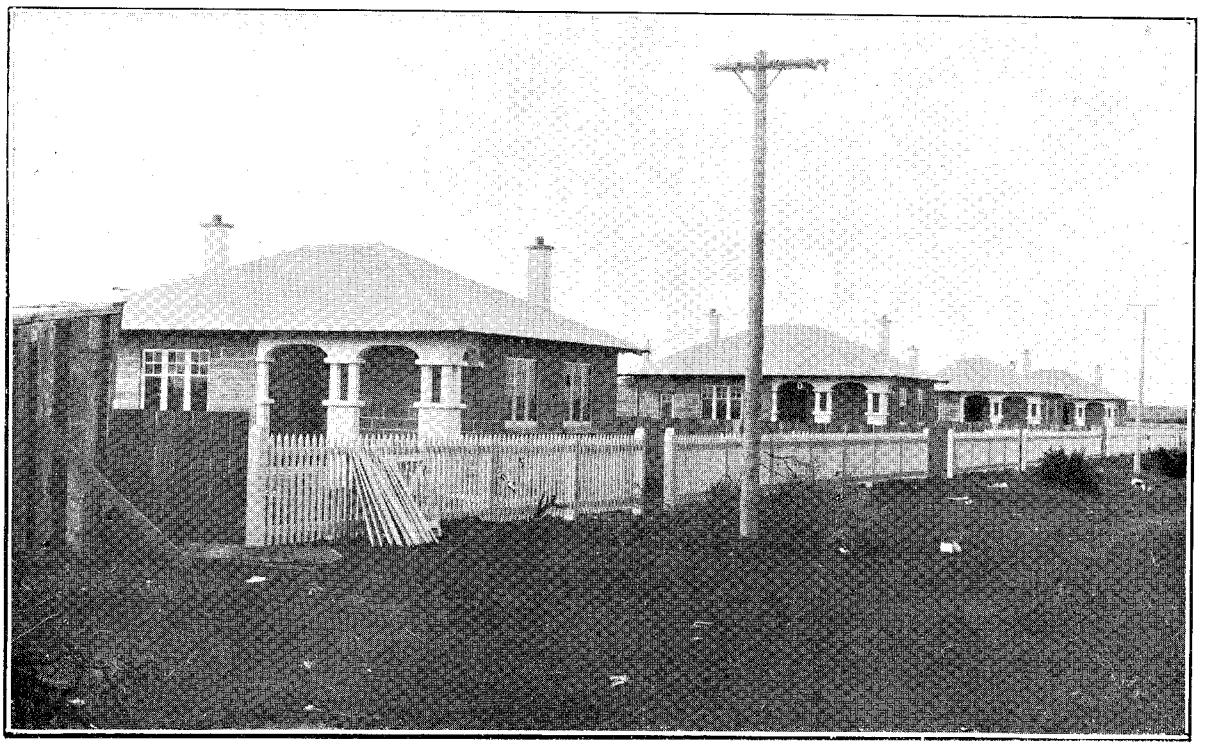


MAIN ROAD OVERBRIDGE, COMPLETED.

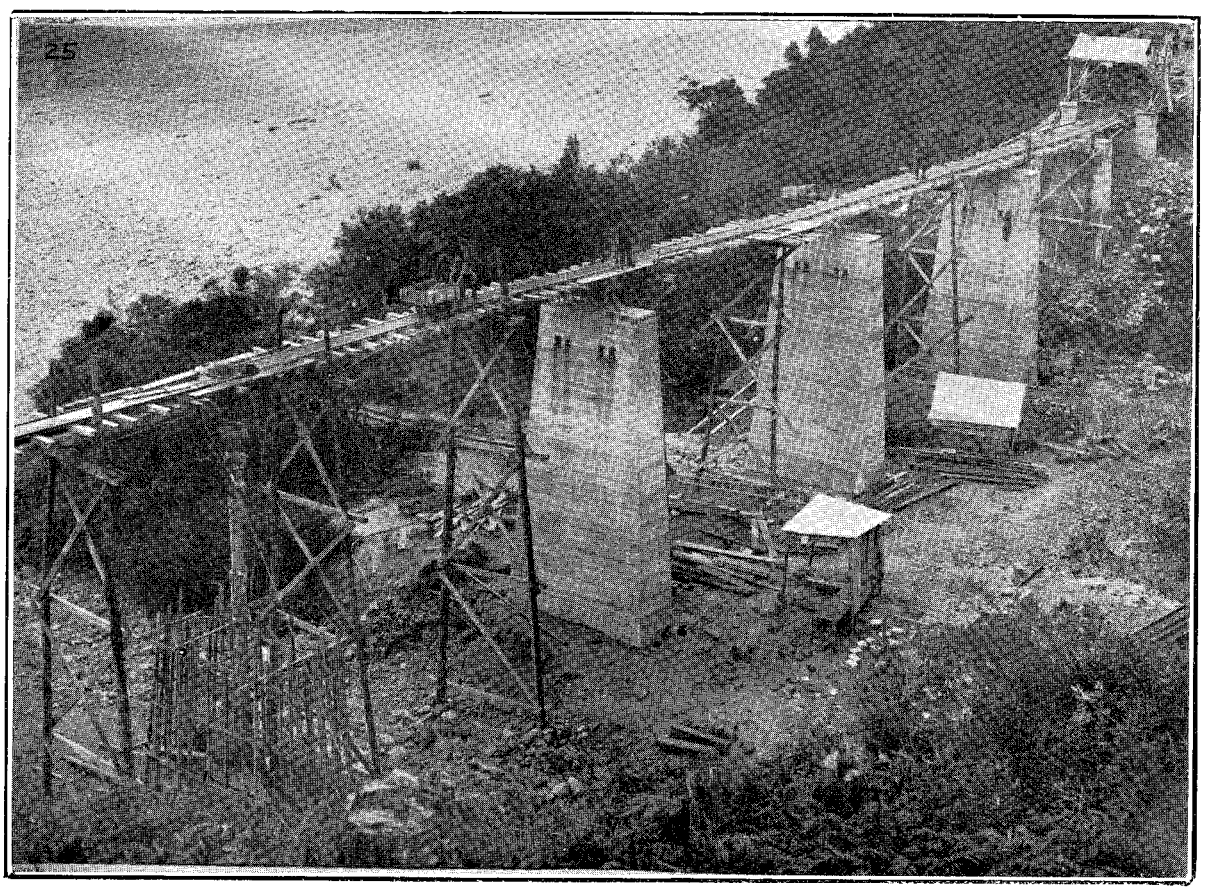


DRAG-LINE EXCAVATOR AND WORK-TRAIN.

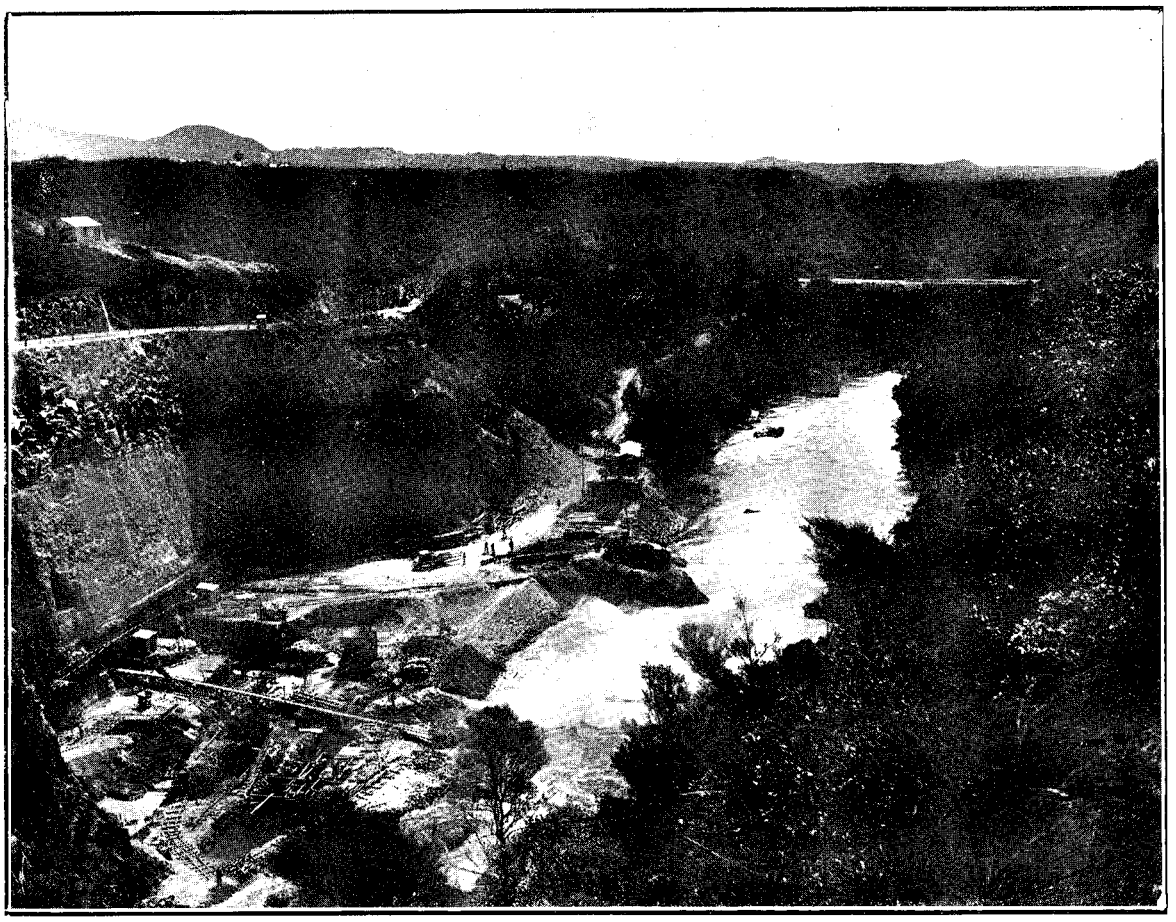
HUTT VALLEY RAILWAY.



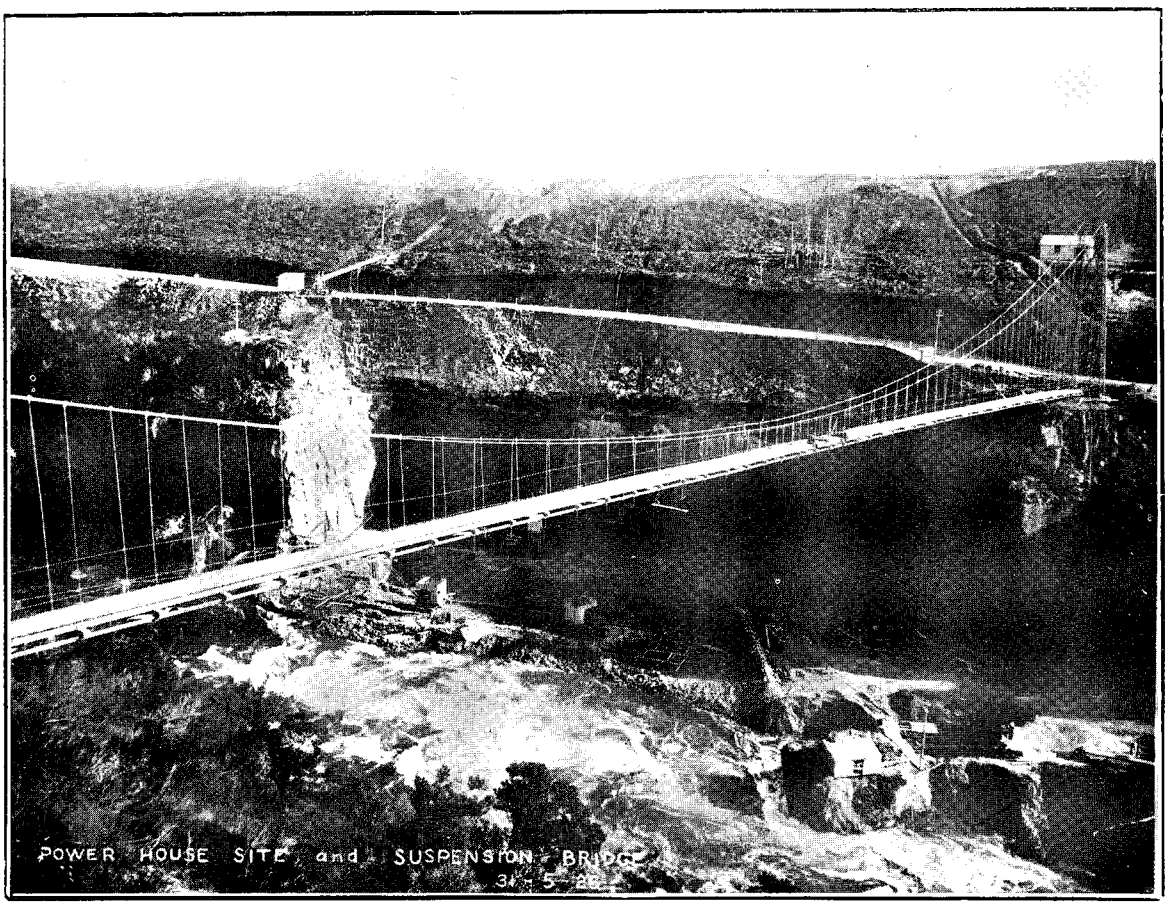
Opunake Branch Railway: Concrete-block Cottages at Opunake.



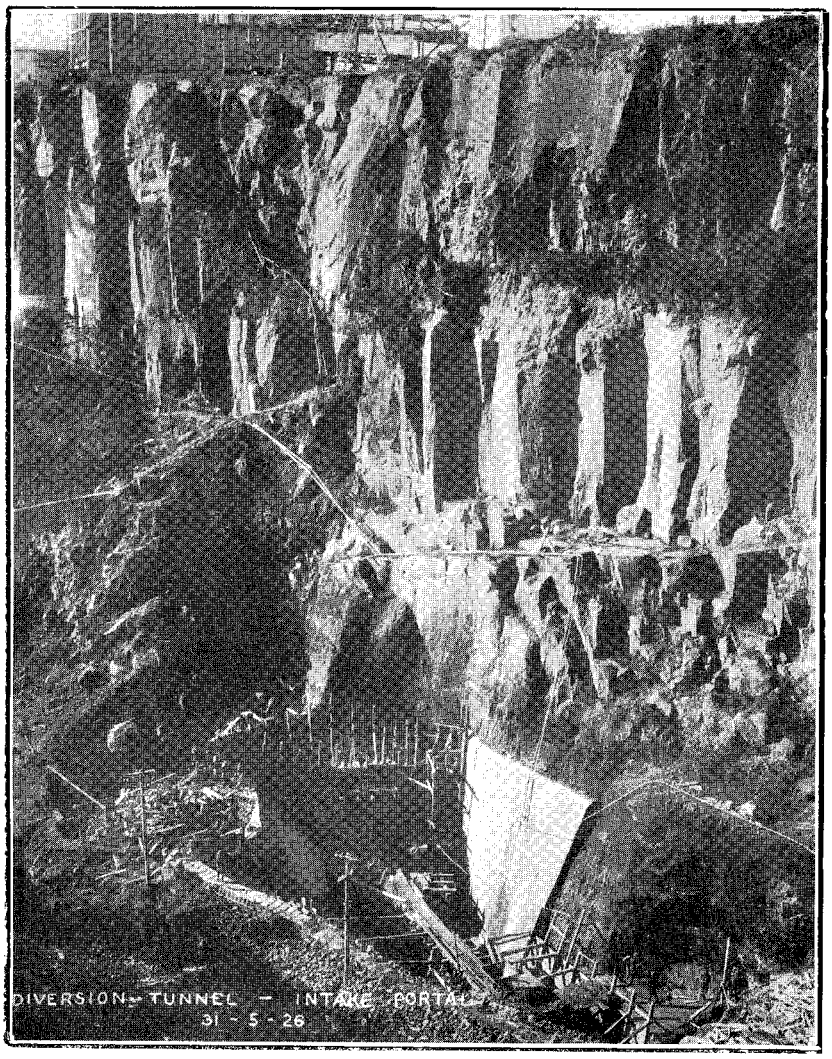
Westport–Inangahua Railway: Little Cascade Creek Bridge.



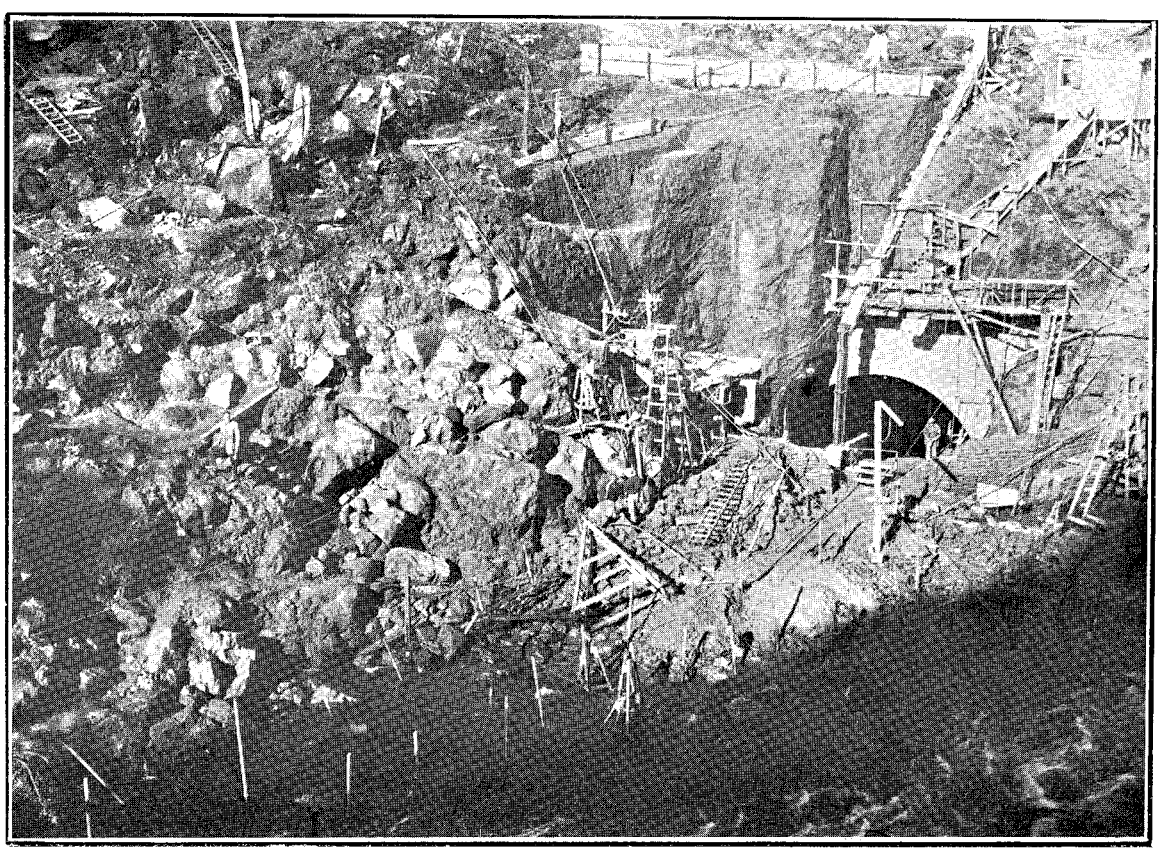
Arapuni Hydro-electric-power Development: Power-house Excavation.



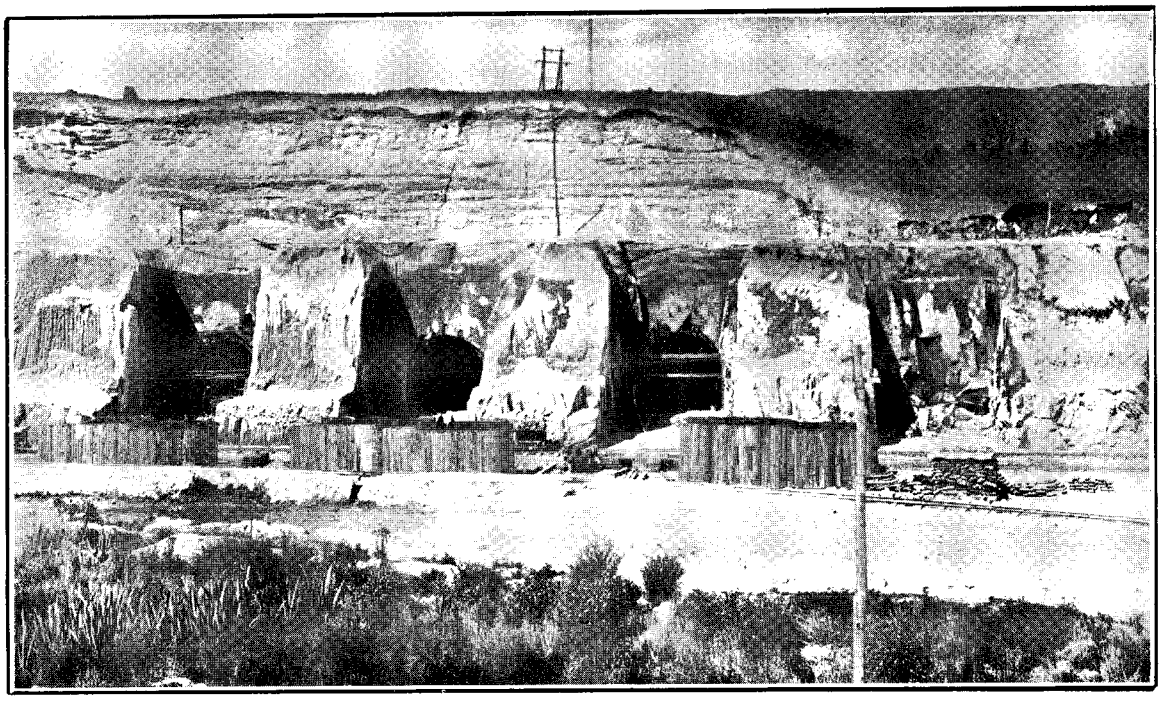
Arapuni Hydro-electric-power Development: Power-house Excavation and Suspension Bridge.



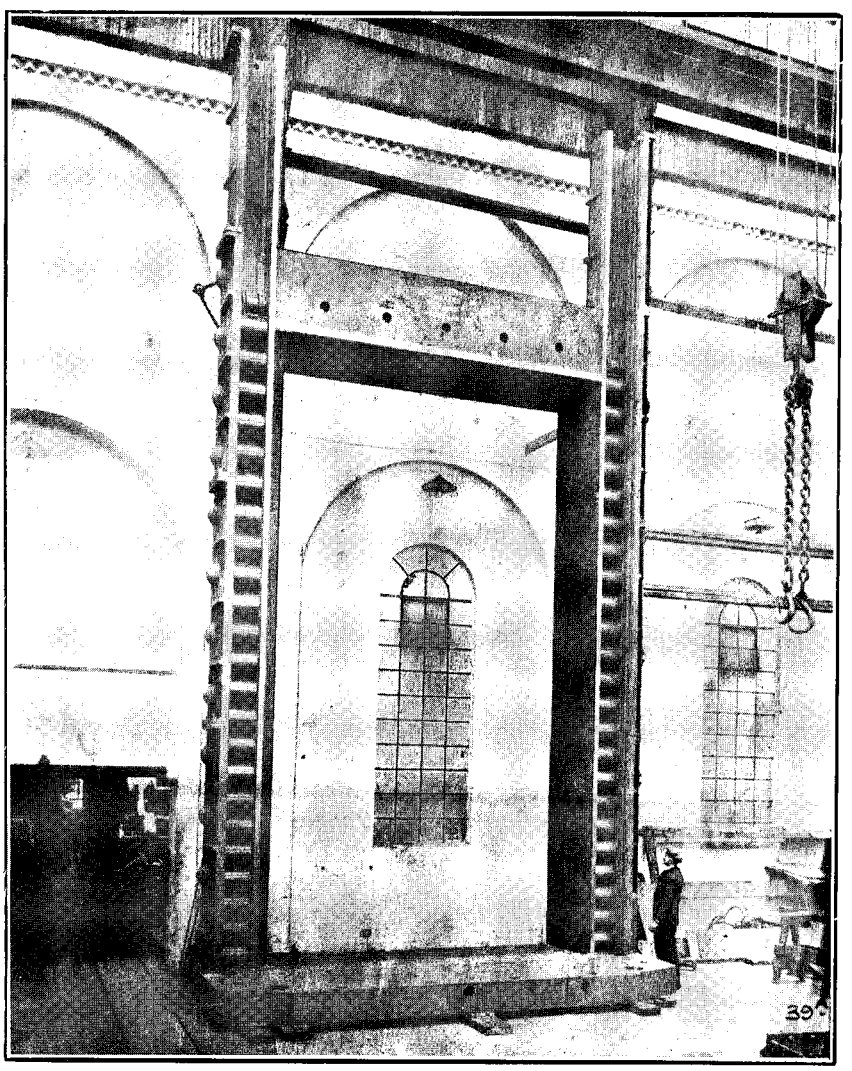
Arapuni Hydro-electric-power Development: Diversion Tunnel—Intake.



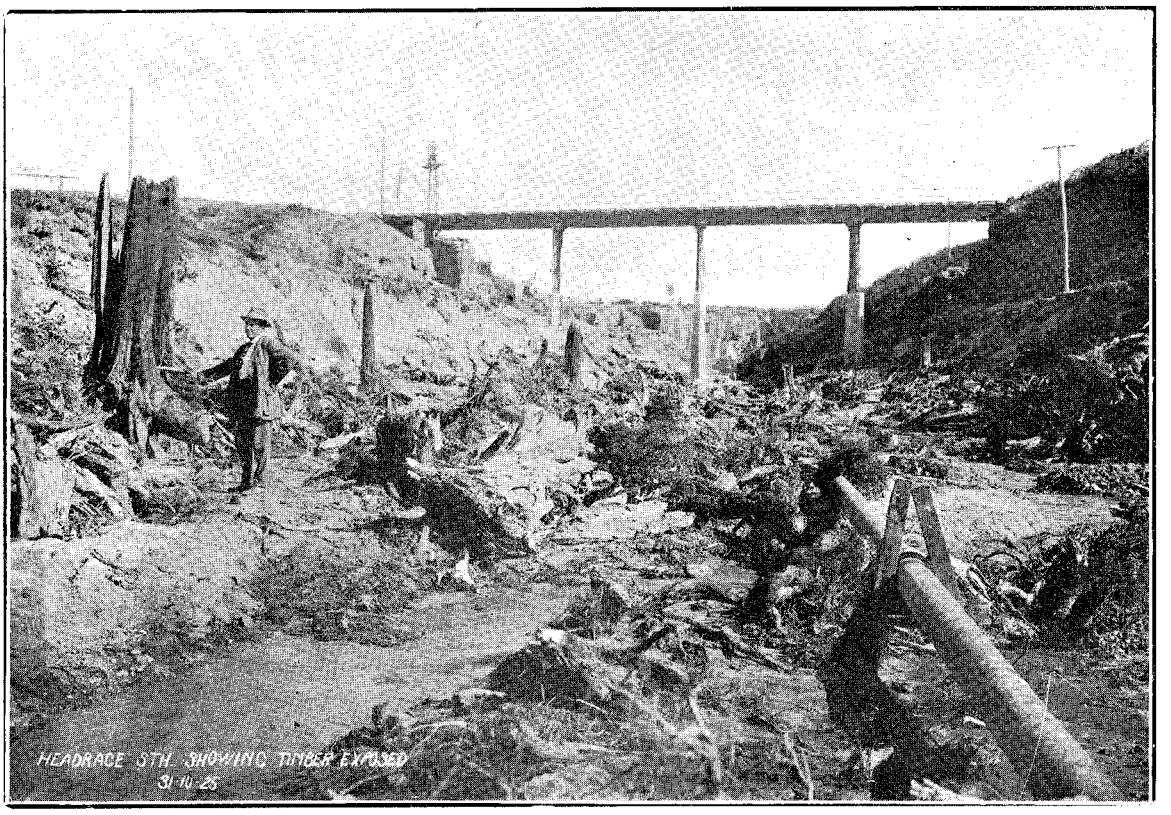
Arapuni Hydro-electric-power Development: Diversion Tunnel—Outlet.



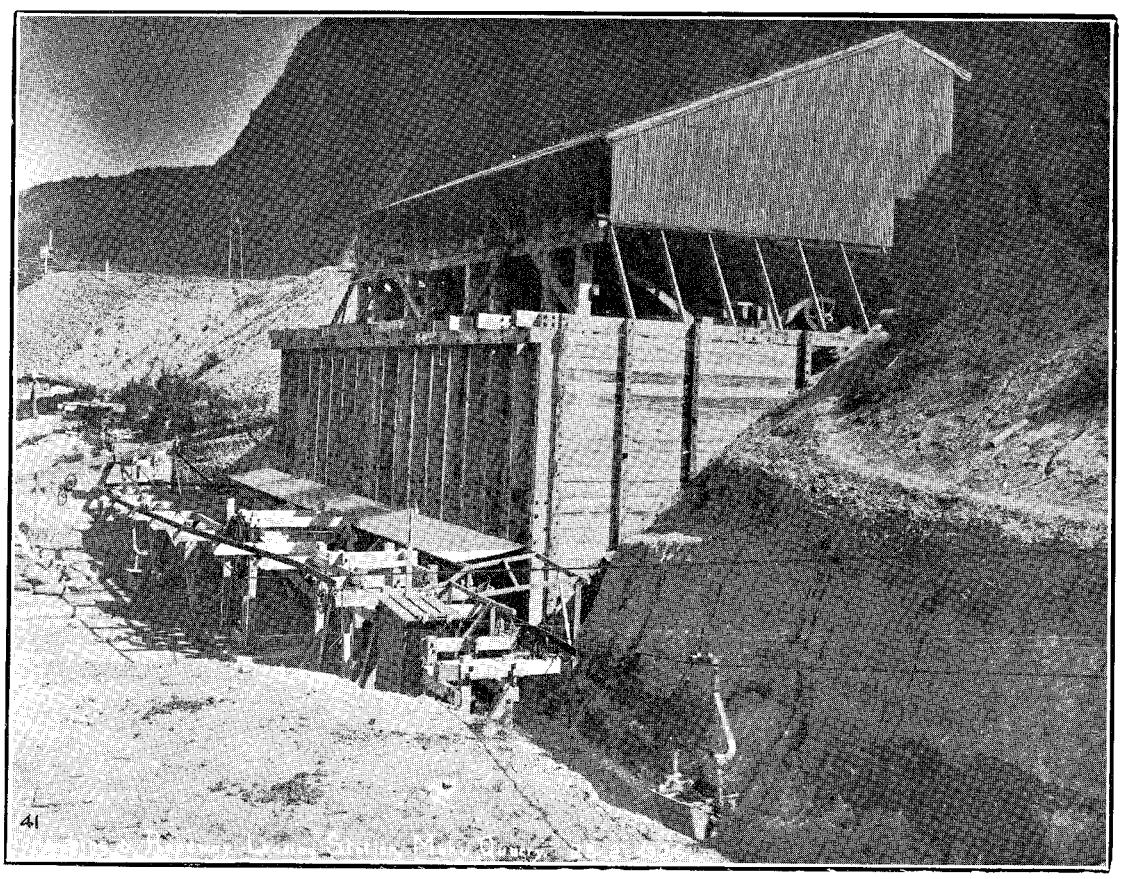
Arapuni Hydro-electric-power Development: Penstock Tunnel Intakes.



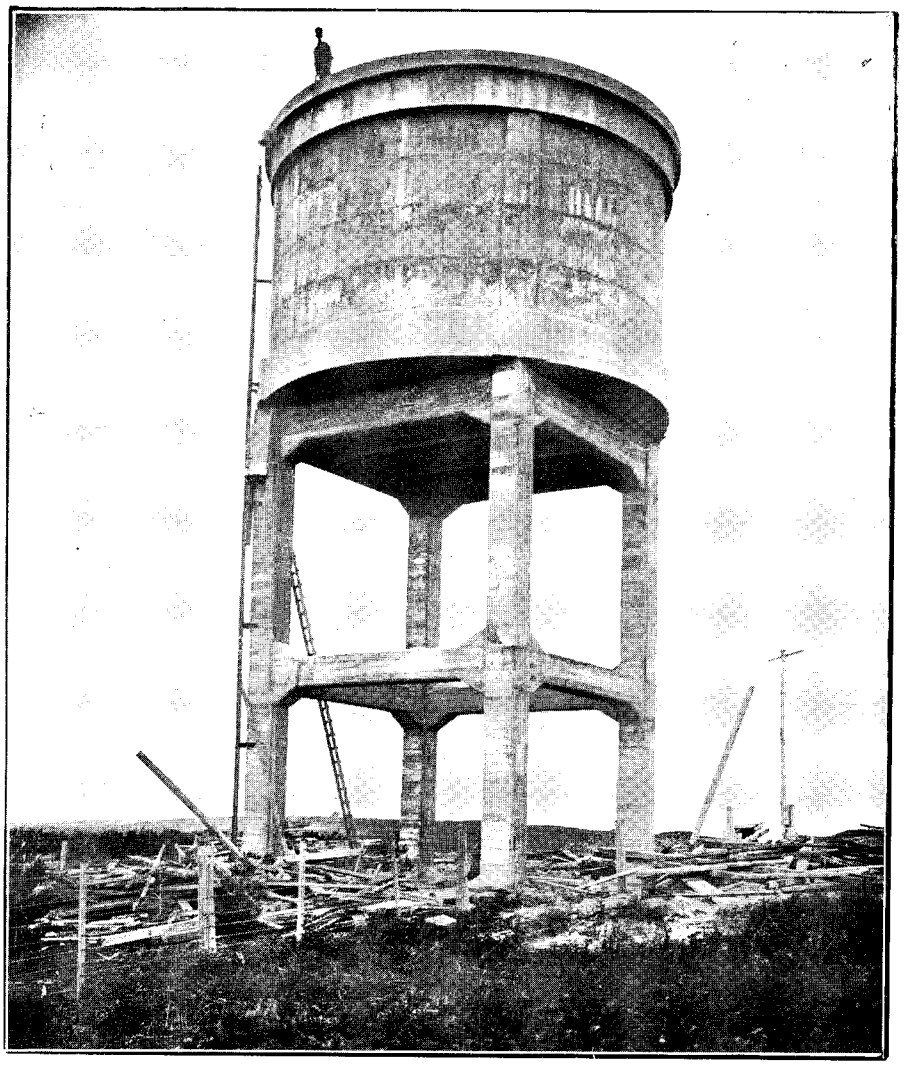
Arapuni Hydro-electric-power Development: One of Gate-frames, Diversion-tunnel Gates.



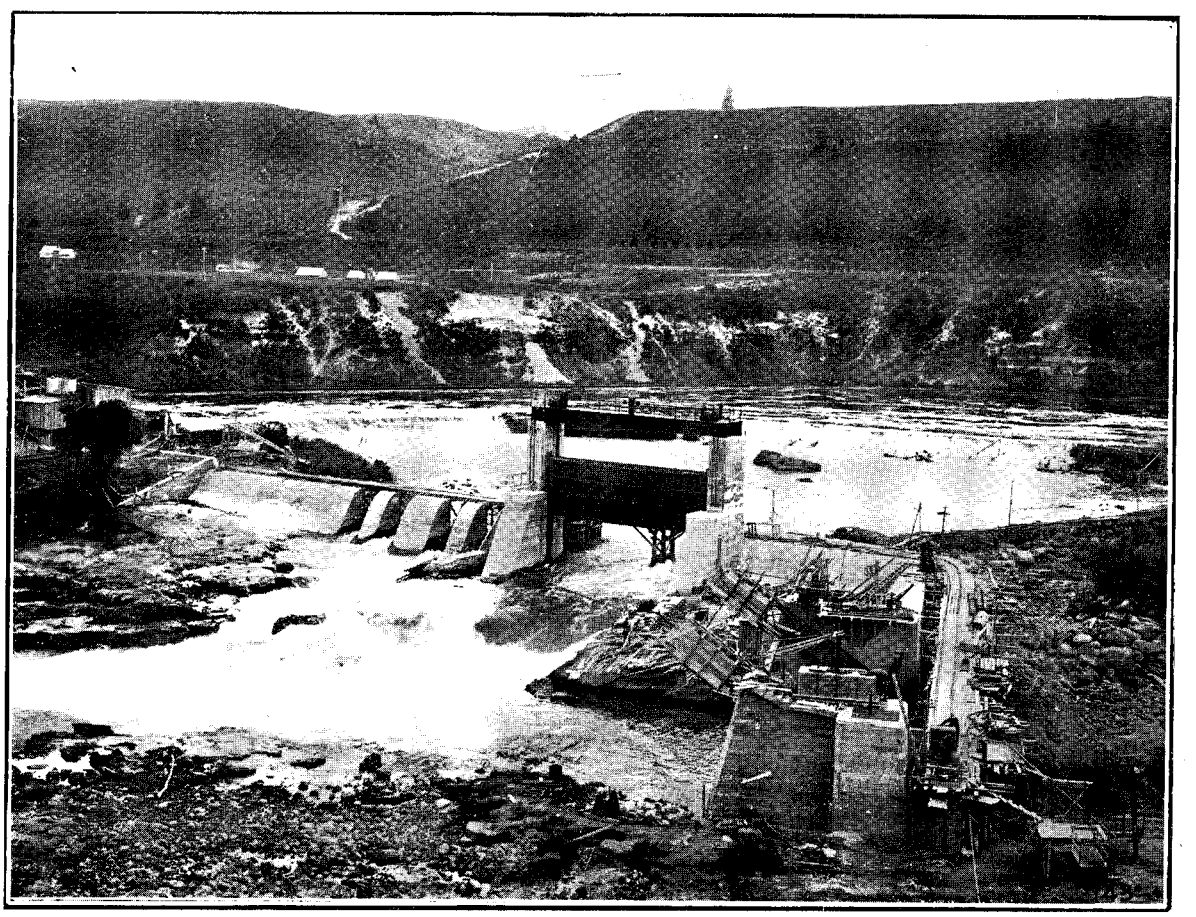
Arapuni Hydro-electric-power Development: Head-race, showing Buried Timber.



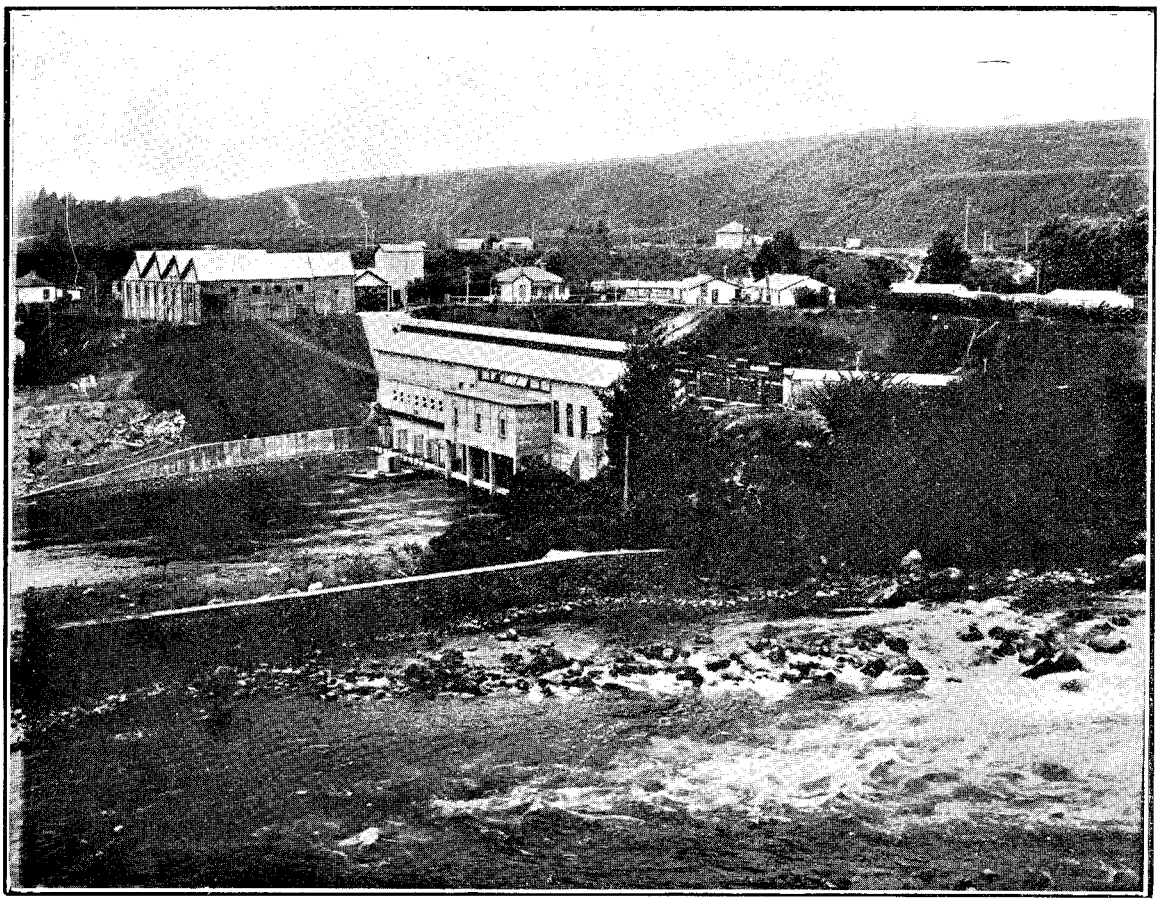
Arapuni Hydro-electric-power Development: Stone-bins and Ropeway Terminal, Muku Quarry.



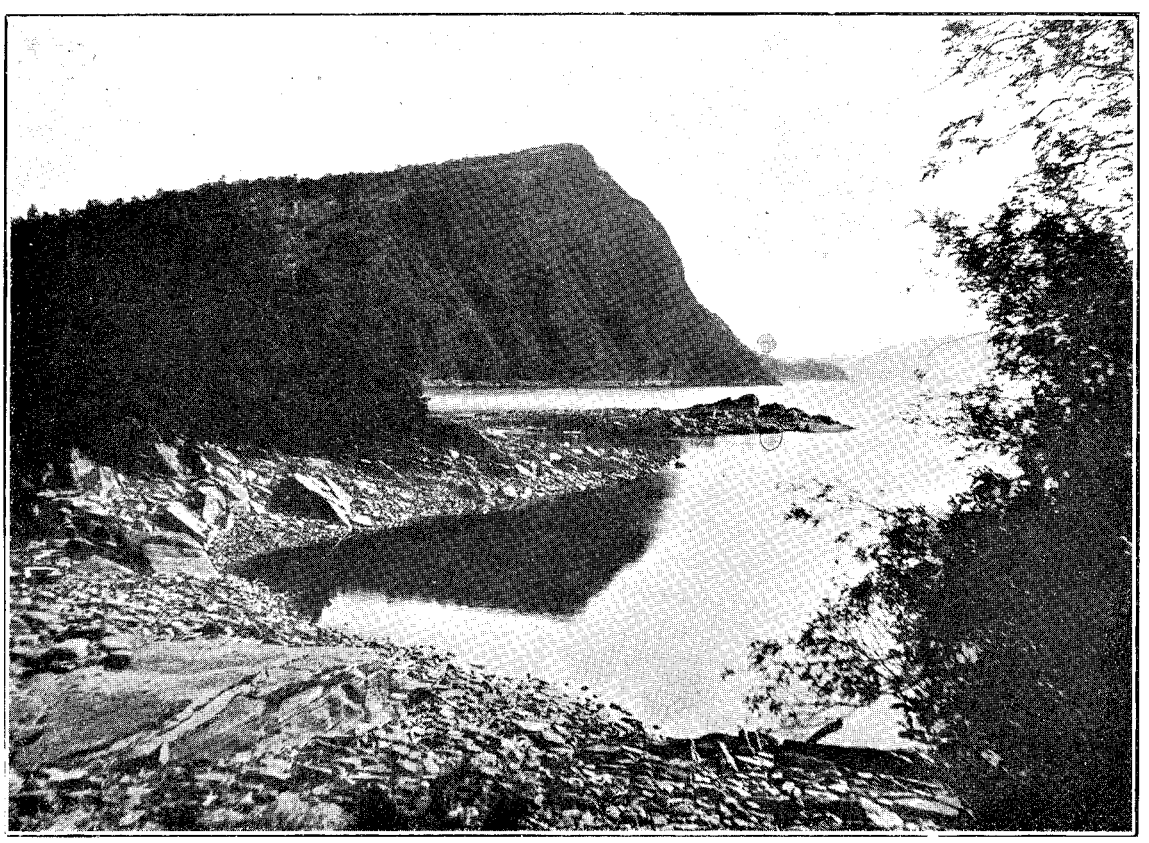
Arapuni Water-tower.



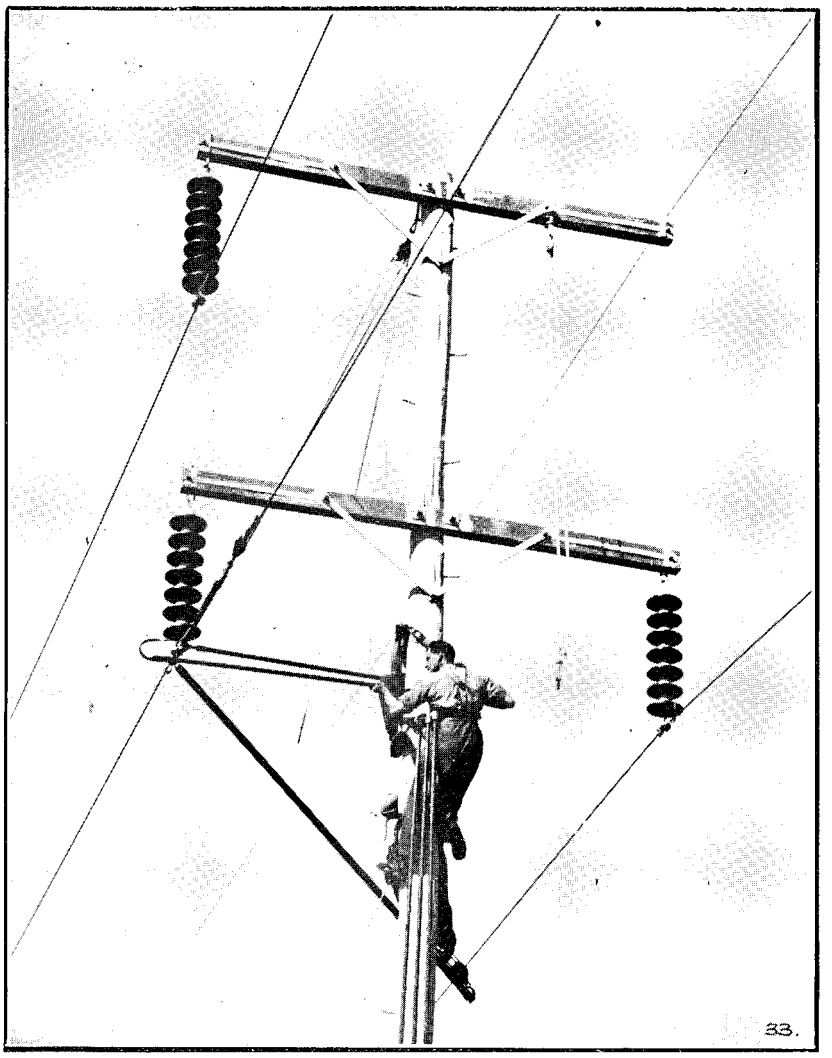
Horahora Hydro-electric-power Development: Overflow Weir and Overflow Gates.



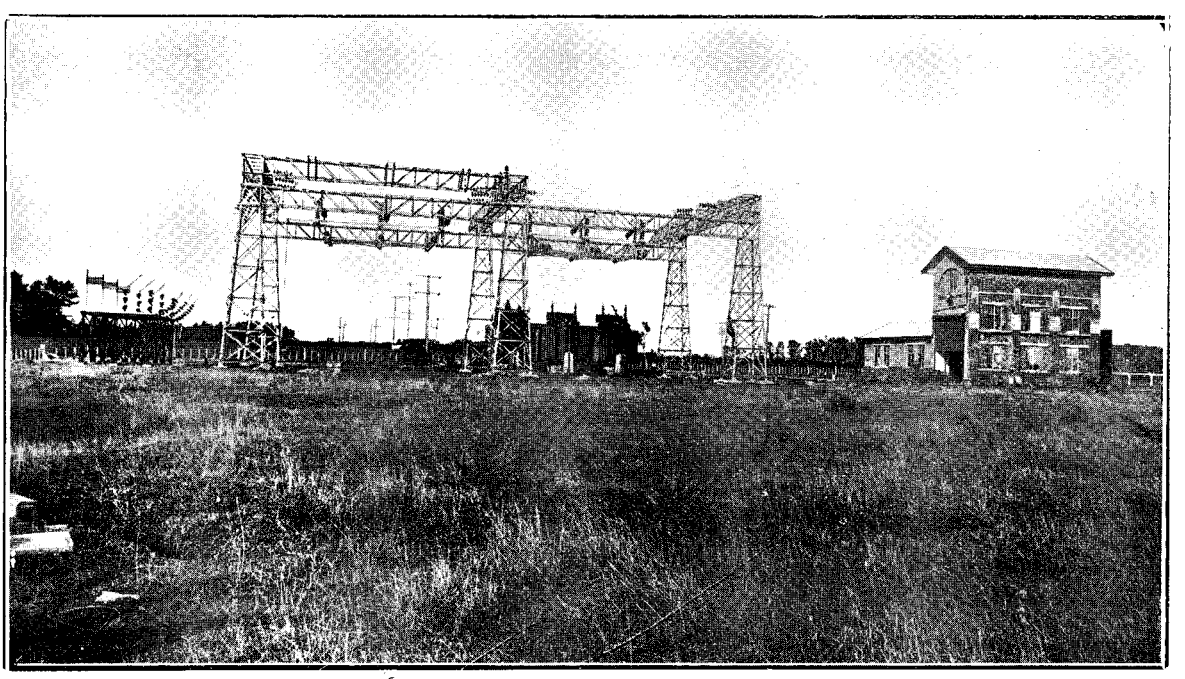
Horahora Hydro-electric-power Development: Power-house.



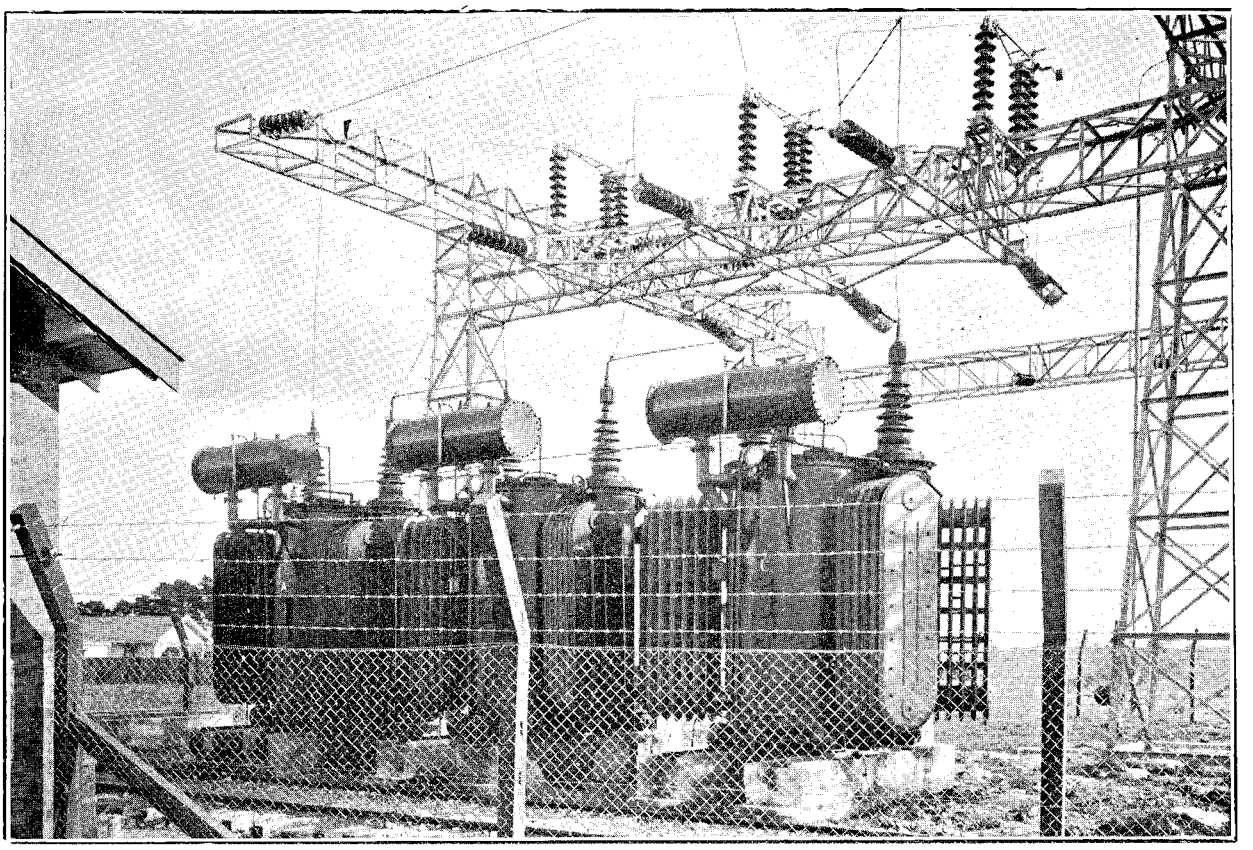
Lake Waikaremoana—the Department's Latest Source of Power.



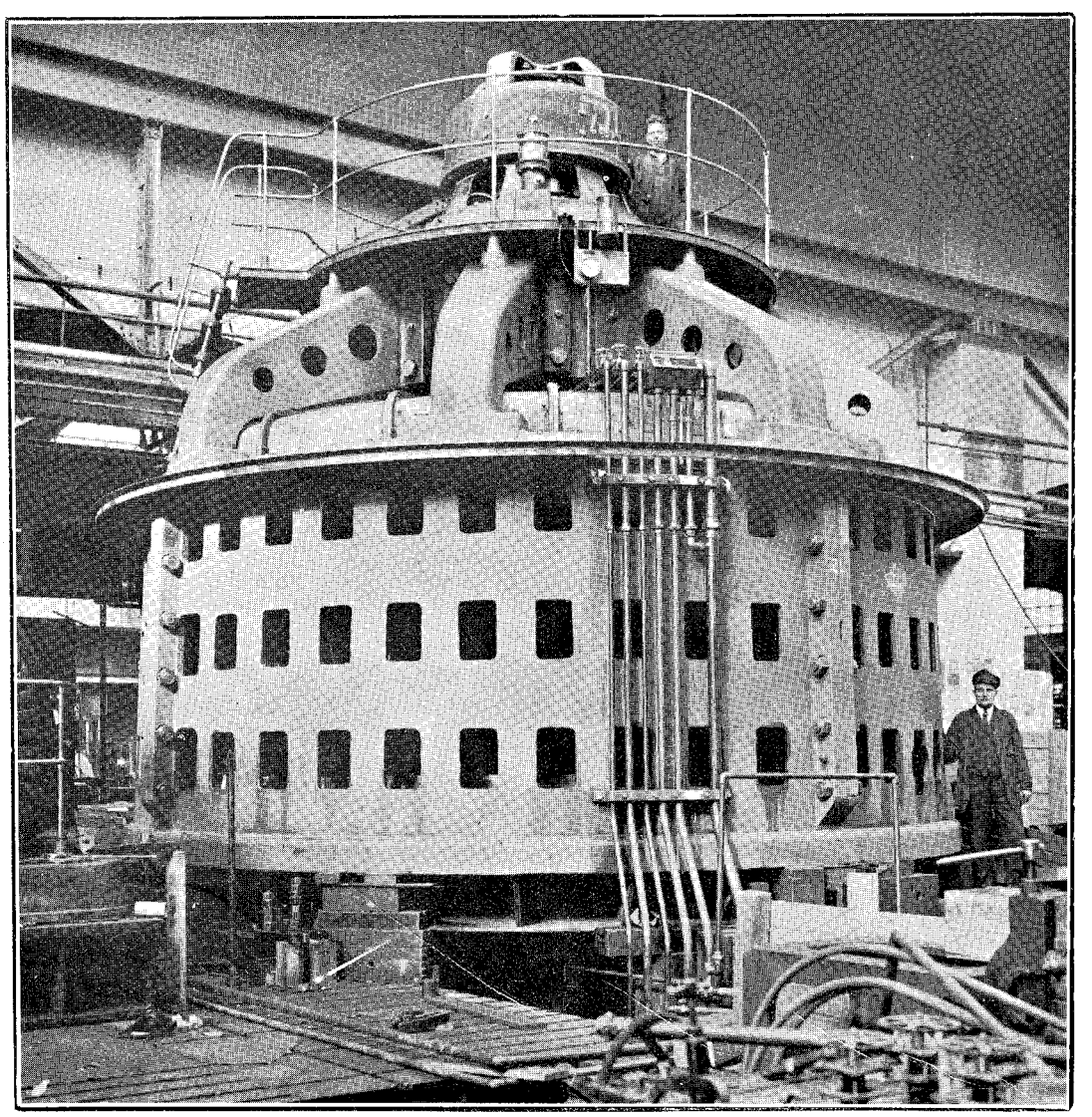
MANGAHAO HYDRO-ELECTRIC-POWER DEVELOPMENT: CHANGING INSULATORS ON 110,000-VOLT LINE.



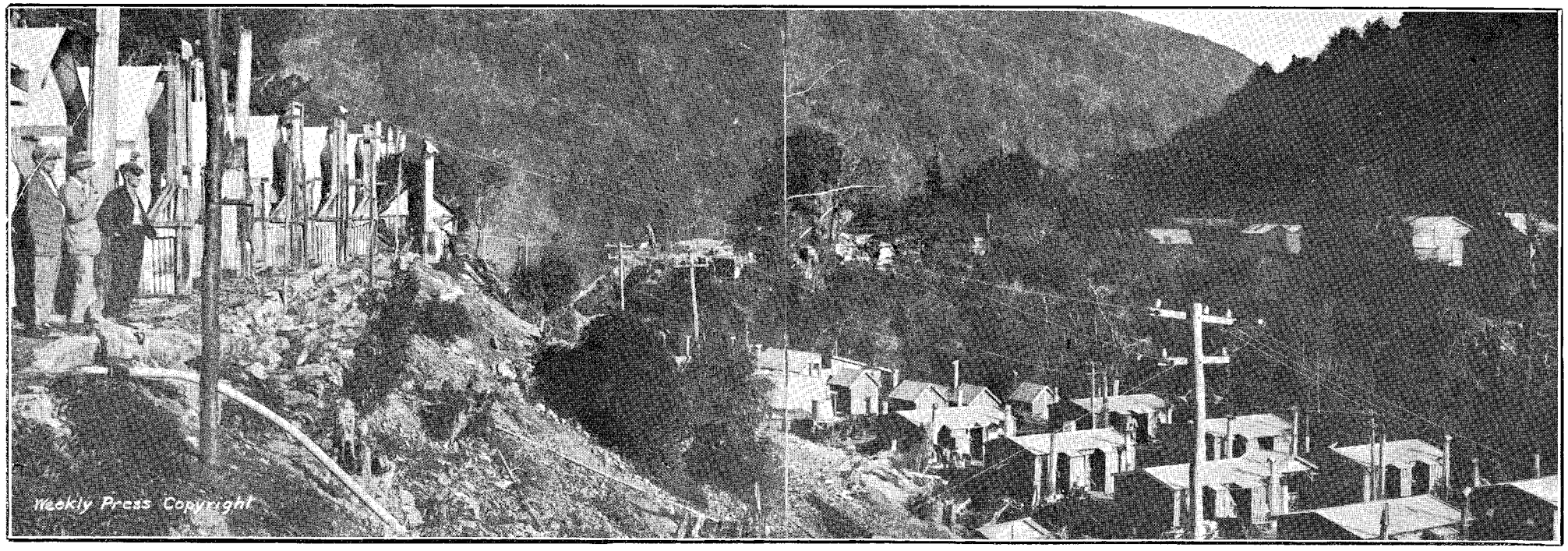
MANGAHAO HYDRO-ELECTRIC-POWER DEVELOPMENT: WANGANUI SUBSTATION.



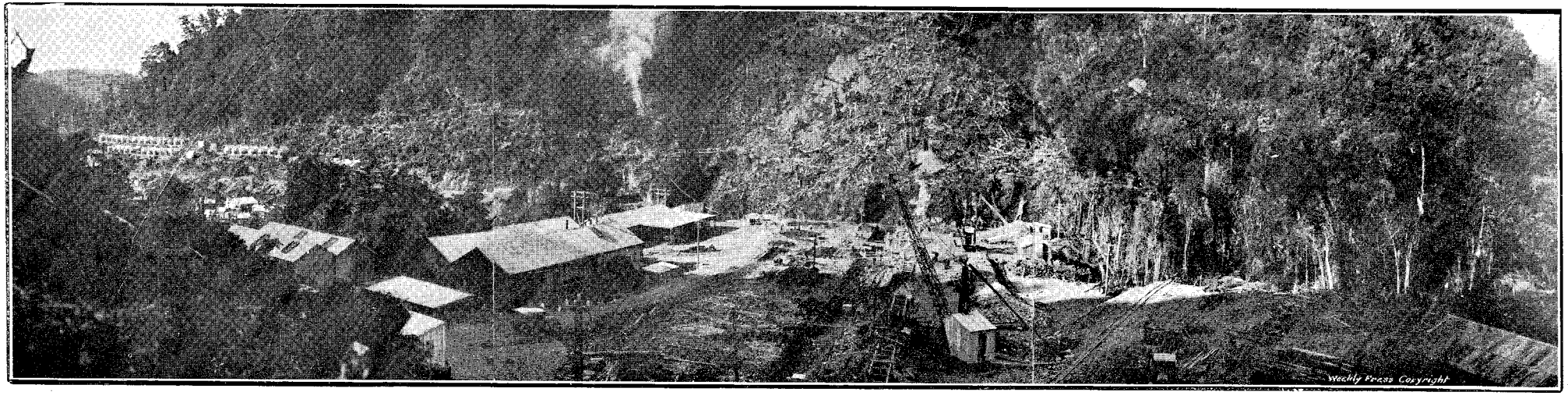
Mangahao Hydro-electric-power Development: Wanganui Substation—Transformer Bank.



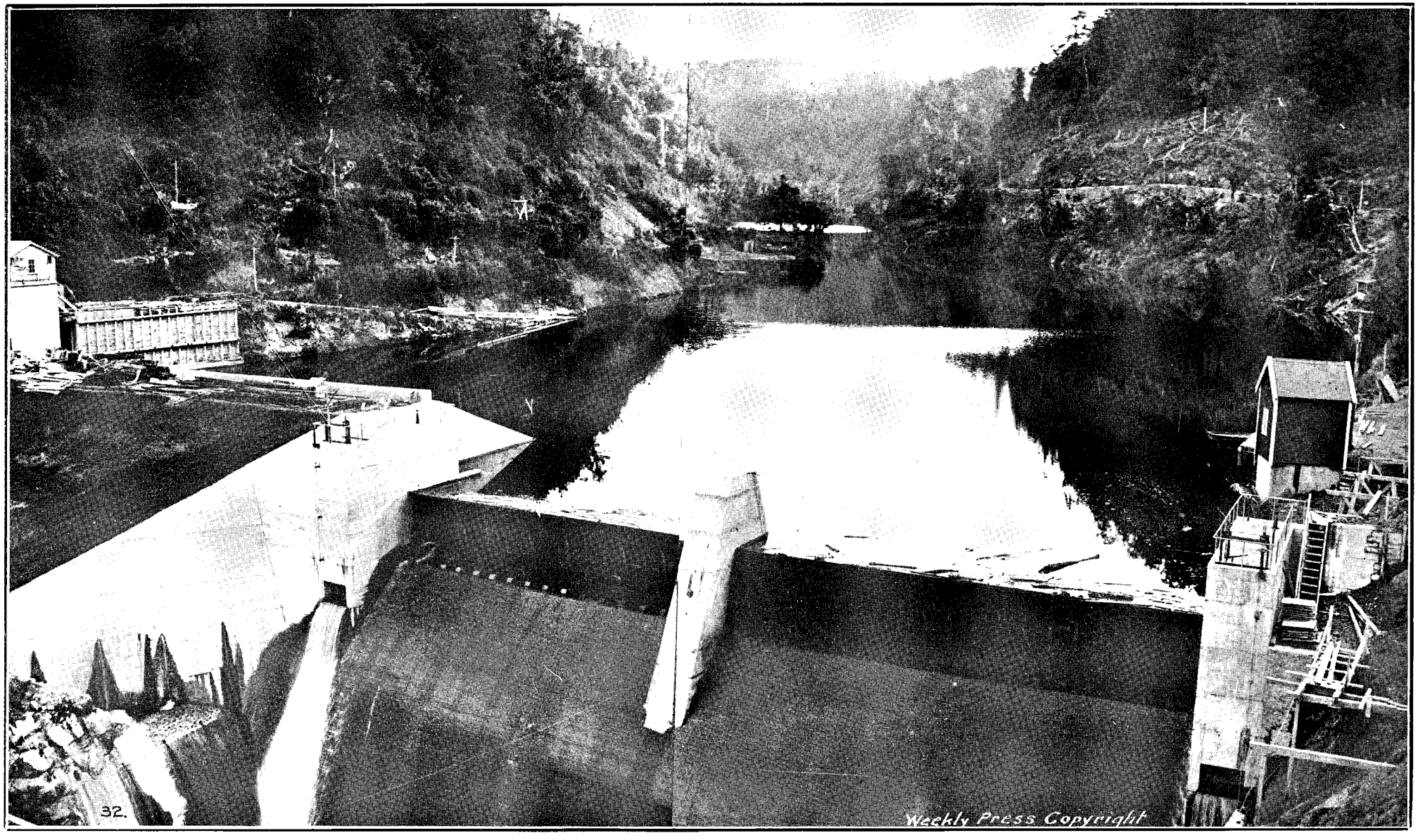
Arapuni Hydro-electric-power Development: Main Generator (15,000 kw.) erected in Shop.



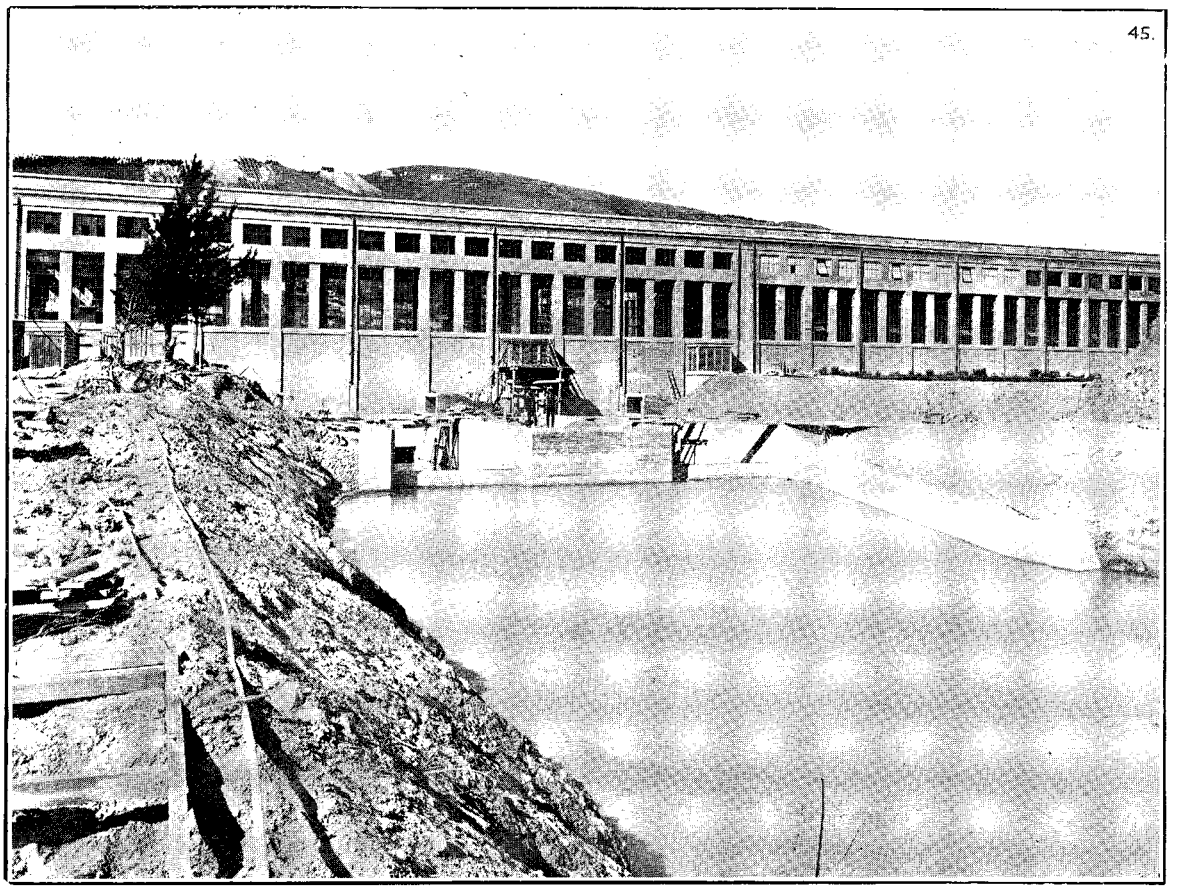
MANGAHAO HYDRO-ELECTRIC-POWER DEVELOPMENT: UPPER MANGAHAO DAM—WORKERS' ACCOMMODATION.



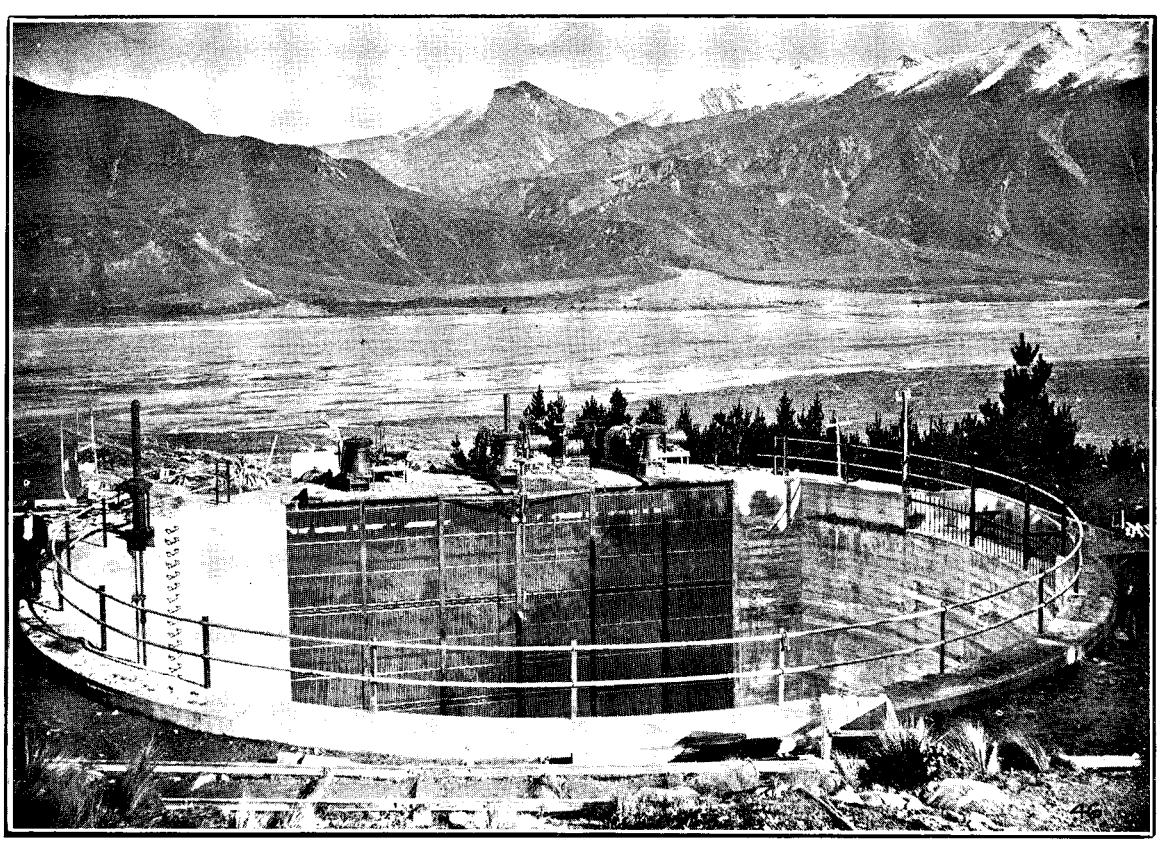
MANGAHAO HYDRO-ELECTRIC-POWER DEVELOPMENT: UPPER MANGAHAO DAM—WORKS AND ACCOMMODATION.



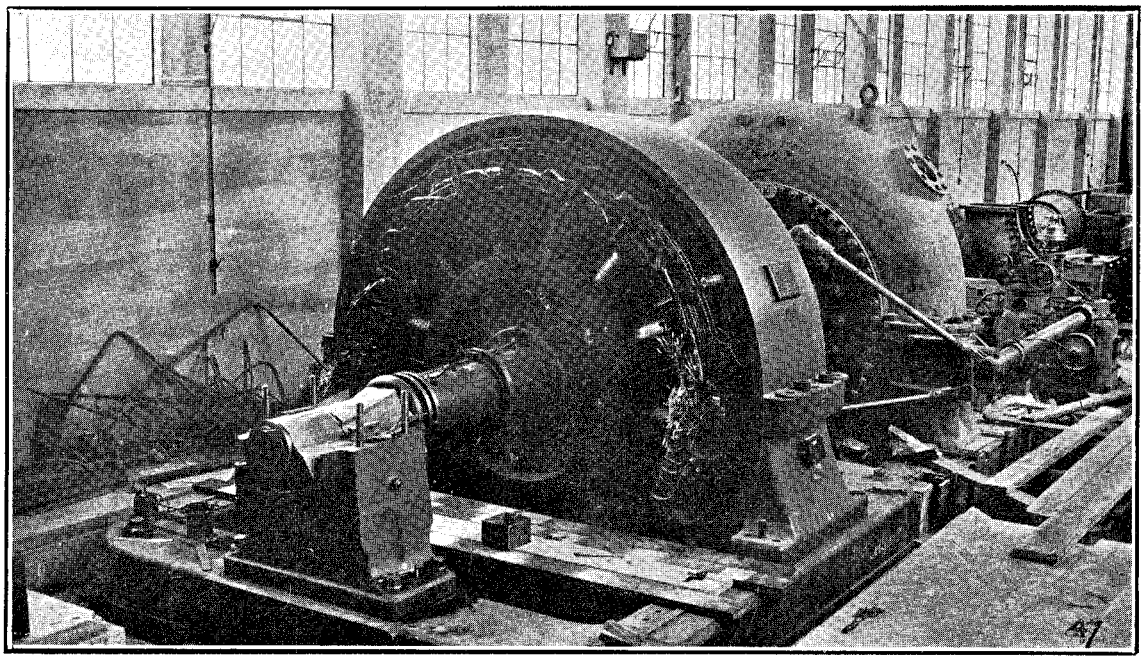
MANGAHAO HYDRO-ELECTRIC-POWER DEVELOPMENT: LOWER MANGAHAO DAM.



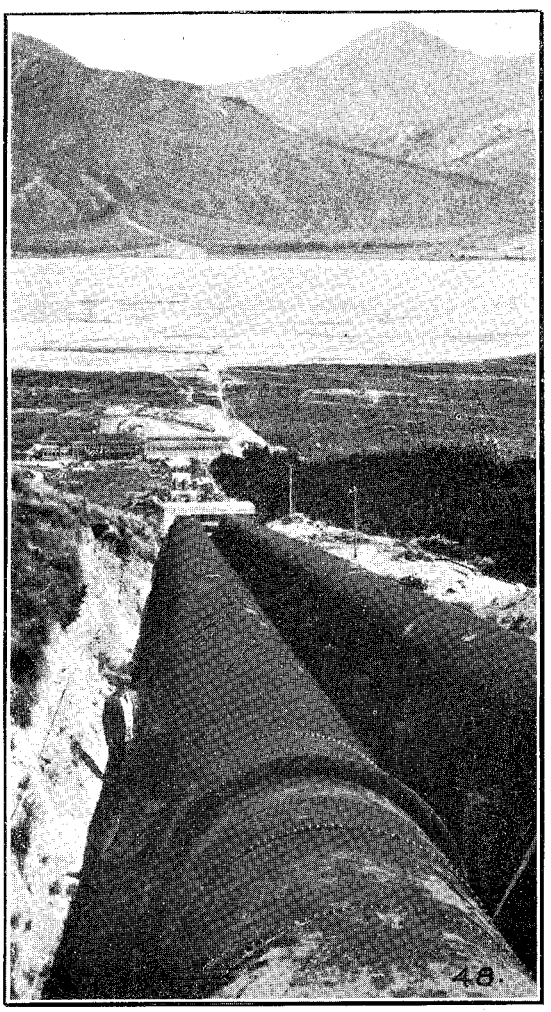
LAKE COLERIDGE HYDRO-ELECTRIC-POWER DEVELOPMENT: POWER-HOUSE EXTENSION.



LAKE COLERIDGE HYDRO-ELECTRIC-POWER DEVELOPMENT: NEW SURGE-CHAMBER.

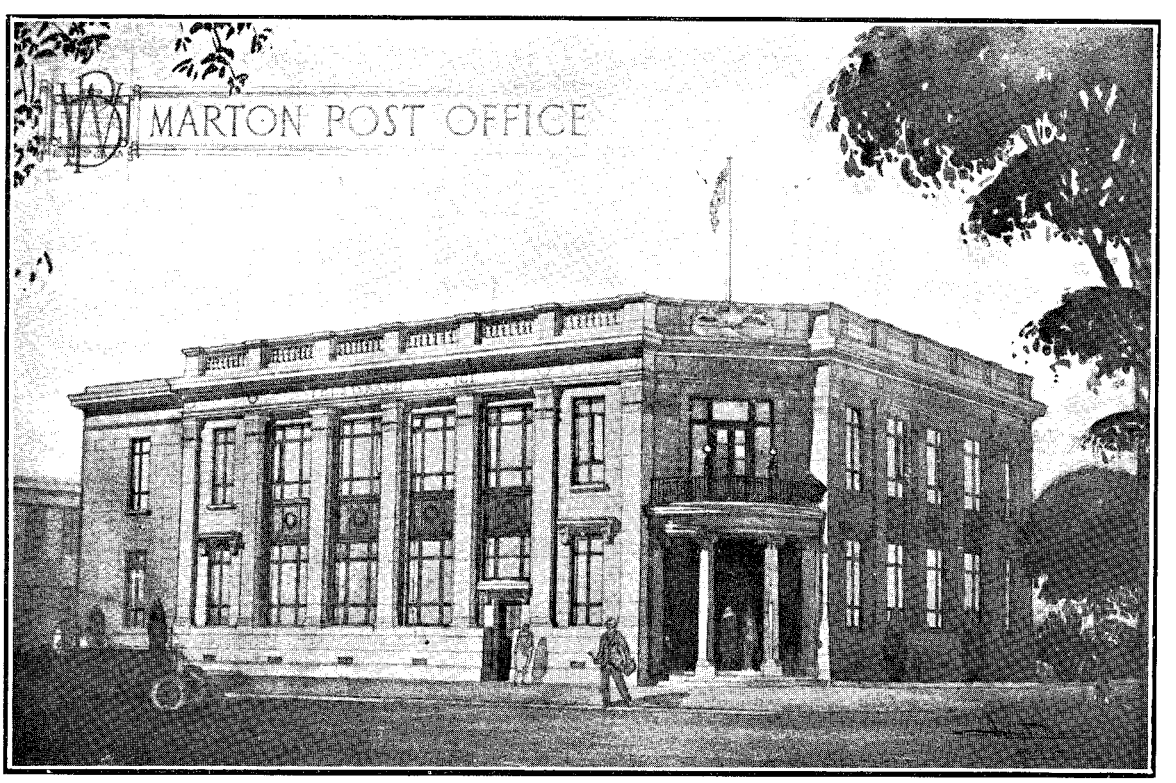


LAKE COLERIDGE HYDRO-ELECTRIC-POWER DEVELOPMENT: ERECTION OF NEW 75,000 KW. UNIT.

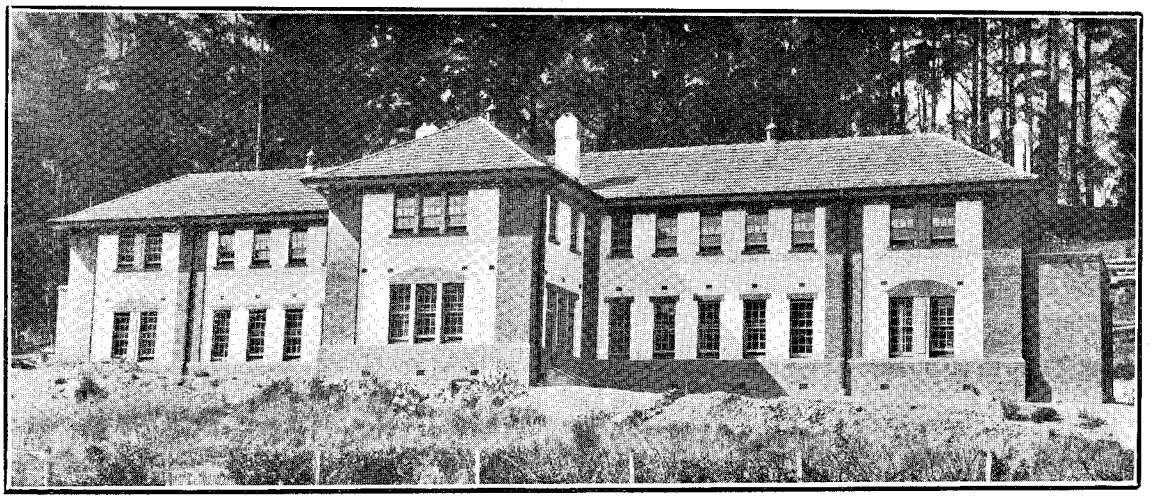


LAKE COLERIDGE HYDRO-ELECTRIC-POWER DEVELOPMENT:
NEW PIPE-LINES.

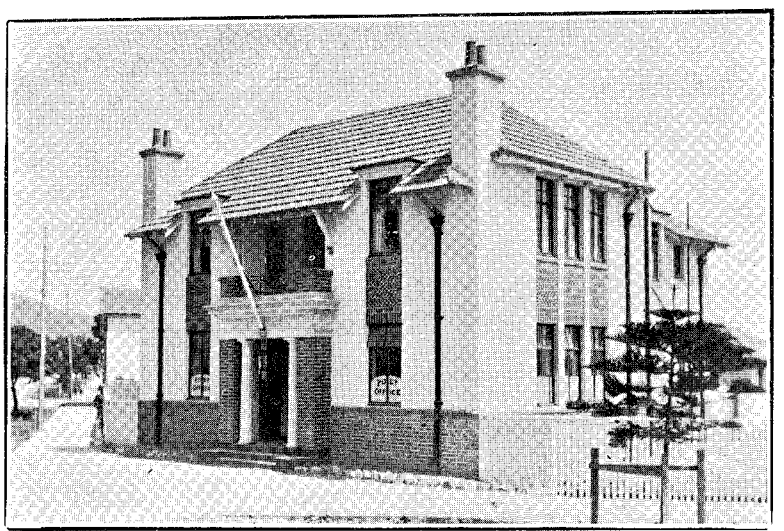
PAEROA POST-OFFICE.



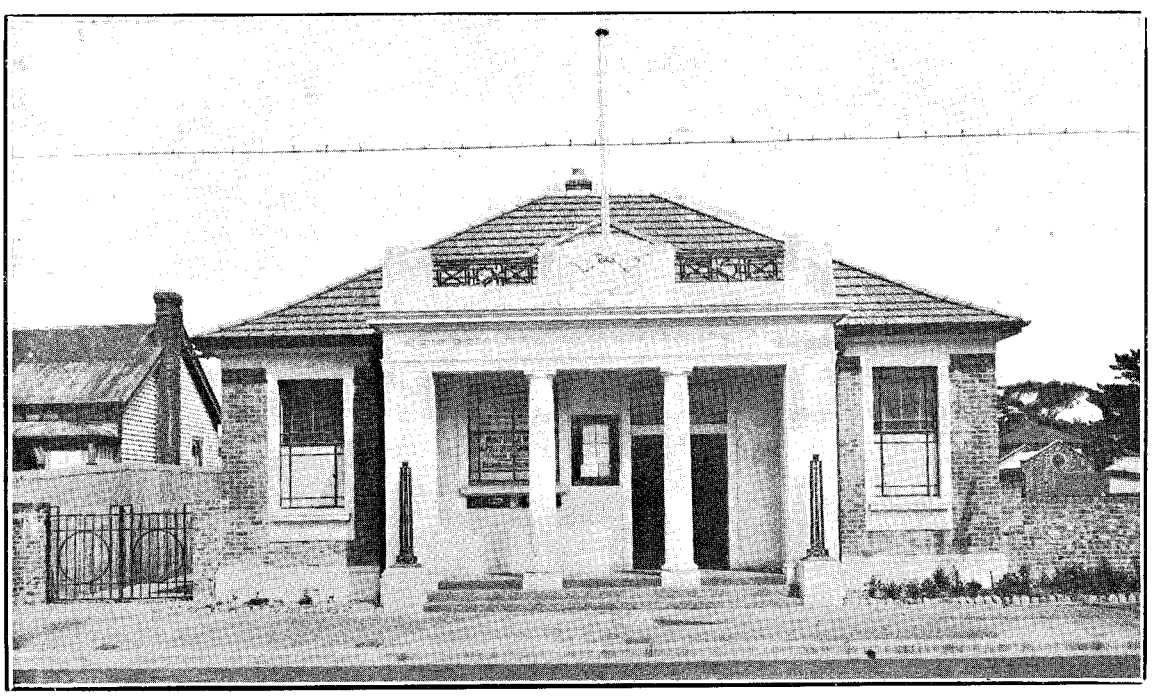
MARTON POST-OFFICE.



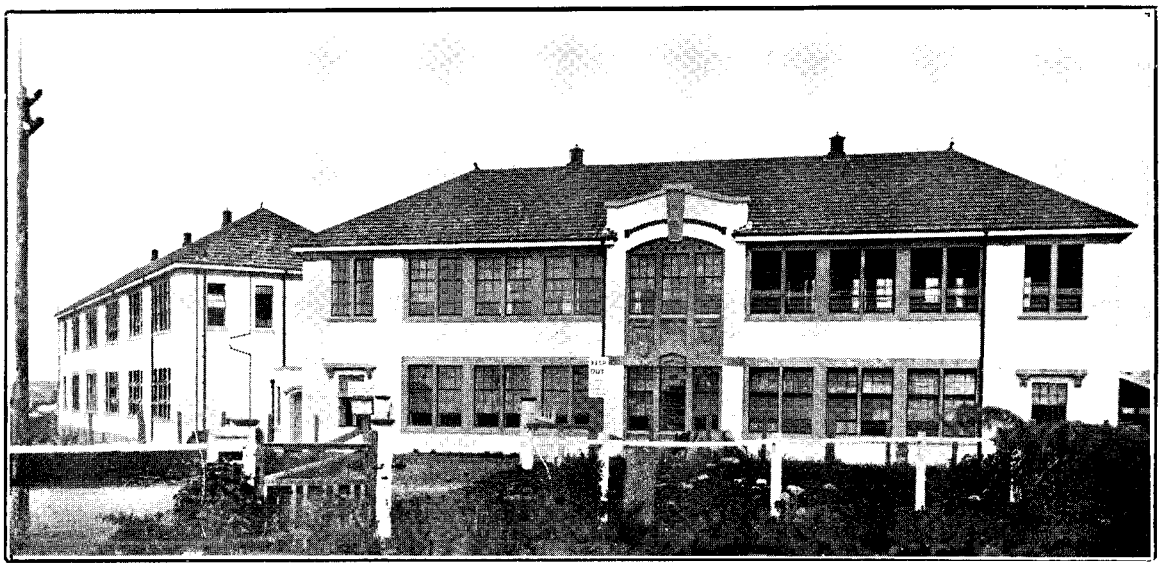
NEW BLOCK, STOKE MENTAL HOSPITAL.



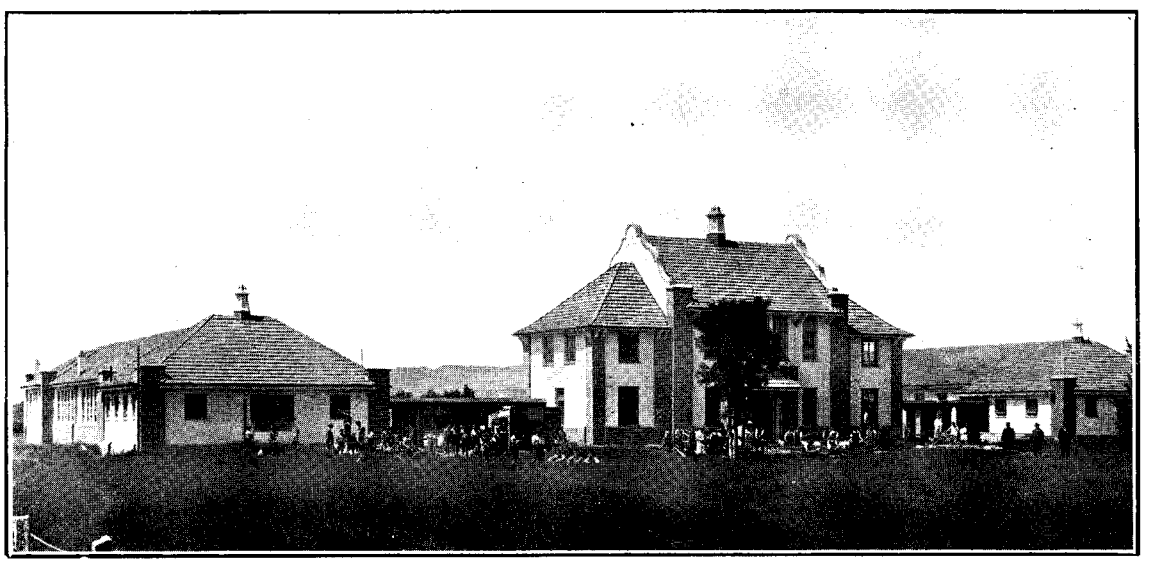
EASTBOURNE POST-OFFICE.



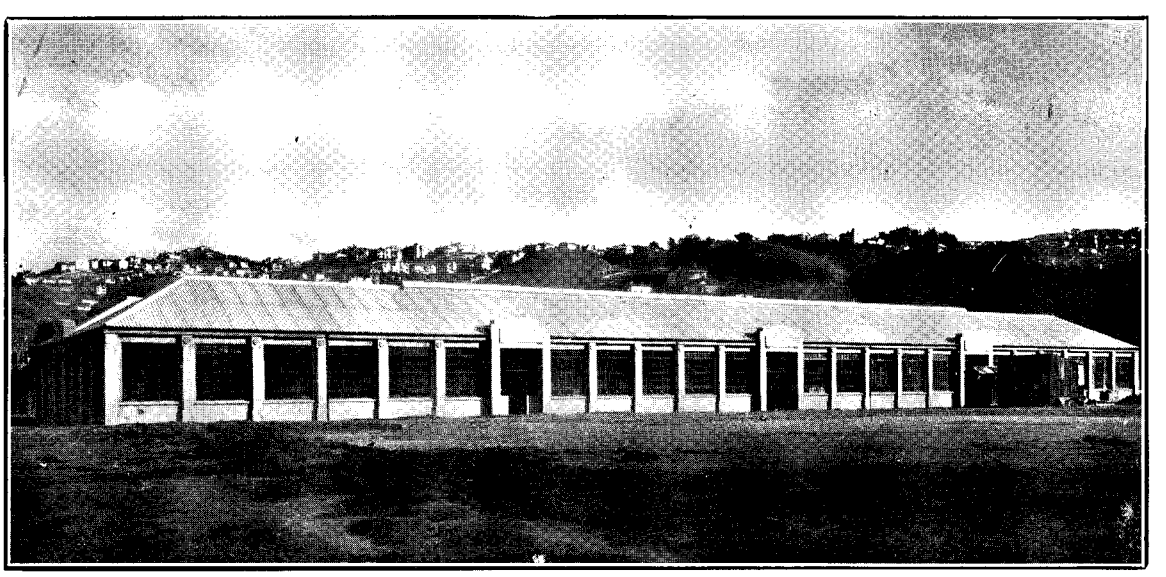
NEW BRIGHTON POST-OFFICE.



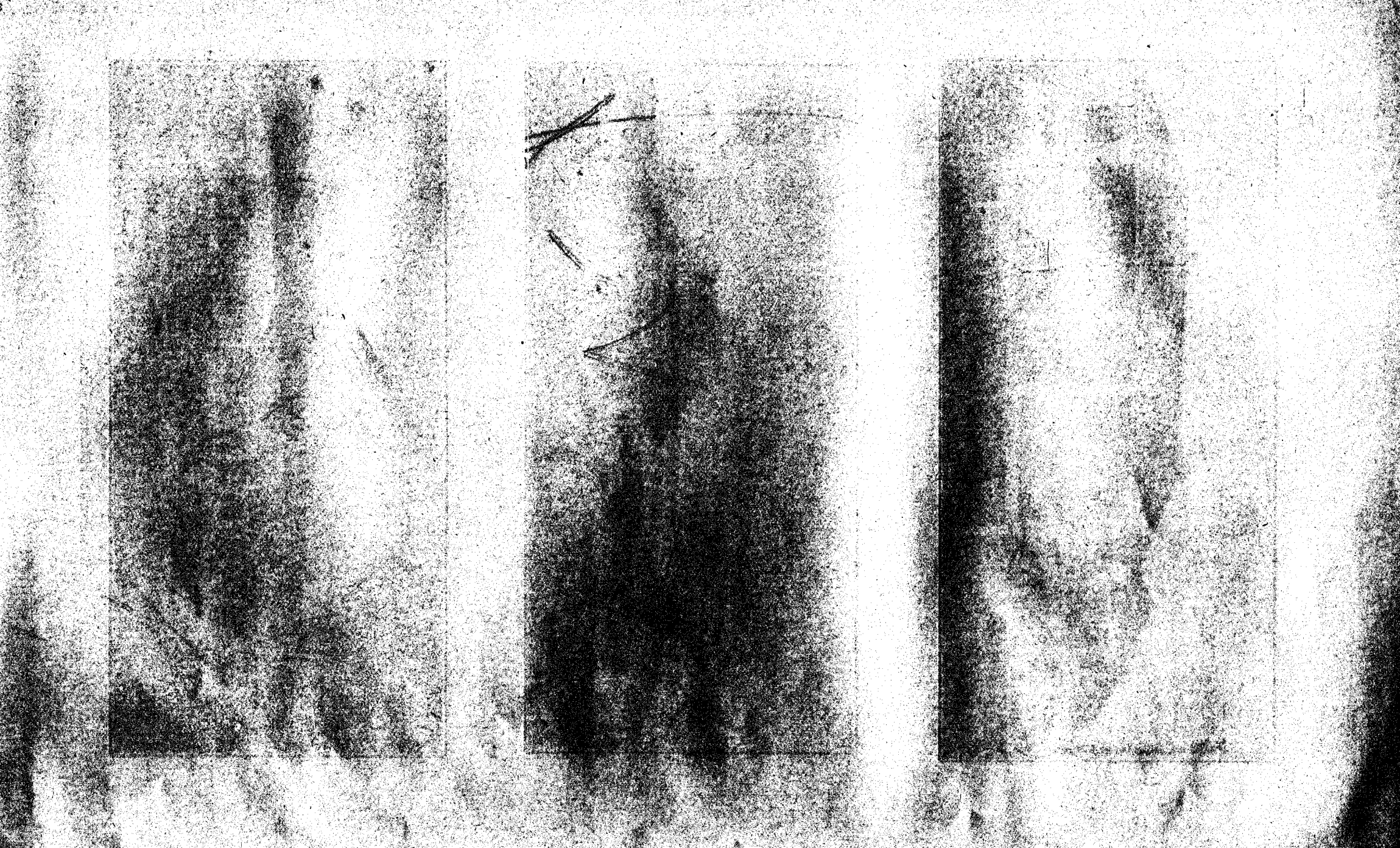
Whangarei High School.



Hastings Technical College.



Wellington Technical College Workshops.



PUBLIC WORKS STATEMENT, 1926.

INDEX.

TABLES.

APPENDICES.

TABLE No. 1.

SUMMARY SHOWING THE TOTAL EXPENDITURE ON PUBLIC WORKS AND OTHER SERVICES OUT OF PUBLIC WORKS FUND TO 31ST MARCH, 1926, AND THE LIABILITIES ON THAT DATE.

Number of Table containing Details.	Works.	Total Net Expenditure to 31st March, 1925.	Expenditure during Twelve Months ended 31st March, 1926.	Recoveries on Account of Services of Previous Years.	Total Net Expenditure to 31st March, 1926.	Liabilities on 31st March, 1926.	Total Net Expenditure and Liabilities.	Works.
		£	£	£	£	£	£	
3	Railways*..	46,459,380	1,988,614	16,875	48,431,119	99,592	48,530,711	Railways.*
..	Roads†	15,120,263	568,628	4,810	15,684,081	54,859	15,738,940	Roads.†
..	Development of mining	832,975	..	..	832,975	..	832,975	Development of mining.
..	Telegraphs	7,176,705	931,661	..	8,108,366	214,007	8,322,373	Telegraphs.
..	Public buildings	9,324,208	284,178	3,398	9,604,988	19,521	9,624,509	Public buildings.
..	Lighthouses, harbour-works, and harbour-defences	1,198,166	9,407	881	1,206,692	591	1,207,283	Lighthouses, harbour-works, and harbour-defences.
..	Departmental	2,166,556	126,596	129	2,293,023	1,768	2,294,791	Departmental.
18 of 1878	Coal-exploration and mine-development	10,835	..	..	10,835	..	10,835	Coal-exploration and mine-development.
11 of 1877	Aiding works on Thames goldfields ..	50,000	..	..	50,000	..	50,000	Aiding works on Thames goldfields.
..	Immigration	2,825,412	107,521	443	2,932,490	33,179	2,965,669	Immigration.
..	Purchase of Native lands	2,061,739	..	..	2,061,739	..	2,061,739	Purchase of Native lands.
..	Defence	1,118,495	89,670	33	1,208,132	..	1,208,132	Defence.
..	Charges and expenses of raising loans ..	2,043,772	297,180	..	2,340,952	..	2,340,952	Charges and expenses of raising loans.
..	Interest and sinking fund	218,500	..	..	218,500	..	218,500	Interest and sinking fund.
..	Rates on Native lands	68,672	..	..	68,672	..	68,672	Rates on Native lands.
..	Thermal springs	14,600	..	..	14,600	..	14,600	Thermal springs.
..	Tourist and health resorts	349,142	43,486	..	392,628	6,697	399,325	Tourist and health resorts.
..	Lands improvement‡	229,677	70,493	19	300,151	3,621	303,772	Lands improvement.‡
..	Payment to Midland Railway bondholders	150,000	..	..	150,000	..	150,000	Payment to Midland Railway bondholders.
..	Irrigation and water-supply§ ..	621,212	56,227	31	677,408	2,406	679,814	Irrigation and water-supply.§
..	Plant, material, and stores	350,912	34,471	751	384,632	4,292	388,924	Plant, material, and stores.
..	Quarries (acquisition and operation) ..	1,815	12,351	..	14,166	2,011	16,177	Quarries (acquisition and operation).
..	Timber-supply and sawmills for Public Works Department	14,170	*Cr.* 9,892	104	4,174	81	4,255	Timber-supply and sawmills for Public Works Department.
..	Motor Transport Services	28,641	4,994	..	33,635	..	33,635	Motor Transport Services.
..	Transfer to Main Highways Account, Construction Fund	226,000	..	..	226,000	..	226,000	Transfer to Main Highways Account, Construction Fund.
	Totals	92,661,847	4,615,585	27,474	97,249,958	442,625	97,692,583	**Totals.**

* Exclusive of expenditure on Hutt Railway and Road Improvement and Railways Improvement Accounts. † Includes £4,500 expended under section 16 (1) Native Land Amendment and Native Land Claims Adjustment Act, 1923. ‡ £6,727 previously expended on irrigation under this item, now transferred to Irrigation and Water-supply. § Includes £115,000 previously expended under Irrigation and Water-supply Account, 1911–12 to 1915–16 and part 1917–18, now included in Public Works Fund; also £6,727 previously expended on irrigation under Lands Improvement, now transferred to Irrigation and Water-supply.

TABLE No. 2.

GENERAL SUMMARY.

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND, 1904–1905 to 1925–26.

N.B.—The figures in italics, prefixed by "*Cr.*," are either recoveries on account of services of previous years or receipts-in-aid applied in reduction of expenditure.

Description of Services.	Total Net Expenditure to 31st March, 1904.	Expenditure.										
		1904–5.	1905–6.	1906–7.	1907–8.	1908–9.	1909–10.	1910–11.	1911–12.	1912–13.	1913–14.	1914–15.
	£	£	£	£	£	£	£	£	£	£	£	£
Immigration	2,147,993	6,481	8,753	14,353	9,132	15,075	17,003	9,441	11,681	14,694	33,914	33,219
Public Works, Departmental	507,124	12,814	13,517	16,710	18,219	24,512	41,176	42,733	49,864	57,426	66,650	100,719
Irrigation and Water-supply	..	..	..	..	..	..	..	1,562	2,794	14,689	40,329	32,090
Railways	20,090,422	779,891	1,021,265	1,227,880	1,093,535	1,116,183	1,128,400	1,104,071	1,125,905	1,148,832	1,104,897	2,146,753†
								Cr. 652	*Cr. 6,987*	*Cr. 29,528*	*Cr. 5,485*	*Cr. 6,022*
Payment to Midland Railway Bondholders	150,000	..	..	..	..	..	..	..	..	..	..	..
Roads:—												
Miscellaneous Roads and Bridges	5,660,401	202,850	306,065	308,500	285,248	422,174	297,932	229,537	383,511	337,584	353,836	484,365
Roads on Goldfields	632,736	26,112	45,139	38,970	38,494	47,375	40,830	25,626	41,067	36,761	*Cr. 515*	
Development of Thermal Springs and Natural Scenery ..	16,023	..	..	..	..	..	..	..	..	..	24,143	30,065
Lands Improvement Account*	300,930	..	..	..	..	..	..	..	..	..	..	..
Total, Roads	6,610,090	228,962	351,204	347,470	323,742	469,549	338,762	255,163	424,578	374,345	377,464	514,430
Development of Mining	742,170	6,258	18,533	11,064	8,633	32,859	18,597	10,845	21,244	10,644	4,889	2,384
							Cr. 1,000	*Cr. 1,000*	*Cr. 30*	*Cr. 1,015*		*Cr. 255*
Purchase of Native Lands	1,512,385	6,281	13,777	9,135	2,190	2,099	30,567	2,976	*Cr. 2,466*	*Cr. 917*	*Cr. 857*	*Cr. 1,060*
								Cr. 2,286				
Native Lands Purchase Account	491,980	..	..	..	..	..	..	..	..	..	..	..
Total, Land Purchases	2,004,365	6,281	13,777	9,135	2,190	2,099	30,567	690	*Cr. 2,466*	*Cr. 917*	*Cr. 857*	*Cr. 1,060*
Telegraph Extension	1,053,693	79,298	77,186	114,068	155,491	163,032	123,423	111,867	147,692	251,375	392,648	288,395
Public Buildings:—												
General (including Miscellaneous)	276,431	9,021	2,231	14,216	16,260	39,635	41,964	44,044	34,721	44,719	43,199	52,239
Parliamentary	61,555	697	71	1,047	4,119	5,172	3,157	237	2,004	18,806	23,612	31,478
Judicial { Courthouses	498,057	2,174	6,509	9,580	5,788	14,473	11,119	5,759	14,556	20,097	9,423	5,171
Judicial { Prisons		4,127	1,537	3,146	4,164	5,008	4,231	7,506	9,760	6,911	4,928	14,515
Judicial { Police-stations		6,782	7,853	22,466	18,986	17,730	16,256	9,030	19,817	18,423	14,094	19,122

* Subsequent expenditure under separate class "Lands Improvement," see next page.

† Includes £1,000,000 expended 1908–9 and 1909–10 under Wellington–Manawatu Railway Purchase Account.

[*Continued on page 4.*

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND, 1904–1905 to 1925–26—*continued.*

Description of Services.	Total Net Expenditure to 31st March, 1904.	Expenditure.										
		1904–5.	1905–6.	1906–7.	1907–8.	1908–9.	1909–10.	1910–11.	1911–12.	1912–13.	1913–14.	1914–15.
Public Buildings—*continued.*	£	£	£	£	£	£	£	£	£	£	£	£
Post and Telegraph	386,290	16,008	38,419	43,918	43,724	62,262	68,574	117,815	130,815	122,999	78,815	60,838
Customs	25,317	13,018	7,903	414	47	2,507	233	..	..	..	..	..
Quarantine Stations	6,865	..	..	..	..	..	..	..	..	..	..	..
Mental Hospitals	501,574	15,949	16,235	8,049	7,987	15,296	19,839	12,707	8,809	46,181	26,001	53,996
Public Health	6,315	4,265	7,926	1,765	7,497	4,402	319	..	..	376	..	..
Health and Hospital Institutions	63,515	1,204	4,786	10,259	15,576	11,153	7,259	1,484	12,745	8,750	1,435	998
School Buildings	1,232,846	42,721	69,223	109,459	100,197	102,340	98,103	124,926	90,535	105,000	121,954	122,940
Agricultural	10,131	1,362	2,618	2,707	1,690	5,543	6,103	1,160	3,684	6,475	4,398	2,428
Workers' Dwellings	..	..	..	..	..	..	..	..	22,644	46,455	41,741	*Cr. 34* 68,275
Total, Public Buildings	3,068,896	117,328	165,311	227,026	226,035	285,521	277,157	324,668	350,090	445,192	369,600	431,966
Lighthouses, Harbour-works, and Harbour-defences :—												
Lighthouses	159,726	2,167	962	..	1,417	7,481	6,762	1,470	5,428	9,031	5,174	3,887
Harbour-works	326,301	1,308	2,684	2,963	2,867	4,439	4,548	4,092	6,004	7,415	3,346	12,563
Harbour-defences	516,190	2,515	1,300	1,541	2,579	7,297	5,372	2,865	1,144	339	*Cr. 1,462* 539 *Cr. 300*	681
Total, Lighthouses, &c.	1,002,217	5,990	4,946	4,504	6,863	19,217	16,682	8,427	12,576	16,785	7,297	17,131
Rates on Native Lands	65,934	631	548	695	837	27	..	..	..	..	..	..
Contingent Defence	772,563	46,588	35,569	14,874	18,574	10,766	4,977	6,071	10,437	23,790	30,186	15,221
Tourist and Health Resorts	37,852	17,508	15,888	42,271	45,048	24,286	14,507	5,912	13,361	12,906	14,989	8,232 *Cr. 12*
Lands Improvement*	6,109	2,248	1,052	5,605	9,561	19,542	6,910	11,125	20,394	22,550 *Cr. 383*	10,269 *Cr. 432*	13,810 *Cr. 522*
Charges and Expenses of raising Loans	1,238,304	10,764	236	*Cr. 5,175*	*Cr. 8,487*	575	17,715 *Cr. 12,000*	66,367 *Cr. 66,392*	67,470 *Cr. 66,954*	72,950 *Cr. 71,681*	105,449 *Cr. 96,741*	35,495 *Cr. 34,865*
Interest and Sinking Funds	218,500	..	..	..	..	..	..	..	..	..	..	..
Coal-exploration and Mine-development	10,835	..	..	..	..	..	..	..	..	..	..	..
Thermal Springs	14,600	..	..	..	..	..	..	..	..	..	..	..
Total Ways and Means Credits	..	..	..	*5,175*	*8,487*	..	..	..	*10,530*	*103,524*	*105,792*	*43,400*
Grand Total—Net Expenditure	39,741,667	1,321,510	1,730,686	2,035,144	1,909,688	2,183,245	2,022,876	1,891,918	2,190,731	3,362,654	2,455,066	2,597,109

* For previous expenditure see Roads Class.

[*Continued on page 5.*

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND, 1904–1905 to 1925–26—*continued.*

Description of Services.	Expenditure.											Total Net Expenditure to 31st March, 1926.
	1915–16.	1916–17.	1917–18.	1918–19.	1919–20.	1920–21.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	
	£	£	£	£	£	£	£	£	£	£	£	£
Immigration	10,010 *Cr. 10*	6,533	3,856	*Cr. 12,018*	*Cr. 62,561*	*Cr. 7,806*	247,528	90,611 *Cr. 140*	92,600 *Cr. 1,267*	136,353 *Cr. 16*	107,521 *Cr. 443*	2,932,490
Public Works, Departmental	111,489	131,701	127,962 *Cr. 2,662*	115,419 *Cr. 4,119*	121,677	143,280 *Cr. 6,281*	128,002 *Cr. 525*	111,367 *Cr.* 131	110,445 *Cr. 69*	127,556 *Cr. 19*	126,596 *Cr. 129*	2,293,023
Irrigation and Water-supply*	29,874	20,794	11,650	13,665	34,115	55,344	82,713	58,131	95,467	127,995	56,227 *Cr. 31*	677,408
Railways	1,065,171 *Cr. 4,633*	620,947 *Cr. 4,845*	495,771 *Cr. 110*	387,923 *Cr. 4,924*	748,649 *Cr. 105,196*	1,365,466 *Cr. 388*	3,133,200 *Cr. 751*	2,110,859 *Cr. 3,171*	1,776,413 *Cr. 1,167*	1,878,729 *Cr. 37,924*	1,988,614 *Cr. 16,875*	48,431,119
Payment to Midland Railway Bondholders	..	..	..	..	..	..		..	..	..	..	150,000
Roads :—												
Miscellaneous Roads and Bridges	400,062	203,746	128,730 *Cr. 600*	221,887 *Cr. 997*	376,097 *Cr. 603*	527,854 *Cr. 81*	552,895 *Cr. 197*	643,156 *Cr. 244*	751,370 *Cr. 188*	603,968 *Cr. 231*	564,694 *Cr. 4,810*	..
Roads on Goldfields	24,432	17,099	6,912	4,186	12,465	11,050	11,264	4,850	2,867	2,755	3,934	..
Development of Thermal Springs and Natural Scenery	..	..	..	..	..	..	..	..	..	..	..	..
Lands Improvement Account	..	..	..	..	..	..	..	..	..	..	..	..
Total, Roads	424,494	220,845	135,042	225,076	387,959	538,823	563,962	647,762	754,049	606,492	563,818	15,684,081
Development of Mining	6,602	4,592	27 *Cr. 6,545*	518 *Cr. 1,000*	1,173 *Cr. 7,008*	2,153 *Cr. 1,606*	2,130 *Cr. 51*	*Cr. 98* *Cr. 1,785*	1,363 *Cr. 2,310*	..	..	882,975
Purchase of Native Lands	*Cr. 972*	*Cr. 868*	*Cr. 57*	..	*Cr. 57*	*Cr. 57*	*Cr. 52*	..	..	..	..	..
Native Lands Purchase Account	..	..	..	..	..	..	..	..	..	..	..	..
Total, Land Purchases	*Cr. 972*	*Cr. 868*	*Cr. 57*	..	*Cr. 57*	*Cr. 57*	*Cr. 52*	..	..	..	..	2,061,739
Telegraph Extension	249,554	203,311	213,955	198,611	249,379	336,468	590,981	512,657 *Cr. 11,082*	717,409	957,294	931,661	8,108,366
Public Buildings :—												
General (including Miscellaneous)	22,050	12,648	11,646 *Cr. 15,067*	43,168	64,207	39,504	87,057	113,553	8,160	30,791 *Cr. 35*	29,369 *Cr. 345*	..
Parliamentary	17,133	22,586	37,233	..	..	..	..	..	..	..	..	..
Judicial — Courthouses	4,902	299	21	..	868	1,400	4,358	2,018 *Cr. 13*	2,448	5,363 *Cr. 19*	7,209	..
Judicial — Prisons	17,786	15,685	13,195	16,299	20,981	30,038 *Cr. 800*	41,740	23,313	26,484 *Cr. 2,568*	25,279 *Cr. 86*	24,196	..
Judicial — Police-stations	25,484	21,147	18,814	6,157	24,944	36,843	22,544	6,298	12,838	18,553	16,594 *Cr. 102*	..

* £6,727 previously included under Lands Improvement, now transferred to Irrigation and Water-supply.

[*Continued on page 6.*

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND, 1904–1905 to 1925–26—*continued.*

Description of Services.	Expenditure.											Total Net Expenditure to 31st March, 1926.
	1915–16.	1916–17.	1917–18.	1918–19.	1919–20.	1920–21.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	
	£	£	£	£	£	£	£	£	£	£	£	£
Public Buildings—*continued.*												
Post and Telegraph	35,258	22,744	33,525	26,072	66,543	93,364	112,906	77,211	108,395	65,917	89,865	..
						Cr. 560	*Cr. 675*	*Cr. 69*		*Cr. 210*	*Cr. 453*	
Customs	..	..	..	..	..	..	..	..	..	..	..	..
Quarantine Stations	..	..	..	..	35,490	15,529	4,581	154	171	284	..	..
Mental Hospitals	54,898	44,602	26,502	14,640	18,277	27,368	41,838	13,852	26,541	68,438	77,835	.
	Cr. 15										*Cr. 283*	
Public Health	..	..	..	..	..	..	..	..	..	..	..	..
Health and Hospital Institutions	1,426	7,570	4,080	2,332	8,484	4,099	26,131	20,981	7,420	27,951	31,177	..
								Cr. 1,399			*Cr. 300*	
School Buildings	97,972	70,367	63,082	115,656	195,500	244,722	2,469	..	..	..	..	..
							Cr. 9,255	*Cr. 367*	*Cr. 1,090*	*Cr. 905*	*Cr. 1,050*	
Agricultural	2,972	3,046	5,685	4,229	7,227	9,345	1,115	514	282	3,242	7,932	..
								Cr. 27	*Cr. 171*	*Cr. 686*	*Cr. 865*	
Workers' Dwellings	55,893	35,437	15,505	7,293	26,674	..	..	..	..	..	..	..
Total, Public Buildings	335,759	256,131	214,221	235,846	469,195	500,851	334,809	255,818	188,910	243,877	280,780	9,604,988
Lighthouses, Harbour-works, and Harbour-defences:—												
Lighthouses	1,415	449	561	1,663	253	758	16,350	3,260	4,473	2,850	5,690	..
											Cr. 750	
Harbour-works	9,355	2,280	2,359	3,729	3,245	4,080	2,424	6,524	6,334	423	3,717	..
											Cr. 131	
Harbour-defences	2,903	1,038	56	..	..	..	..	..	..	..	..	..
								Cr. 1,235	*Cr. 16*			
Total, Lighthouses, &c.	13,673	3,767	2,976	5,392	3,498	4,838	18,774	8,549	10,791	3,273	8,526	1,206,692
Rates on Native Lands	..	..	..	..	..	..	..	..	..	..	..	68,672
Contingent Defence	37,619	9,742	6,714	8,809	10,187	8,701	15,586	1,702	4,931	27,133	89,670	1,208,132
				Cr. 922				*Cr. 463*	*Cr. 280*	*Cr. 580*	*Cr. 33*	
Tourist and Health Resorts	5,167	1,094	931	1,620	6,194	19,041	17,996	5,435	27,264	12,343	43,486	392,628
	Cr. 500						*Cr. 110*			*Cr. 81*		
Lands Improvement*	5,936	*Cr. 2,731*	1,838	*Cr. 4,268*	2,964	2,064	17,478	26,204	18,182	34,172	70,493	300,151
											Cr. 19	
Charges and Expenses of raising Loans	5,037	35	1	..	..	184	174,280	62,399	311,905	241,930	297,180	2,340,952
	Cr. 5,030											
Interest and Sinking Funds	..	..	..	..	..	..	..	..	..	..	..	218,500
Coal-exploration and Mine-development	..	..	..	..	..	..	..	..	..	..	..	10,835
Thermal Springs	..	..	..	..	..	..	..	..	..	..	..	14,600
Plant, Material, and Stores	74,418	9,778	6,811	20,638	47,682	169,910	106,432	*Cr. 19,708*	*Cr. 52,788*	..	34,471	384,632
				Cr. 31						*Cr. 12,230*	*Cr. 751*	
Quarries (acquisition and operation)	..	..	..	..	..	..	..	..	..	1,815	12,351	14,166
Timber-supply and Sawmills for Public Works Department	..	..	..	..	..	..	16,369	14,725	3,613	*Cr. 20,537*	*Cr. 9,892*	4,174
											Cr. 104	
Motor Transport Service	..	..	..	..	..	..	..	22,679	962	5,000	4,994	33,635
Transfer to Main Highways Account:—												
Construction Fund	..	..	..	..	..	..	..	..	..	226,000	..	226,000
Total Ways and Means Credits	*11,160*	*5,713*	*43,492*	*11,993*	*112,864*	*19,627*	*11,616*	*20,127*	*61,914*	*73,559*	*27,474*	..
Grand Total—Net Expenditure	2,363,658	1,502,588	1,237,422	1,207,482	2,020,714	3,121,131	3,449,351	3,892,320	4,056,423	4,632,134	4,615,585	97,249,958

* Expenditure on Irrigation and Water-supply—1905–6, £22; 1906–7, £750; 1907–8, £1,554; 1908–9, £1,966; 1909–10, £2,435, now transferred to Irrigation and Water-supply.

TABLE No

Expenditure on Railways to 31st March, 1926.

Lines of Railway.	Total Expenditure by General Government to 31st March, 1925.	Recoveries on Account of Expenditure of Previous Years.	Expenditure out of Public Works Fund during Year 1925–26.				Expenditure under Special Acts during Year 1925–26.*	Amounts previously charged to "Surveys of New Lines" now charged to Individual Lines.	Total Expenditure by General Government to 31st March, 1926.	Valuation of Works constructed by Provinces and Midland Railway Company.
			New Works.			Works on Open Lines.				
			Construction and Surveys.	Permanent-way.	Total New Works.					
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Kaihu Valley	179,121 2 0	3 5 0	..	..	..	..	..	..	179,117 17 0	..
Opua Wharf to Whangarei and Onerahi	615,541 17 7	7,250 0 0	..	..	..	..	..	..	608,291 17 7	..
Otiria to Ngapuhi	125,987 0 0	..	..	..	..	..	..	..	125,987 0 0	..
Whangarei (Kioreroa) to Waiotira	422,264 0 4	..	*Cr.* 4,907 7 9	..	*Cr.* 4,907 7 9	..	..	..	417,356 12 7	..
Waipu Branch	*Cr.* 35 8 0	..	35 8 0	..	35 8 0		..	..	..	..
North Auckland Main Trunk—										
Ngapuhi Northwards	250,525 5 10	..	45,684 10 7	..	45,684 10 7	..	..	..	296,209 16 5	..
Helensville Northwards	2,314,378 17 3	3 15 0	237,033 14 0	16,554 17 9	253,588 11 9	45,872 13 6	22,349 12 5	..	2,636,185 19 11	..
North Auckland Main Trunk to Dargaville	474 0 0	..	10,127 10 5	..	10,127 10 5	..	..	..	10,601 10 5	..
Helensville to Te Awamutu	3,104,506 13 3	..	..	..		122,427 12 5	364,763 15 7	..	3,591,698 1 3	..
Waiuku Branch (Paerata to Waiuku)	207,735 9 10	..	..	..	..	..	..	..	207,735 9 10	..
Huntly to Awaroa	180,118 0 10	..	413 11 3	..	413 11 3	1,184 9 11	992 5 11	..	182,708 7 11	..
Waikokowai Branch	3,442 0 0	..	..	..	..	..	..	..	3,442 0 0	..
Waipa Gravel Access Branch	114 0 0	..	..	..	..	..	..	..	114 0 0	..
Frankton to Thames	432,084 8 5	..	..	..	..	3,063 0 9	63,609 14 2	..	498,757 3 4	..
Cambridge Branch (Ruakura Junction to Cambridge)	55,394 0 3	..	..	..	..	3,425 17 4	..	..	58,819 17 7	..
Morrinsville to Rotorua	407,889 3 1	..	..	..	..	10,877 14 11	2,980 12 4	..	421,747 10 4	..
Marton to Te Awamutu	2,931,396 11 6	..	..	..	..	29,226 18 10	9,347 12 11	..	2,969,971 3 3	..
Raetihi Branch	88,619 17 1	..	..	..	..	..	..	..	88,619 17 1	..
Paeroa to Pokeno	2,974 9 5	..	1,679 18 4	..	1,679 18 4	..	..	..	4,654 7 9	..
Paeroa to Waihi and Tauranga	534,835 8 5	20 0 0	297,869 14 3	5,486 1 2	303,355 15 5	..	..	..	838,171 3 10	..
Tauranga to Taneatua, including Te Maunga to Maunganui Branch	1,242,335 3 8	..	74,884 19 2	19,200 16 8	94,085 15 10	..	..	..	1,336,420 19 6	..
Gisborne to Motu	623,259 0 7	..	..	..	..	98 14 2	..	..	623,357 14 9	..
Gisborne to Ormond Tramway	4,975 1 7	..	..	..	..	..	..	..	4,975 1 7	..
Napier to Gisborne—										
Gisborne Southwards	280,240 13 8	2,954 14 1	5,591 1 6	4,836 13 11	10,427 15 5	..	..	..	287,713 15 0	..
Wairoa Northwards	20,942 16 6	..	*Cr.* 46 4 6	..	*Cr.* 46 4 6	..	..	..	20,896 12 0	..
Napier Northwards	519,482 9 9	..	228,938 13 4	7,681 10 10	236,620 4 2	..	..	..	756,102 13 11	..
Waikokopu Branch	484,637 19 4	..	61,491 18 4	10,893 18 8	72,385 17 0	..	..	..	557,023 16 4	..
Wellington to Napier—										
Napier to Woodville and Palmerston North	959,867 3 10	88 15 0	..	..	..	34,134 3 6	526 11 9	..	994,439 4 1	..
Wellington to Woodville, including Te Aro Extension	1,827,009 2 9	50 0 0	..	..	..	25,903 10 9	102,463 6 0	..	1,955,325 19 6	..
Featherston to Martinborough	399 0 0	..	..	..	..	..	..	..	399 0 0	..
Wellington to Waitara—										
Wellington to Longburn	1,129,299 9 1	1,689 11 3	*Cr.* 0 5 0	..	*Cr.* 0 5 0	4,166 18 4	127,706 0 8	..	1,259,482 11 10	..
Foxton to Waitara and Moturoa	1,632,717 6 10	256 0 0	..	..	..	54,829 7 7	36,310 3 6	..	1,723,600 17 11	..
Mount Egmont Branch	71,699 0 0	1,012 18 6	..	..	..	..	..	..	70,686 1 6	..
Moturoa to Opunake	759 0 0	..	..	..	..	..	..	..	759 0 0	..
Opunake Branch (Te Roti to Opunake)	344,739 17 2	..	63,949 13 8	10,073 5 9	74,022 19 5	..	..	..	418,762 16 7	..
Manaia Branch (Kapuni to Manaia)	19,648 6 0	..	..	..	..	..	..	..	19,648 6 0	..
Rangitikei River Quarry Line	206 0 0	..	..	..	..	..	..	..	206 0 0	..

* Railways Improvement Authorization Act 1914 Account.

TABLE No. 3—*continued.*

EXPENDITURE ON RAILWAYS TO 31ST MARCH, 1926—*continued.*

Lines of Railway.	Total Expenditure by General Government to 31st March, 1925.	Recoveries on Account of Expenditure of Previous Years.	Expenditure out of Public Works Fund during Year 1925-26.				Expenditure under Special Acts during Year 1925-26.*	Amounts previously charged to "Surveys of New Lines" now charged to Individual Lines.	Total Expenditure by General Government to 31st March, 1926.	Valuation of Works constructed by Provinces and Midland Railway Company.
			New Works.							
			Construction and Surveys.	Permanent-way.	Total New Works.	Works on Open Lines.				
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Stratford to Okahukura (East End) ..	511,377 17 5	10 14 4	58,055 16 8	17,024 14 9	75,080 11 5	..	..	..	586,447 14 6	..
Stratford to Okahukura (West End) ..	807,632 1 4	..	45,091 13 6	..	45,091 13 6	..	..	..	852,723 14 10	..
Nelson to Greymouth—										
Nelson to Inangahua	449,414 6 1	22 2 7	29,333 18 3	8,133 6 9	37,467 5 0	..	962 4 0	..	487,821 12 6	78,307 0 0
Stillwater to Inangahua	215,243 10 4	..	..	..	..	834 7 11	10,919 13 0	..	226,997 11 3	279,685 0 0
Ngahere to Blackball	147,532 0 0	..	..	..	..	..	..	..	147,532 0 0	..
Westport to Ngakawau	192,743 19 6	..	..	..	..	1,139 6 3	..	..	193,883 5 9	..
Westport to Inangahua	170,430 15 0	..	19,254 15 5	8,362 16 1	27,617 11 6	..	..	..	198,048 6 6	..
Greymouth to Rewanui	255,646 0 0	..	..	..	..	..	..	..	255,646 0 0	..
Point Elizabeth Branch	74,241 10 11	..	*Cr.* 144 12 0	..	*Cr.* 144 12 0	..	..	..	74,096 18 11	..
Greymouth to Ross and Mikonui	355,735 6 1	..	..	..	..	117 19 2	..	..	355,853 5 3	..
Picton to Waipara—										
Picton Southwards	656,002 1 10	76 14 4	*Cr.* 172 16 10	..	*Cr.* 172 16 10	273 10 2	0 15 3	..	656,026 16 1	..
Waipara Northwards	377,533 0 5	..	1,211 0 4	..	1,211 0 4	*Cr.* 3 14 4	..	..	378,740 6 5	..
Christchurch to Greymouth—										
Rolleston to Bealey	996,956 11 7	..	123 12 10	..	123 12 10	4,577 12 0	855 10 2	..	1,002,513 6 7	61,579 0 0
Whitecliffs Branch	25,021 0 0	..	..	..	..	..	..	..	25,021 0 0	..
Greymouth to Bealey	2,042,436 16 11	2,798 11 1	455 13 6	..	455 13 6	2,853 11 6	4,167 1 3	..	2,047,114 12 1	263,889 0 0
Hurunui to Waitaki—										
Main Line (Waiau to Waitaki)	2,144,711 17 5	..	..	..	..	14,389 2 3	4,493 10 1	..	2,163,594 9 9	316,135 0 0
Oxford Branch (Rangiora to Oxford West)	52,952 0 0	..	..	..	..	..	120 8 2	..	53,072 8 2	..
Eyreton Branch (Kaiapoi to Bennett's) ..	44,277 0 0	..	..	..	..	..	..	..	44,277 0 0	..
Lyttelton Branch	80,908 0 0	..	..	..	..	..	..	..	80,908 0 0	340,500 0 0
Southbridge Branch (Hornby to Southbridge)	91,441 0 0	..	..	..	..	..	..	..	91,441 0 0	..
Little River Branch (Lincoln to Little River)	110,713 14 3	..	..	..	..	..	132 17 6	..	110,846 11 9	..
Rakaia to Methven	77,142 15 4	..	..	..	..	..	91 4 0	..	77,233 19 4	..
Ashburton to Springburn	64,025 11 3	..	..	..	..	..	..	..	64,025 11 3	..
Orari to Geraldine	321 0 0	..	..	..	..	..	..	..	321 0 0	..
Fairlie Branch (Washdyke Junction to Fairlie)	68,166 0 1	..	..	..	..	1,091 4 7	101 19 0	..	69,359 3 8	75,124 0 0
Waimate Branch	80,686 10 7	..	..	32 6 5	32 6 5	..	..	..	80,718 17 0	..
Canterbury Interior Main Line—										
Oxford to Malvern	54,248 0 0	..	..	..	..	..	..	..	54,248 0 0	..
Whitecliffs to Rakaia	542 0 0	..	..	..	..	..	..	..	542 0 0	..
Temuka to Rangitata	5,152 0 0	..	..	..	..	..	..	..	5,152 0 0	..
Waitaki to Bluff—										
Main Line, including Port Chalmers Branch	3,374,500 1 10	..	..	..	..	8,468 4 8	28,363 19 8	..	3,411,332 6 2	82,259 0 0
Duntroon Branch (Pukeuri to Kurow) ..	97,465 0 0	..	..	..	..	..	..	..	97,465 0 0	37,500 0 0
Ngapara Branch (Waiareka Junction to Ngapara)	26,090 0 0	..	..	..	..	..	..	..	26,090 0 0	58,009 0 0

* **Railways Improvement Authorization Act 1914 Account.**

TABLE No. 3—*continued.*

Expenditure on Railways to 31st March, 1926—*continued.*

Lines of Railway.	Total Expenditure by General Government to 31st March, 1925.	Recoveries on Account of Expenditure of Previous Years.	Expenditure out of Public Works Fund during Year 1925-26				Expenditure under Special Acts during Year 1925-26.*	Amounts previously charged to "Surveys of New Lines" now charged to Individual Lines.	Total Expenditure by General Government to 31st March, 1926.	Valuation of Works constructed by Provinces and Midland Railway Company.
			New Works.			Works on Open Lines.				
			Construction and Surveys.	Permanent-way.	Total New Works.					
Waitaki to Bluff—*continued.*	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Livingstone Branch (Windsor to Tokarahi)	82,785 0 0	..	..	..	..	..	..	..	82,785 0 0	..
Waihemo Branch (Palmerston to Dunback)	33,191 0 0	..	..	..	..	..	..	..	33,191 0 0	..
Fernhill Railway	1,415 0 0	..	..	..	..	..	..	..	1,415 0 0	..
Brighton Road Branch	6,474 0 0	..	..	..	..	..	..	..	6,474 0 0	12,829 0 0
Outram Branch (Mosgiel to Outram) ..	11,951 0 0	..	..	..	..	..	..	..	11,951 0 0	29,691 0 0
Lawrence Branch	542,929 4 6	..	66,951 8 2	2,667 3 6	69,618 11 8	..	..	..	612,547 16 2	..
Balclutha to Tuapeka Mouth	2,489 0 0	..	..	..	..	..	..	..	2,489 0 0	..
Catlin's River Branch (Balclutha to Tahakopa)	462,722 0 0	..	..	..	..	..	436 13 6	..	463,158 13 6	..
Heriotburn Branch (Waipahi to Edievale)	124,808 4 5	..	..	..	..	..	..	..	124,808 4 5	..
Waikaka Branch (McNab to Waikaka) ..	68,423 0 0	..	..	..	..	..	..	..	68,423 0 0	..
Gore to Lumsden	112,143 0 0	..	..	..	..	..	..	..	112,143 0 0	..
Edendale to Glenham	53,328 0 0	..	..	..	..	..	..	..	53,328 0 0	..
Riversdale to Switzers	82,304 0 0	..	..	..	..	..	..	..	82,304 0 0	..
Seaward Bush to Catlin's (Appleby to Tokanui)	185,360 0 0	..	..	..	..	..	..	..	185,360 0 0	..
Otago Central (Wingatui to Cromwell) ..	1,435,918 12 6	..	707 10 2	..	707 10 2	..	..	..	1,436,626 2 8	..
Invercargill to Kingston—										
Main Line	363,591 17 7	..	..	..	..	128 9 4	2,398 12 5	..	366,118 19 4	91,937 0 0
Mararoa Branch (Lumsden to Mossburn)	27,508 4 4	..	..	..	..	..	..	..	27,508 4 4	..
Winton to Heddon Bush	140 0 0	..	..	..	..	..	..	..	140 0 0	..
Makarewa to Orepuki and Waiau.. ..	346,378 4 10	637 14 0	8,566 11 3	2,640 1 10	11,206 13 1	..	..	..	356,947 3 11	37,097 0 0
Thornbury to Wairio	87,033 15 11	..	..	..	..	3,455 17 9	..	..	90,489 13 8	23,200 0 0
Forest Hill (Winton to Hedgehope) ..	23,337 0 0	..	..	..	..	..	..	..	23,337 0 0	..
Expenses of Railway Commissions and other Expenditure not chargeable to Individual Lines	10,337 0 0	..	..	..	..	..	..	..	10,337 0 0	..
Surveys of New Lines—										
North Island	38,082 17 0	..	1,605 12 3	..	1,605 12 3	..	..	..	39,688 9 3	..
Middle Island	5,763 0 0	..	..	..	..	..	..	..	5,763 0 0	..
Rolling-stock	9,629,859 4 3	..	..	..	..	473,447 13 4	20,784 4 7	..	10,124,091 2 2	..
General	..	..	..	..	..	..	3,698 6 4	..	3,698 6 4	..
Suspense Account, being proportion of cost of raising loans for Railways Authorization Improvement Act 1914 Account	..	..	..	..	..	..	23,579 19 7	..	23,579 19 7	..
Stock of Permanent-way Materials, 31st March, 1925 .. .. £ s. d. 125,951 2 10	125,951 2 10	..	..	..	..	..	..	..	..	..
	48,535,097 4 2									
Stock of Permanent-way decreased by .. 103,493 4 2	103,493 4 2	..	..	..	..	..	..	..	..	..
Stock of Permanent-way Materials, 31st March, 1926 .. .. £22,457 18 8	..	..	..	..	..	..	..	..	22,457 18 8	..
Total	48,431,604 0 0	16,874 15 2	1,253,786 19 1	113,587 14 1	1,367,374 13 2	845,984 6 7	832,156 13 9	..	51,460,244 18 4	1,787,741 0 0†

* Railways Improvement Authorization Act 1914 Account. † Includes value for £150,000 paid to debenture-holders under the Midland Railway Petitions Settlement Act Amendment Act. 1903.

TABLE No. 4.

EXPENDITURE OUT OF SEPARATE ACCOUNTS ON WORKS UNDER THE CONTROL OF THE PUBLIC WORKS DEPARTMENT.

Year.	Loans to Local Bodies Account. Roads to open up Crown Lands.	Opening up Crown Lands for Settlement Account. Roads to open up Crown Lands.	Land for Settlements Account. Opening up Crown Lands for Settlement Account. Roads to open up Crown Lands.	National Endowment Account. Roads to open up National endowment Lands.	Land for Settlements Account Roads to open up Land for Settlements.	Waihou and Ohinemuri Rivers Improvement Account. Waihou and Ohinemuri Rivers Improvement.
	£	£	£	£	£	£
1890-91	25,000					
1891-92	64,000					
1892-93	800					
	89,800*					
1891 92	8,000†					
1892-93	29,833†					
1893-94	30,000†					
1894-95	6,114†					
1894-95	42,971‡					
1895-96	30,057‡					
1896-97	31,017					
1897-98	18,770					
1898-99	16,972					
1899-1900	31,363					
1900-1	37,390					
1901-2	31,979					
1902-3	18,578					
1903-4	25,753					
1904-5	28,895					
1905-6	38,801					
1906-7	47,371					
1907-8	38,524					
1908-9	54,713					
1909-10	40,507	..	..	4,975	..	..
	607,608§					
1910-11	..	45,691	..	5,619	..	..
1911-12	..	49,739	..	6,554	..	3,769
1912-13	..	47,951	..	2,689	..	9,555
1913-14	..	63,245	..	4,282	..	9,633
1914-15	..	..	92,975	9,151	..	10,004
1915-16	..	..	47,974	13,344	..	9,225
1916-17	..	..	24,730	6,787	..	10,407
1917-18	..	..	..	..	43,996	12,025
1918-19	..	..	..	..	51,355	27,402
1919-20	..	..	..	..	61,692	34,806
1920-21	..	..	..	..	28,920	62,249
1921-22	..	..	..	..	51,471	54,379
1922-23	..	..	..	..	78,350	66,708
1923-24	..	..	..	..	49,186	70,533
1924-25	..	..	..	..	23,144	53,887
1925-26	..	..	..	..	17,181	47,908
	697,408	206,626	165,679	53,401	405,295	482,490

* Payment to the Public Works Fund under section 31 of the Government Loans to Local Bodies Act, 1886, in reduction of expenditure under Class "Roads."

† Paid into the Public Works Fund, reducing the expenditure under Class "Roads."

‡ Paid into the Lands Improvement Account (now included in Public Works Fund under Class "Roads"), reducing the expenditure on roads.

§ Expenditure under the Government Loans to Local Bodies Act Amendment Act, 1891.

TABLE No. 5.

EXPENDITURE ON PUBLIC BUILDINGS OUT OF PUBLIC WORKS FUND TO THE 31ST MARCH, 192 , AND THE LIABILITIES ON THAT DATE.

——	Total Expenditure to 31st March, 1925.	Expenditure for Year ended 31st March, 1926.	Total Expenditure to 31st March, 1926.	Liabilities on Authorities, Contracts, &c., 31st March, 1926.	Total Expenditure and Liabilities.
	£	£	£	£	£
Judicial*	1,281,511	47,898	1,329,409	3,589	1,332,998
Postal and telegraph	1,825,896	89,413	1,915,309	9,134	1,924,443
Customs	49,441	..	49,441	..	49,441
Offices for public Departments	614,600	29,024	643,624	2,623	646,247
Mental hospitals	1,069,562	77,552	1,147,114	1,205	1,148,319
Alexandra Depot, Wellington†	8,084	..	8,084	..	8,084
School buildings	3,098,397	*Cr.* 1,051	3,097,346	..	3,097,346
Hospitals‡	281,712	30,877	312,589	2,970	315,559
Quarantine-stations	62,464	..	62,464	..	62,464
Parliament Buildings (old buildings) ..	76,553	..	76,553	..	76,553
Parliament Buildings (new buildings) ..	393,389	..	393,389	..	393,389
Parliament Buildings (alterations to streets surrounding grounds, and purchase of land)	14,187	..	14,187	..	14,187
Government House, Wellington (land and new building)	72,645	..	72,645	..	72,645
Agricultural	85,038	7,067	92,105	..	92,105
Workers' dwellings	319,916	..	319,916	..	319,916
Miscellaneous	70,813	..	70,813	..	70,813
Totals	9,324,208	280,780	9,604,988	19,521	9,624,509

* Includes Courthouses, prisons, and police-stations. † Expenditure *re* Defence requirements only. Other expenditure included in "Judicial" class. ‡ Includes £32,754 previously shown under "Public Health."

TABLE No. 6.

ELECTRIC SUPPLY ACCOUNT.

STATEMENT OF ACCOUNTS AT THE 31ST MARCH, 1926.

GENERAL BALANCE-SHEET AT 31ST MARCH, 1926, COMPARED WITH POSITION AT 31ST MARCH, 1925.

1924–25.	*Liabilities.*	1925–26.		1924–25.	*Assets.*	1925–26.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
	Aid to Water-power Works and Electric Supply Accounts—			1,078,522 1 2	Lake Coleridge scheme— Assets as per separate balance-sheet ..	..	1,464,931 0 8
	Debentures issued—				Profit and Loss Account—Accumulated		
125,000 0 0	At 4 per cent. interest	189,000 0 0		17,738 18 10	loss to date	..	..
344,000 0 0	At 4½ per cent. interest	310,000 0 0					
4,000 0 0	At 5½ per cent. interest	108,450 0 0		1,096,261 0 0			
55,750 0 0	At 5 per cent. interest	51,650 0 0					
	N.Z. inscribed stock—				Lake Waikaremoana scheme—		
800,360 0 0	At 5 per cent. interest (due 1930) ..	804,460 0 0		78,178 17 5	Assets as per separate balance-sheet ..	81,177 13 2	
..	At 5½ per cent. (due 1936)	195,550 0 0		7,159 16 4	Profit and Loss Account—Loss to date ..	11,207 18 9	
	N.Z. Consolidated Stock—						92,385 11 11
..	At 4½ per cent. (due 1945)	542,004 10 10		85,338 13 9			
510,991 13 4	At 5 per cent. (due 1935–45)	510,991 13 4					
1,076,938 9 3	At 6 per cent. interest (due 1936–51) ..	1,076,938 9 3			Waikato River schemes—		
807,703 17 0	At 6 per cent. interest (due 1936–51) ..	807,703 17 0			Horahora—		
			4,596,748 10 5	553,032 13 1	Assets as per separate balance-sheet ..	767,637 2 3	
3,724,743 19 7				12,235 1 8	Investments, Sinking Fund	17,596 11 3	
							785,233 13 6
				565,267 14 9			
	Waihi Gold-mining Company (Limited)—				Arapuni— £ s. d.		
	Purchase of Horahora works—Deed of			176 0 0	Land and fencing .. 151 5 2		
212,500 0 0	security at 5 per cent. interest ..	..	212,500 0 0	26,218 9 9	Roads and bridges .. 27,029 16 0		
				319 8 2	Electric lines and telephone service		
				5,631 1 7	Houses 5,453 2 7		
				5,947 5 7	Offices and temporary buildings 6,180 6 9		
						38,814 10 6	
	Consolidated Fund—			38,292 5 1			
	Interest accrued on loans to 31st March,						
41,483 1 5	1926	45,978 3 0					
67 10 0	Sundry creditors for interest unclaimed ..	100 18 0					
			46,079 1 0		Headworks—		
41,550 11 5				17,352 19 1	Engineering and preliminary works .. 16,678 13 3		
				433 11 6	Electric supply for works		
	Amount set aside as reserve to cover difference between interest payable on loans raised and interest earned from their			111,285 15 5	Dam and other headworks under Armstrong-Whitworth's contract .. 322,072 7 7		
30,848 18 8	temporary investment pending use ..	..	31,250 0 5			338,751 0 10	
				129,072 6 0			
					50,000-volt lines—		
				4,836 17 8	Horahora–Arapuni		
				5,891 12 3	Arapuni–Ngongotaha ..		
				223 4 11	Penrose–Takapuna .. 1,594 6 0		
				486 4 7	Katikati–Waikino		
				11 8 0	Pokeno–Waihou		
				..	Waikino–Bombay .. 1,268 2 4		
						2,862 8 4	
				11,449 7 5			
4,009,643 9 8	Carried forward	..	4,886,577 11 10	1,925,681 7 0	Carried forward	380,427 19 8	2,342,550 6 1

TABLE No. 6—*continued.*

GENERAL BALANCE-SHEET AT 31ST MARCH, 1926, AS COMPARED WITH POSITION AT 31ST MARCH, 1925—*continued.*

1924–25.	*Liabilities.*	1925–26.		1924–25.	*Assets.*	1925–26.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
4,009,643 9 8	Brought forward	..	4,886,577 11 10	1,925,681 7 0	Brought forward	380,427 19 8	2,342,550 6 1
	Sundry Creditors—				Waikato River Schemes—*continued.*		
22,571 7 11	Arapuni scheme	44,895 3 10			Arapuni—*continued.*		
7,957 2 3	Horahora scheme	4,614 9 9			110,000-volt lines— £ s. d.		
16,060 10 5	Lake Coleridge scheme	34,915 18 2		93,415 15 0	Hamilton–Penrose		
27,714 12 2	Mangahao scheme	15,290 3 4		148 15 9	Arapuni–Te Kuiti		
..	Waikaremoana scheme	291 8 8		..	Arapuni–Hamilton .. 27,531 13 6		
..	Lakes Te Anau and Manapouri surveys ..	163 13 3			Arapuni–Penrose (tower) 4,999 10 11		
	Amount due to Public Works Fund, Public Works Departmental, for Head Office			133 17 0		32,531 4 5	
..	salaries, &c.	26,240 0 0		93,698 7 9			
74,303 12 9			126,410 17 0	3 18 0	50,000-volt substations— Takapuna 12 15 10		
				4 10 9	Waitemata .. 13 18 3		
				4 4 0	Huntly 1 0 3		
				4 3 0	Hamilton 5 16 9		
				4 9 6	Bombay 1,196 4 9		
	Depreciation Reserves—					1,229 15 10	
31,680 16 7	Horahora scheme	46,443 18 4		21 5 3			
88,631 3 0	Lake Coleridge scheme	111,526 8 0					
..	Mangahao scheme	30,056 0 0			110,000-volt substation—		
2,883 8 0	Waikaremoana scheme	4,431 0 0		20,801 8 0	Penrose	9 13 6	
123,195 7 7			192,457 6 4		£ s. d.		
				11 10 1	Office furniture		
				1,970 8 5	Motor-vehicles .. 3,949 0 5		
				6,063 19 0	Loose tools, plant, and equipment .. 7,470 2 2		
	Sinking Funds—				Engineering, office and general expenses on preliminary surveys		
16,983 5 1	Horahora scheme	28,938 11 3			and during construc-		
..	Lake Coleridge scheme	8,906 15 11			tion 15,696 7 5		
			37,845 7 2	5,178 6 4	Supervision and office expenses on transmission-lines and substations during con-		
					struction 8,404 2 2		
	Reserve Fund—			..	Interest during con-		
20,547 12 1	Horahora scheme	..	30,553 18 0	20,985 0 5	struction 41,159 17 7		
						76,679 9 9	
				34,209 4 3			
				18,109 10 11	Stocks of material on hand	61,263 18 6	
				553 9 9	Sundry debtors	877 13 3	
							553,019 14 11
4,244,673 7 2	Carried forward	..	5,273,845 0 4	2,093,074 12 11	Carried forward	..	2,895,570 1 0

TABLE No. 6—*continued.*

General Balance-sheet at 31st March, 1926, as compared with Position at 31st March, 1925—*continued.*

1924–25.	*Liabilities.*	1925–26.		1924–25.	*Assets.*	1925–26.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
4,244,673 7 2	Brought forward	..	5,273,845 0 4	2,093,074 12 11	Brought forward	..	2,895,570 1 0
					Mangahao scheme—		
				1,903,715 1 5	Assets as per separate balance-sheet ..	2,111,908 4 2	
				..	Profit and Loss Account—Loss to date ..	67,290 12 9	
							2,179,198 16 11
					Other schemes, surveys, &c.—		
					North Island—		
				376 13 11	Aratiatia (Waikato River)	376 13 11	
				453 9 6	Huka Falls (Waikato River).. ..	453 9 6	
				2,719 2 3	Hutt River (including dam site) ..	2,705 10 7	
				38 9 0	Makuri River	38 9 0	
				1,355 4 4	Rotoiti-Kaituna	1,355 4 4	
				879 16 8	Tauherenikau River	879 16 8	
				236 6 8	Wairau River	236 6 8	
				6,059 2 4			6,045 10 8
					South Island—		
				803 1 9	Clarence River	803 1 9	
				5 0 0	Lake Kanieri	5 0 0	
				749 8 2	Nelson–Marlborough	749 8 2	
				252 15 1	Timaru–Oamaru	2,004 12 4	
				519 12 7	Opihi River	519 12 7	
				17 7 0	Toaroha River	17 7 0	
				543 0 5	Teviot River	543 0 5	
				11 19 0	Upper Taieri River..	11 19 0	
				475 5 8	Lake Hawea	475 5 8	
					Lakes Te Anau and Manapouri .. .. £ s. d. 578 4 10		
				..	Material on hand .. 212 11 1		
				..		790 15 11	
				3,377 9 8			5,920 2 10
4,244,673 7 2	Carried forward..	..	5,273,845 0 4	4,006,226 6 4	Carried forward..	..	5,086,734 11 5

TABLE No. 6—*continued.*

GENERAL BALANCE-SHEET AT 31ST MARCH, 1926, COMPARED WITH POSITION AT 31ST MARCH, 1925—*continued.*

1924–25.	*Liabilities.*	1925–26.		1924–25.	*Assets.*	1925–26.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
4,244,673 7 2	Brought forward	..	5,273,845 0 4	4,006,226 6 4	Brought forward	..	5,086,734 11 5
				4,439 17 8	General expenditure not chargeable to any individual scheme	..	4,613 9 1
				..	Charges and expenses of raising loans during year	..	43,148 0 2
					Balance in Electric Supply Account at the end of the year—		
				30,479 13 10	Cash in Public Account	2,350 6 8	
				3,598 15 1	In hands of Government officers in New Zealand	2,145 7 0	
				42,369 6 11	In hands of Government officers in London	43,616 0 9	
				76,447 15 10			48,111 14 5
				152,800 0 0	Investment Account (funds invested until actually required for use)	..	90,000 0 0
				4,239,913 19 10			
				4,490 2 1	Interest accrued on investments to 31st March, 1926	1,196 7 5	
				269 5 3	Sundry debtors for interest due but unpaid	40 17 10	
				4,759 7 4			1,237 5 3
£4,244,673 7 2	Total	..	£5,273,845 0 4	4,244,673 7 2	Total	..	£5,273,845 0 4

J. J. GIBSON,
Accountant, Public Works Department.

TABLE No. 6—*continued.*

WAIKAREMOANA ELECTRIC-POWER SUPPLY.

Profit and Loss Account for Year ended 31st March, 1926.

1924–25.		1925–26.	1924–25.		1925–26.
£ s. d.		£ s. d.	£ s. d.		£ s. d.
4,261 1 0	To Interest on capital	4,388 4 0	2,440 5 8	By Rental of plant and land leased to Wairoa Power Board	1,900 13 7
..	Departmental expenses	13 0 0	3,295 12 4	Loss for year	4,048 2 5
1,418 10 0	Depreciation on plant (2 per cent. on value of assets in operation at close of year)	1,432 6 0			
56 7 0	Interest on Depreciation Reserve (4 per cent. on £2,883 8s.)	115 6 0			
£5,735 18 0		£5,948 16 0	£5,735 18 0		£5,948 16 0
3,295 12 4	Loss for year, as above	4,048 2 5	7,159 16 4	Accumulated loss to date carried to balance-sheet	11,207 18 9
3,864 4 0	Loss carried forward at 1st April, 1925	7,159 16 4			
£7,159 16 4		£11,207 18 9	£7,159 16 4		£11,207 18 9

Depreciation Reserve.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
2,883 8 0	Balance carried to balance-sheet	4,431 0 0	1,408 11 0	By Balance at close of previous year	2,883 8 0
			56 7 0	Interest	115 6 0
			1,418 10 0	Amount reserved for year	1,432 6 0
£2,883 8 0		£4,431 0 0	£2,883 8 0		£4,431 0 0

Balance-sheet at 31st March, 1926.

1924–25.	*Liabilities.*	1925–26.	1924–25.	*Assets.*	1925–26.
£ s. d.		£ s. d.	£ s. d.		£ s. d.
82,455 5 9	Balance carried to general balance-sheet	87,663 3 3	11,431 10 10	Access roads and bridges	11,431 10 10
..	Sundry creditors	291 8 8	18,478 6 2	Pipe-lines	19,045 2 7
2,883 8 0	Depreciation reserve	4,431 0 0	25,905 18 5	Power-house building and machinery	25,545 12 10
			6,625 1 11	Compensation for land	6,625 1 11
			278 17 3	Headworks	278 17 3
			3,053 0 9	Staff cottages	3,083 1 4
			1,260 1 5	Workmen's huts	1,260 1 5
			436 17 11	Workshop	442 11 4
				Transmission-line surveys—	
			..	Napier–Waikaremoana	1,509 0 8
			..	Waikaremoana–Gisborne	221 0 6
			1,000 0 0	Telephone-line to Wairoa	1,000 0 0
			3,146 2 8	Survey, engineering, and office expenses	4,355 2 10
			5,697 14 5	Interest during construction	5,767 0 5
			77,313 11 9		80,564 3 11
			865 5 8	Sundry debtors	613 9 3
			7,159 16 4	Balance from Profit and Loss Account: Accumulated loss to date	11,207 18 9
£85,338 13 9		£92,385 11 11	£85,338 13 9		£92,385 11 11

TABLE No. 6—*continued.*

LAKE COLERIDGE HYDRO-ELECTRIC-POWER SUPPLY.

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 31ST MARCH, 1926, COMPARED WITH YEAR ENDED 31ST MARCH, 1925.

Gross Revenue Account.

1924-25.		1925-26.		1924-25.		1925-26.	
£ s. d.	To Generating expenses, headworks, and power-house—	£ s. d.	£ s. d.	£ s. d.	By Sale of energy—	£ s. d.	£ s. d.
				88,224 17 4	Wholesale	120,749 1 6	
2,881 18 10	Salaries	2,894 4 5		1,864 7 4	Retail	263 9 7	
851 2 8	Wages	725 12 5					121,012 11 1
82 10 5	Supplies	58 6 5		90,089 4 8			
444 3 10	Transport of stores, &c.	580 1 0					
	Maintenance and repairs—						
990 11 4	Harper diversion	1,354 0 0		..	Discounts forfeited	..	0 3 10
257 11 10	Headworks	297 4 5					
145 13 6	Power-house building	205 16 8					
1,003 14 2	Power-house machinery	515 15 3			Rents—		
172 9 1	Roads and fences	232 19 8		976 11 9	Land and buildings	1,054 19 11	
550 15 10	Staff residences, &c.	447 18 3		252 17 3	Electric lines	221 4 8	
			7,311 18 6	132 16 8	Electric plant	471 12 11	
7,380 11 6				1,362 5 8			1,747 17 6
	Transmission-lines—						
525 0 0	Salaries	555 0 0					
	Transport, including upkeep of horses,						
585 0 1	traps, cars, and cycles	560 16 1			Fees for testing and repairing electrical ap-		
2,052 4 9	Repairs to power-lines	2,992 3 9		476 16 8	pliances	..	445 5 3
			4,107 19 10				
3,162 4 10							
	Substation, Addington—				Stand-by provision: Fees from wholesale		
1,154 11 1	Salaries	1,258 6 8		80 0 0	consumers	..	80 0 0
511 3 6	Wages	521 8 2					
85 8 10	Supplies	58 16 11					
	Maintenance and repairs—						
334 14 9	Buildings and yards	238 18 3			Interest from local bodies in respect of		
163 6 10	Machinery	227 11 1		7 9 4	reticulations sold on deferred payment ..	..	7 9 4
			2,305 1 1	132 4 11	Earnings, motor-vehicles	..	61 6 11
2,249 5 0							
	Distribution—						
212 11 9	Salaries	212 10 0					
	Transport, including upkeep of motor-						
114 2 8	vehicles	99 8 4					
	Maintenance of feeder cables, transformer						
1,581 9 0	stations, and tools	2,649 17 0					
2,237 0 3	Maintenance of secondary distribution ..	2,553 17 7					
340 14 0	Maintenance of and testing meters ..	250 15 7					
73 5 7	Earth-testing	109 12 7					
			5,876 1 1				
4,559 3 3							
17,351 4 7	Carried forward	..	19,601 0 6	92,163 2 7	Carried forward	..	123,354 13 11

TABLE No. 6—*continued.*

LAKE COLERIDGE HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 31ST MARCH, 1926, COMPARED WITH YEAR ENDED 31ST MARCH, 1925—*continued.*

Gross Revenue Account—continued.

1924-25.	——	1925-26.		1924-25.	——	1925-26.
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.
17,351 4 7	Brought forward	..	19,601 0 6	92,163 2 7	Brought forward	123,354 13 11
	To Stand-by provision—					
	Payment to Christchurch Tramway Board					
1,350 0 0	for rental	1,350 0 0				
	Payment to Christchurch Tramway Board					
26 13 1	for energy supplied	226 12 11				
1,376 13 1			1,576 12 11			
	Management and general expenses—					
2,155 17 1	Salaries	2,241 0 7				
313 13 11	Sick and holiday pay to workmen ..	267 6 11				
71 13 1	Travelling-expenses	103 11 10				
379 0 0	Office-rent	379 0 0				
65 10 0	Rent of other buildings	65 10 0				
148 7 3	Postages and telegrams	132 16 3				
126 17 3	Telephone subscriptions	136 8 8				
131 19 8	Printing and stationery	95 14 1				
12 10 0	Advertising	17 1 3				
238 8 8	Accident pay	13 1 7				
83 10 5	Fire insurance	107 6 3				
88 6 8	Audit fees	139 13 4				
313 2 8	Meter-reading and line-inspection ..	208 14 8				
73 13 5	Commission on collection of accounts ..	2 4 3				
329 9 11	Electrical testing	328 10 9				
10 7 5	Miscellaneous trade expenses	4 14 7				
..	Misappropriation by clerk	909 18 4				
	Proportion of salaries, rents, and expenses, Head Office and High Commissioner's					
..	Staff	705 0 0				
4,542 7 5			5,857 13 4			
			27,035 6 9			
23,270 5 1						
68,892 17 6	Balance to Net Revenue Account ..	..	96,319 7 2			
£92,163 2 7			£123,354 13 11	£92,163 2 7		£123,354 13 11

Net Revenue Account.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
15,679 0 0	To Depreciation at 2 per cent. per annum on completed work	19,350 0 0	68,892 17 6	By Balance from Gross Revenue Account	96,319 7 2
47,780 6 9	Interest for year ended 31st March	50,323 12 5			
5,433 10 9	Balance to Profit and Loss Appropriation Account ..	26,645 14 9			
£68,892 17 6		£96,319 7 2	£68,892 17 6		£96,319 7 2

TABLE No. 6,—*continued.*

LAKE COLERIDGE HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

Profit and Loss Appropriation Account.

1924–25	——	1925–26.	1924–25.	——	1925–26.
£ s. d.		£ s. d.	£ s. d.		£ s. d.
23,172 9 7	To Balance from previous year's statement	17,738 18 10	5,433 10 9	By Balance from Net Revenue Account	26,645 14 9
..	Sinking Fund Account	8,906 15 11	17,738 18 10	Balance to balance-sheet—Accumulated loss	..
£23,172 9 7		£26,645 14 9	£23,172 9 7		£26,645 14 9

Depreciation Reserve Account.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
	To Amounts written off—				
1,075 0 11	Motor-vehicles and tools	..	72,593 19 8	By Balance from previous year's statement	88,631 3 0
1,470 10 9	Paparua Reticulation	..	2,903 15 0	Interest at 4 per cent. per annum	3,545 5 0
88,631 3 0	Balance to balance-sheet	111,526 8 0	15,679 0 0	Amount set aside as per Net Revenue Account	19,350 0 0
£91,176 14 8		£111,526 8 0	£91,176 14 8		£111,526 8 0

Sinking Fund Account.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
..	To Balance, to balance-sheet	8,906 15 11	..	By amount set aside from Profit and Loss Appropriation Account	8,906 15 11
..		£8,906 15 11	..		£8,906 15 11

TABLE No. 6—*continued.*

LAKE COLERIDGE HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

Balance-sheet at 31st March, 1926.

1924–25.	*Liabilities.*	1925–26.		1924–25.	*Assets.*	1925–26.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
88,631 3 0	Depreciation Reserve Account	..	111,526 8 0	4,507 7 5	Works at Lake Coleridge— Land, including fencing and planting ..	4,601 19 2	
..	Sinking Fund	..	8,906 15 11	8,319 13 9	Coalgate Gorge Road	10,064 17 5	
				7,566 3 8	Service roads	7,566 3 8	
	Sundry creditors—			310 8 5	Service telephones	310 8 5	
5,656 1 0	On open accounts	5,471 18 6					22,543 8 8
9,891 14 0	On contracts	29,133 8 2		20,703 13 3			
512 15 5	Payment for current in advance	310 11 6					
			34,915 18 2		Headworks—		
16,060 10 5					First tunnel, including inlet and outlet		
				80,520 8 11	works	80,586 0 8	
	Balance carried to general balance-sheet—			71,111 12 1	Second tunnel, including inlet and outlet		
1,096,261 0 0	Total assets as *per contra*	1,464,931 0 8		83,436 14 5	works	202,987 17 5	
104,691 13 5	*Less* total liabilities as above	155,349 2 1		4,453 7 9	Pipe-lines	121,582 14 1	
			1,309,581 18 7	3,473 19 5	Tram-lines	4,186 14 5	
991,569 6 7				22,995 13 11	Weir at lake-outlet, gauges, and fencing ..	3,473 19 5	
					Harper River diversion works	23,007 6 9	
				265,991 16 6			435,824 12 9
				32,444 11 0	Power-house—		
				96,019 2 0	Buildings, &c.	52,680 9 4	
				231 2 1	Machinery, &c.	129,451 9 9	
					Office furniture, fittings, &c.	231 2 1	
				128,694 15 1			182,363 1 2
				23,463 6 1	Accommodation for staff and workmen— Buildings, fencing, &c.	..	24,400 16 0
				4,983 14 4	Transmission-lines—		
				178,120 19 6	Land	4,983 14 4	
				57,460 5 8	Power-lines to Christchurch	180 609 19 9	
				2,468 13 5	Power-lines to South Canterbury	10,970 14 1	
					Telephone-system	2,480 7 8	
				3,244 17 3	Linemen's cottages, depots, tools, and		
				6,588 12 4	equipment	3,244 17 3	
				9,154 9 6	Alterations to public telegraph-lines ..	6,588 12 4	
					Point Switching Station	11,386 19 4	
				262,021 12 0			317,461 16 5
				3,483 0 5	Addington Substation—		
				8,481 6 6	Land, including cottages	3,483 0 5	
				32,089 9 5	Substation buildings	8,654 19 0	
				5,856 14 3	Machinery, &c.	61,399 14 3	
					Store buildings and workshops	5,865 14 3	
				49,919 10 7			79,403 7 11
1,096,261 0 0	Carried forward	..	1,464,931 0 8	750,794 13 6	Carried forward	..	1,061,997 2 11

TABLE No. 6—*continued.*

LAKE COLERIDGE HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

BALANCE-SHEET AT 31ST MARCH, 1926—*continued.*

1924-25.	*Liabilities.*	1925-26.	1924-25.	*Assets.*	1925-26.	
£ s. d.		£ s. d.	£ s. d.		£ s. d.	£ s. d.
1,096,261 0 0	Brought forward	1,464,931 0 8	750,794 13 6	Brought forward	..	1,061,997 2 11
				Primary distribution—		
			7,021 16 1	Supply cables—Christchurch City ..	7,021 16 1	
			4,889 19 10	Christchurch Tramways ..	4,889 19 10	
			7,097 13 1	Lyttelton	7,210 15 11	
			19,168 19 6	Northern	20,720 19 11	
			11,281 7 4	Southern	13,096 2 0	
			4,046 14 1	Motukarara	4,046 7 7	
			4,961 11 3	Substations—Hororata	6,190 13 0	
			8,863 1 8	Ashburton	12,838 1 11	
			12,378 10 10	Timaru	14,974 13 2	
			622 9 9	Lightning-arresters	622 9 9	
			300 4 5	Tools and equipment	300 4 5	
			1,516 12 8	Alterations to public telegraph-lines ..	1,516 12 8	
			82,149 0 0			93,446 16 3
				Secondary distribution—		
			15,432 8 3	Supply cables and reticulation	15,490 5 2	
			26,141 16 1	Local substations	26,675 3 2	
			41,574 4 4			42,165 8 4
			8,910 7 3	Service transformers and meters	..	7,003 9 6
			7,171 4 8	Motor-cars, lorries, and cycles, &c.	..	9,460 18 4
			107 9 4	Test-room equipment	..	108 5 4
			14,870 18 10	Loose tools, plant, and equipment	..	17,846 3 11
			1,729 3 9	Public telephones to the lake	..	1,729 3 9
			173 19 1	Telephones to Christchurch City Council and Tramway Board and local offices	..	173 19 1
			252 16 9	Christchurch office—Furniture and fittings ..	..	255 1 0
			32,444 17 1	Engineering, office, and general expenses on preliminary surveys and during construction	..	47,030 10 9
			31,796 19 2	Salaries of Engineers and others on preliminary surveys and during construction	..	35,152 17 11
			36,515 3 10	Interest during construction	..	50,580 14 4
			1,008,490 18 1			1,366,950 11 5
			46,695 5 11	Stocks of material, &c., on hand at date ..	..	69,504 16 11
			136 8 4	Telephone subscriptions, fire insurance, &c., paid in advance	..	162 13 6
				Sundry debtors—		
			22,837 3 0	For current, rent, work carried out, &c. ..	..	28,312 18 10
			362 5 10	Amount misappropriated by clerk in Christchurch office	..	..
			1,078,522 1 2			
			17,738 18 10	Balance from Profit and Loss Appropriation Account	..	..
1,096,261 0 0		£1,464,931 0 8	£1,096,261 0 0			£1,464,931 0 8

TABLE No. 6—*continued.*

WAIKATO ELECTRIC-POWER SUPPLY.—HORAHORA SCHEME.

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 31ST MARCH, 1926, COMPARED WITH YEAR ENDED 31ST MARCH, 1925.

Gross Revenue Account.

1924–25.		1925–26.		1924–25.		1925–26.	
£ s. d.	——	£ s. d.	£ s. d.	£ s. d.	——	£ s. d.	£ s. d.
	To Generating expenses, headworks, and power-house—			63,229 17 11	By Sales of electrical energy to wholesale consumers	84,070 2 4	
2,827 18 5	Salaries and wages	3,448 10 1		116 11 3	Less discounts and rebates	101 3 0	
87 6 2	Supplies	125 0 10		63,113 6 8			83,968 19 4
119 1 5	Transport	130 9 10					
	Maintenance and repairs—						
662 13 2	Headworks and buildings	610 4 6		39 6 6	Hire of plant	43 10 8	
435 13 2	Power-house machinery	1,047 0 4		789 4 4	Rent of lines	790 12 4	
125 8 7	Staff village	149 5 8		671 2 6	Miscellaneous rents	869 11 8	
981 1 7	Erection of temporary weir	..					1,703 14 8
5,239 2 6			5,510 11 3	1,499 13 4			
1,255 12 8	Power purchased in bulk	..	2,561 14 6				
				553 8 9	Testing, oil-drying, and repairs for consumers	154 5 11	
				17 17 0	Fees for inspection of lines and testing of instruments, &c.	3 3 0	
	Operation and maintenance of main transmission-lines (50,000-volt)—						157 8 11
1,166 18 11	Horahora–Waikino	1,222 2 1		571 5 9			
260 19 5	Horohora–Hamilton	368 7 5					
134 15 3	Mystery Creek–Te Awamutu	116 12 3					
66 9 6	Wairongomai–Waihou	26 15 3					
..	Horahora–Arapuni	47 5 4					
..	Arapuni–Ngongotaha	31 11 6					
..	Hamilton–Auckland	971 7 6					
..	Katikati–Waikino	70 8 0					
1,629 3 1			2,854 9 4				
	Operation and maintenance of main sub-stations (50,000-volt)—						
865 15 1	Waikino	693 9 0					
383 1 5	Hamilton	451 10 10					
310 16 10	Te Awamutu	293 11 6					
341 11 4	Waihou	312 7 1					
..	Arapuni	19 9 11					
..	Ngongotaha	38 17 0					
..	Bombay	28 0 3					
..	Penrose	534 7 4					
1,901 4 8			2,371 12 11				
10,025 2 11	Carried forward		13,298 8 0	65,184 5 9	Carried forward	..	85,830 2 11

TABLE No. 6—*continued.*

WAIKATO ELECTRIC-POWER SUPPLY—HORAHORA SCHEME—*continued.*

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 31ST MARCH, 1926, COMPARED WITH YEAR ENDED 31ST MARCH, 1925—*continued*

Gross Revenue Account—continued.

1924–25.	——	1925–26.		1924–25.	——	1925–26.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
..	Brought forward	..	13,298 8 0	65,184 5 9	Brought forward	..	85,830 2 11
35 17 1	Operation and maintenance of distribution substations (11,000 volt)	..	16 19 5				
	Operation and maintenance of distribution lines (11,000 volt)—						
310 5 2	Horahora–Hamilton–Frankton	199 1 7					
..	Waikino–Waihi	4 5 7					
			203 7 2				
876 11 0	General supervision and management of transmission distribution systems	..	1,598 18 5				
	Management and general—						
1,008 5 9	Salaries, wages, and audit fees ..	2,162 9 1					
301 16 3	Accident insurance, sick and holiday pay	177 5 8					
215 13 6	Travelling-expenses and motor-cars ..	274 7 8					
181 12 6	Postages, telegrams, and telephones ..	193 16 2					
24 2 5	Fire insurance	28 3 3					
..	Legal expenses	..					
109 9 11	Printing, stationery, and advertising ..	219 5 6					
190 4 8	Office rent, cleaning, and lighting ..	228 8 11					
115 2 8	Experimental testing and	86 0 2					
36 13 11	Miscellaneous expenses						
160 6 9	Fire damage, Hamilton office ..	38 6 3					
2,343 8 4		3,408 2 8					
13,591 4 6	Carried forward	..	15,117 13 0	65,184 5 9	Carried forward	..	85,830 2 11

TABLE No. 6—*continued.*

WAIKATO ELECTRIC-POWER SUPPLY.—HORAHORA SCHEME—*continued.*

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 31ST MARCH, 1926, COMPARED WITH YEAR ENDED 31ST MARCH, 1925—*continued.*

Gross Revenue Account—continued.

1924–25.		1925–26.		1924–25.		1925–26.
£ s. d.	——	£ s. d.	£ s. d.	£ s. d.	——	£ s. d.
13,591 4 6	Brought forward	3,408 2 8	15,117 13 0	65,184 5 9	Brought forward	85,830 2 11
	To Management and general—*continued.*					
514 17 3	Testing, oil-drying, repairs, &c., for consumers	142 6 7				
..	Bad debts	3 12 2				
..	Losses on sales of old and surplus stocks ..	939 19 10				
			4,494 1 3			
14,106 1 9			19,611 14 3			
51,078 4 0	Balance to Net Revenue Account ..	..	66,218 8 8			
£65,184 5 9			£85,830 2 11	£65,184 5 9		£85,830 2 11

Net Revenue Account.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
	To Interest on purchase-money for plant purchased from Waihi		51,078 4 0	By Balance from Gross Revenue Account	66,218 8 8
20,129 3 3	Gold-mining Company, and on advances from Treasury ..	31,269 6 0			
9,756 14 4	Depreciation on completed works (2 per cent.) and on stocks	13,600 16 9			
29,885 17 7		44,870 2 9			
21,192 6 5	Balance to Profit and Loss Appropriation Account ..	21,348 5 11			
£51,078 4 0		£66,218 8 8	£51,078 4 0		£66,218 8 8

PROFIT AND LOSS APPROPRIATION ACCOUNT FOR YEAR ENDED 31ST MARCH, 1926, COMPARED WITH YEAR ENDED 31ST MARCH, 1925.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
	Sinking Fund contributions to date, as required by section 12		3,493 19 3	By Balance from previous year	..
4,138 13 7	of the State Supply of Electrical Energy Act, 1917.. ..	11,342 0 0	21,192 6 5	Balance from Net Revenue Account	21,348 5 11
20,547 12 1	Reserve Fund	10,006 5 11			
£24,686 5 8		£21,348 5 11	£24,686 5 8		£21,348 5 11

TABLE No. 6—*continued.*

WAIKATO ELECTRIC-POWER SUPPLY.—HORAHORA SCHEME—*continued.*

Depreciation Reserve Account.

1924–25.		1925–26.	1924–25.		1925–26.
£ s. d.	——	£ s. d.	£ s. d.	——	£ s. d.
1,869 10 6	To Amount written off for temporary works	..	24,831 14 8	By Balance at close of previous year	31,680 16 7
2,031 6 11	Amount written off for plant sold and replaced	105 0 0	993 5 0	Interest for year	1,267 5 0
31,680 16 7	Balance to balance-sheet	46 443 18 4	9,756 14 4	Amount set aside as per Net Revenue Account	13,600 16 9
£35,581 14 0		£46,548 18 4	£35,581 14 0		£46,548 18 4

Sinking Fund Account.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
16,983 5 1	To Balance, to balance-sheet	28,938 11 3	12,718 0 0	By Balance at close of previous year	16,983 5 1
			4,138 13 7	Amount set aside as per Profit and Loss Appropriation Account	11,342 0 0
			126 11 6	Interest	613 6 2
£16,983 5 1		£28,938 11 3	£16,983 5 1		£28,938 11 3

Reserve Fund Account.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
20,547 12 1	To Balance, to balance-sheet	30,553 18 0	..	By Balance at close of previous Year	20,547 12 1
			20,547 12 1	By Amount set aside as per Profit and Loss Appropriation Account	10,006 5 11
£20,547 12 1		30,553 18 0	£20,547 12 1		30,553 18 0

TABLE No. 6—*continued.*

WAIKATO ELECTRIC-POWER SUPPLY.—HORAHORA SCHEME—*continued.*

BALANCE-SHEET AT 31ST MARCH, 1926.

1924–25.	*Liabilities.*	1925–26.		1924–5.	*Assets.*	1925–26.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.	Works, &c., at Horahora—	£ s. d.	£ s. d.
	Electric Supply Account—						
488,098 18 9	Balance carried to general balance-sheet ..	674,682 16 2		2,168 5 9	Roads and bridges	2,168 5 9	
7,957 2 3	Sundry creditors	4,614 9 9		1,039 15 3	Land and fencing	1,039 15 3	
31,680 16 7	Depreciation reserve	46,443 18 4		11,353 17 2	Accommodation for staff and workmen ..	11,461 1 0	
16,983 5 1	Sinking Fund	28,938 11 3		158,112 15 4	Headworks	174,518 18 8	
20,547 12 1	Reserve Fund	30,553 18 0		72,640 18 0	Generating-station	74,105 13 9	
			785,233 13 6	39,487 17 6	Transformer building and machinery ..	40,168 4 2	
				1,430 8 3	Tools and equipment	1,632 10 2	
				286,233 17 3			305,094 8 9
					Transmission-lines (50,000 volt)—		
				38,460 1 3	Horahora–Waihi	38,460 1 3	
				22,221 10 5	Horahora–Hamilton	22,332 6 7	
				7,559 9 9	Mystery Creek – Te Awamutu	7,803 2 6	
				1,241 3 8	Te Awamutu–Hangatiki	11,962 9 9	
				4,561 6 6	Wairongomai–Waihou	4,561 6 6	
				138 19 2	Waihou–Hamilton	138 19 2	
				1,479 3 1	Linemen's cottages	1,479 3 1	
				..	Horahora–Arapuni	4,865 12 4	
				..	Arapuni–Ngongotaha	18,931 6 1	
				..	Hamilton–Penrose	99,354 7 1	
				..	Waikino–Katikati	10,657 15 7	
				..	Arapuni–Te Kuiti	148 15 9	
				75,661 13 10			220,695 5 8
					Main substations (50,000-volt)—		
				20,719 18 6	Waikino	20,736 17 0	
				7,836 15 6	Hamilton	7,893 18 11	
				5,478 14 1	Te Awamutu	5,570 17 2	
				..	Attendant's residence, Te Awamutu ..	791 9 2	
				7,230 16 3	Waihou	8,448 15 10	
				..	Hangatiki	480 9 4	
				..	Arapuni	2,289 10 2	
				..	Ngongotahi	3,684 8 1	
				..	Bombay	2,656 5 6	
				..	Penrose	27,686 7 8	
				41,266 4 4			80,238 18 10
565,267 14 9	Carried forward	..	785,233 13 6	361,895 11 1	Carried forward	..	606,028 13 3

TABLE No 6—*continued.*

WAIKATO ELECTRIC-POWER SUPPLY.—HORAHORA SCHEME—*continued.*

BALANCE-SHEET AT 31ST MARCH, 1926—*continued.*

1924–25.	*Liabilities.*	1925–26.	1924–25.	*Assets.*	1925–26.	
£ s. d.		£ s. d.	£ s. d.		£ s. d.	£ s. d.
565,267 14 9	Brought forward	785,233 13 6	361,895 11 1	Brought forward	..	606,028 13 3
				Distribution-lines (11,000-volt)—		
			33,155 11 3	Horahora–Frankton	33,162 10 5	
			704 11 11	Waihi Grand Junction Company line ..	704 11 11	
			6,000 0 0	Waikino–Waihi	6,000 0 0	
			39,860 3 2			39,867 2 4
			..	Bombay–Pukekohe	..	3,076 14 9
			7,406 1 11	Distribution substations (11,000-volt) ..	..	7,353 8 5
			..	Hamilton Area—		
			3,975 11 9	Land at Ruakura	3,976 3 9	
			7,365 7 2	Stores buildings and fittings and railway-siding, Ruakura	7,648 15 1	
			3,511 19 9	Staff residences, Ruakura	4,270 5 11	
			3,256 13 11	Loose tools and equipment	3,217 5 7	
			4,035 6 10	Motor lorries, cars, and cycles	4,434 15 0	
			648 2 2	Office furniture, Hamilton	739 17 1	
			218 19 9	Office accommodation	227 9 6	
			7,266 6 2	Engineering, office, and general expenses on surveys and on construction	7,524 17 2	
			12,400 8 2	Salaries of officers on surveys and on construction	14,036 18 2	
			29,865 16 11	Interest during construction	32,013 11 5	
			72,544 12 7			78,089 18 8
			522,972 13 1			735,091 8 2
			..	Arapuni Area—		
				Electric lines and distribution	..	675 10 9
			15,964 12 2	General stocks of material on hand	..	10,697 17 0
				Debtors—		
			14,077 1 11	For electricity and sales of material ..	21,838 8 7	
			18 5 11	For payments in advance	9 8 6	
			14,095 7 10			21,847 17 1
			12,000 0 0	Sinking Fund Investment	17,390 0 0	
			126 11 6	Interest accrued on Sinking Fund	205 6 2	
			108 10 2	In hands of Treasury	1 5 1	
			12,235 1 8			17,596 11 3
£565,267 14 9		£785,233 13 6	£565,267 14 9			£785,233 13 6

TABLE No. 6—*continued.*

MANGAHAO ELECTRIC-POWER SCHEME.—*continued.*

BALANCE-SHEET AS AT 31ST MARCH, 1926.

Liabilities.	£	s.	d.	£	s.	d.
Depreciation Reserve				30,056	0	0
Sundry creditors				15,208	1	1
Charges paid in advance by consumers and others				82	2	3
Balance carried to General Balance-sheet—						
Total assets as per contra	2,179,198	16	11			
Less total liabilities as above	45,346	3	4			
				2,133,852	13	7
				£2,179,198	16	11

Assets.	£	s.	d.	£	s.	d.
Headworks—						
Land, headworks, &c.	9,961	15	2			
Roads, tram-lines, &c.	69,077	1	9			
Local electric line	10,344	14	2			
Dams 1, 2, and 3	277,509	19	1			
Tunnels 1 and 2	149,071	11	7			
Pipe-line, &c.	108,339	5	11			
Surge-chamber	14,611	16	7			
				638,916	4	3
Power-house—						
Buildings, &c.	64,510	16	2			
Machinery, &c.	207,213	19	0			
Tail-race	5,591	6	5			
Village water-supply	2,441	5	6			
				279,757	7	1
Accommodation for staff—Buildings, fences, &c.				15,913	6	1
Transmission-lines (110,000-volt)—						
Lands, lines, and substations	8,159	4	1			
Shannon–Khandallah	145,466	2	3			
Shannon–Wanganui	95,054	19	0			
Bunnythorpe–Dannevirke	45,772	16	7			
Woodville–Masterton	67,819	15	7			
Dannevirke–Napier	72,315	11	2			
				434,588	8	8
Transmission-lines (11,000-volt)—						
Mangaore–Shannon	3,004	5	2			
Khandallah–Petone	8,811	18	2			
				11,816	3	4
Substations—						
Khandallah	71,303	17	3			
Otaki	1,661	14	11			
Bunnythorpe	26,327	14	9			
Wanganui	16,922	18	5			
Dannevirke	9,991	2	9			
Waipukurau	18,075	14	8			
Napier	15,006	6	6			
Woodville	7,567	16	2			
Mangamaire	14,055	13	5			
Masterton	12,157	12	11			
				193,070	11	9
Motor-cars, lorries, &c.				3,982	13	10
Office furniture				810	19	6
Service buildings				13,366	10	10
Salaries and expenses, &c., of engineers and others on preliminary surveys and during construction				100,611	7	4
Construction, tools, plant, and equipment, &c.				75,668	0	0
Housing workmen, &c.				57,392	11	2
Interest during construction				196,420	13	2
				2,022,314	17	0
Stocks on hand, 31st March, 1926 (including 10 per cent. to cover administration, &c.)	53,973	15	1			
Stocks issued but not used—						
Lines and substations	6,438	2	8			
Towers	499	2	9			
				60,911	0	6
Sundry debtors for current, rents, &c.				28,602	18	5
Telephone subscriptions, &c., paid in advance				79	8	3
Net loss				67,290	12	9
				£2,179,198	16	11

TABLE No. 6—*continued.*

MANGAHAO ELECTRIC-POWER SUPPLY.

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1926.

Gross Revenue Account.

To	£ s. d.	£ s. d.	By	£ s. d.	£ s. d.
Generating-expenses, headworks, and power-house—			Sale of energy—		
Salaries, wages, and allowances	3,535 19 2		Wholesale	74,783 18 2	
Maintenance headworks, dams, and pipe-lines	190 1 2		Retail (staff cottages and construction works)	1,137 8 1	
Maintenance power-house building and machinery	909 0 1				75,921 6 3
Maintenance staff—Village and roads, transport and general	1,136 8 7		Rents		
		5,771 9 0	Cottages	918 17 10	
Transmission-lines, patrol maintenance, &c.—			Poles	6 9 9	
Mangaore–Khandallah	2,142 5 9				925 7 7
Mangaore–Bunnythorpe	1,025 14 1		Tests and inspections		9 18 0
Bunnythorpe–Dannevirke	1,204 4 1				
Woodville–Masterton	1,580 11 9				
Dannevirke–Waipukurau	333 4 3				
Miscellaneous 11,000-volt lines	58 16 7				
		6,344 16 6			
Substations—Operating, maintenance, &c.—					
Khandallah	2,001 6 0				
Otaki	28 0 2				
Bunnythorpe	672 3 1				
Dannevirke	431 7 3				
Waipukurau	492 1 4				
Woodville	424 1 9				
Mangamaire	355 2 9				
Masterton	463 16 8				
		4,867 19 0			
Management and general expenses—					
Management and office salaries, &c.	2,397 1 0				
Distribution salaries and expenses and transport	1,654 8 8				
Postages, telephones, &c.	195 12 6				
Printing, stationery, and advertising	107 8 9				
Motor-cars and general travelling-expenses	279 8 11				
Accident, sick, and holiday pay	205 13 11				
Miscellaneous expenses	41 8 4				
		4,881 2 1			
		21,865 6 7			
Balance to Net Revenue Account		54,991 5 3			
		£76,856 11 10			£76,856 11 10

Net Revenue Account.

To	£ s. d.	£ s. d.	By	£ s. d.	£ s. d.
Depreciation at 2 per cent. per annum on complete works at 31st March, 1926	30,056 0 0		Balance from Gross Revenue Account	54,991 5 3	
Interest for year ended 31st March, 1926	92,225 18 0		Loss for year carried to Balance-sheet	67,290 12 9	
	£122,281 18 0			£122,281 18 0	

Depreciation Reserve Account.

To	£ s. d.	£ s. d.	By	£ s. d.	£ s. d.
Balance to balance-sheet	30,056 0 0		Amount set aside as per Net Revenue Account	30,056 0 0	
	£30,056 0 0			£30,056 0 0	

TABLE No. 7.

IRRIGATION AND WATER-SUPPLY.

SCHEDULE OF SCHEMES COMPLETED OR UNDER CONSTRUCTION.

Scheme.	Source of Supply.	River Discharge (Minimum).	Main Canal Discharge (Maximum).		Average Rainfall from Records Available.	Rainfall, 1925.	Area commanded (Gross).	Area irrigated at Present.	Works authorized.		Works completed.		Expenditure to 31st March, 1926.	Estimate to complete.	Remarks.
			As per Design.	During 1925–26.					Main Canals.	Distributaries.	Main Canals.	Distributaries.			
		Cusecs.	Cusecs.	Cusecs.	Inches.	Inches.	Acres.	Acres.	M. ch.	M. ch.	M. ch.	M. ch.	£	£	
Steward Settlement	Waitaki River ..	..	110	..	20·10 (Steward Settlement)	18·38	18,000	..	14 60	50 31	14 60	50 31	12,115	..	Completed.
Otekaike ..	Otekaike River ..	9	15	..	21·89 (Duntroon)	25·21	1,500	800	14 37	3 47	14 37	3 47	3,631	..	Completed. Used only on west side of river.
Ida Valley ..	Manorburn, Poolburn, and Moa Creek. (Storage Manorburn Dam)	..	110	110·5	15·68 (Moa Ck.)	15·98	28,918	10,603	73 0	54 0	73 0	29 20	169,851	991	About 20,000 acres can now receive partial irrigation equal to one-third complete irrigation, the balance being land that either does not require irrigation or benefits indirectly through irrigation of the balance. To provide further water for its complete irrigation further conservation-works would be necessary. These have been investigated, and as they appear to be excessive in cost, nothing further is now proposed in that direction.
Galloway ..	Manorburn Dam ..	..	15	21·5	14·07 (Galloway)	14·96	2,250	2,066	10 50	7 47	10 50	7 47	22,262	1,865	Completed and in working condition. An extension of area of 600 acres is proposed.
Manuherikia – Alexandra-Clyde No. 1	Manuherikia River	77	100	63	15·55 (Alexandra, Ophir, and Clyde)	15·95	11,000	4,967	23 0	41 0	23 0	44 0	221,033	2,288	Completed and serving all land requiring water.
Ardgour	Lindis River ..	40	20	19	18·55 (Tarras)	17·82	2,000	1,494	13 0	2 40	13 0	2 40	32,859	633	Completed and serving whole area, with a few improvements requiring to be done.
Arrow River ..	Arrow River ..	55	48	..	26·16 (Frankton)	28·01	6,536	..	17 0	24 0	0 35	..	6,596	115,620	Survey completed and construction is well in hand.
Hawkdun (formerly Mount Ida)	Tributaries of Manuherikia River and Eweburn Reservoir	..	50	..	24·50 (Naseby, Naseby Plantation).	28·38	10,000	..	65 0	70 0	0 70	..	2,163	58,364	Survey is nearly completed, and construction has been commenced.

TABLE No. 7—*continued.*

IRRIGATION AND WATER-SUPPLY—*continued.*

SCHEDULE OF SCHEMES COMPLETED OR UNDER CONSTRUCTION—*continued.*

Scheme.	Source of Supply.	River Discharge (Minimum).	Main Canal Discharge (Maximum).		Average Rainfall from Records available.	Rainfall, 1925.	Area commanded (Gross).	Area irrigated at Present.	Works authorized.		Works completed.		Expenditure to 31st March, 1926.	Estimate to complete.	Remarks.
			As per Design.	During 1925–26.					Main Canals.	Distributaries.	Main Canals.	Distributaries.			
		Cusecs.	Cusecs.	Cusecs.	Inches.	Inches.	Acres.	Acres.	M. ch.	M. ch.	M. ch.	M. ch.	£	£	
Earnscleugh (Fraser River)	Fraser River ..	10	20	20	14·21 (Earnscleugh)	14·89	2,743	1,845	11 30	17 30	11 30	17 30	12,984	1,700	Extension has been completed, and whole scheme is in working order and supplying all land requiring water.
Last Chance (Fruitlands and Earnscleugh Tops)	Shingle, Gorge, and Coal Creeks	14	20	10	14·08 (Earnscleugh and Roxburgh East)	14·98	4,300	2,293	22 0	5 70	20 78	5 70	24,843	2,972	The extension is practically complete, and the scheme is serving all occupied land.
Tarras	Lindis River ..	40	70	26	18·55 (Tarras)	17·82 (Tarras)	7,000	1,144	13 16	15 60	21 70	17 55	128,214	2,220	Completed, and has had one year of operation. Area served will be greatly increased next season.
Bengerburn ..	Bengerburn ..	1	4	4	..	..	1,000	144	2 06	..	2 06	..	764	92	Completed. Supplying domestic and irrigation requirements.
Teviot River ..	Teviot River and Lake Onslow dam	40 (estim.)	80	40	13·95 (Roxburgh East)	15·10	3,300	2,758	16 51	10 00	16 51	10 55	39,216	1,035	Completed and serving all land requiring water.

TABLE No. 7—*continued.*

IRRIGATION AND WATER-SUPPLY—*continued.*

SCHEDULE OF SCHEMES UNDER INVESTIGATION.

Scheme.	Source of Supply.	River Discharge (Minimum).	Main Canals Discharge (Maximum), as per Design.	Average Rainfall from Records available.	Rainfall, 1925.	Area commanded (Gross).	Length of Main Canal.	Length of Distributaries.	Expenditure to 31st March, 1926.	Estimate to complete.	Remarks.
		Cusecs.	Cusecs.	Inches.	Inches.	Acres.	Miles.	Miles.	£	£	
Maniototo (Upper Taieri)	Taieri River and storage dam	25	500	17·48 (Waipiata)	17·27	100,000	60	..	220	..	Modified scheme for complete irrigation of 5,000 acres is possible without storage, or for reasonable partial irrigation of 15,000 acres.
Cromwell Flat and Lowburn (Roaring Meg)	Roaring Meg Stream (gravity), Kawarau River (pumping)	29 3,000	40	21·32 (Luggate)	14·12 (7 months only)	15,000	10	30	1,862	Various	This scheme is a costly development, and alternative scheme of combined power development and irrigation are being investigated.
Upper Manuherikia ..	Manuherikia and Dunstan Rivers, and storage dam in Manuherikia River at Falls	77	355	19·22 (Clyde, Ophir, and Blackstone Hill)	23·48	96,000	130	..	5,021	866,360	Surveys and investigations in connection with dam and storage have been continued. The estimate covers work in hand.
Hawea Flats (first alternative)	Timaru Creek (gravity)	20	30	25·59 (Hawea Flat)	27·67	4,000	11	20	49	41,470	To irrigate lower flat only.
Hawea Flats (later alternative)	Hawea River (pumping)	..	..	25·59 (Hawea Flat)	27·67	17,600	..	..	..	71,720	Latest tentative proposal. Electric power not necessary, but water to be pumped by direct application of power generated by low-pressure turbines at outlet of Lake Hawea. This appears preferable to alternative No. 1, and appears to be a promising scheme. Further closer survey and estimates are necessary.
Chapman's Gully ..	Butcher's Creek, Conroy's Creek, and storage dam	..	..	14·73 (Alexandra)	13·70	100	..	..	16	1,165	May yet be amalgamated with Last Chance scheme or possible scheme from Conroy's Gully.
Bendigo Flat	Lindis River and storage dam	40	30	18·55 (Tarras)	17·82	3,000	7	..	..	..	Survey will be commenced shortly.

TABLE No. 7—*continued.*

IRRIGATION AND WATER-SUPPLY—*continued.*

SCHEDULE OF SCHEMES UNDER INVESTIGATION—*continued.*

Scheme.	Source of Supply.	River Discharge (Minimum).	Main Canals Discharge (Maximum), as per Design.	Average Rainfall from Records available.	Rainfall, 1925.	Area commanded (Gross).	Length of Main Canal.	Length of Distributaries.	Expenditure to 31st March, 1926.	Estimate to complete.	Remarks.
		Cusecs.	Cusecs.	Inches.	Inches.	Acres.	Miles.	Miles.	£	£	
* Teviot River Extension	Teviot River and Lake Onslow dam	40	80	13·95 (Roxburgh East)	15·10	13,400	..	..	..	200 (Survey only)	To irrigate Teviot and Ettrick. Involves enlargement of Lake Onslow dam. Some further investigations made, and survey expected to be commenced next spring.
Miller's Flat	Minzionburn	6	..	..	..	2,000	..	..	113	21,000	Proposed to utilize abandoned race of Island Block Extended Gold-mining Company. A new and promising proposal. Survey completed.
Luggate Burn	Luggate Burn ..	6 (after existing rights)	12	21·32 (Luggate)	14·12 (7 months only)	1,200	..	..	263	5,000	To supply water to part of Mount Pisa settlement lands. Detail proposals in hand.
Scandinavian	Tributaries of Manuherikia River	..	20	28·70 (St. Bathan's)	31·93	4,000	..	..	..	50,000	For lands about St. Bathan's. Includes £12,000 towards cost of Falls dam, Upper Manuherikia scheme.
Soil Survey (Central Otago)	..	..	..	..	..	..	..	..	214	1,621	Approximately 370,000 acres surveyed, 88,000 of which are irrigable. 500,000 acres are to be surveyed this year, of which 360,000 are considered irrigable.
Investigation of proposed schemes	..	..	..	..	..	..	..	..	199	1,000	Includes the reading of river and rain gauges.

* Put under Teviot River scheme above, with which it will be ultimately amalgamated.

APPENDICES TO THE PUBLIC WORKS STATEMENT, 1926.

APPENDIX A.

AUDITED STATEMENT OF EXPENDITURE ON PUBLIC WORKS OUT OF THE PUBLIC WORKS FUND FOR THE YEAR 1925-26.

Prepared in compliance with Section 8 of the Public Works Act, 1908.

SIR,— Public Works Department, Wellington, 16th July, 1926.

In compliance with the 8th section of the Public Works Act, 1908, I enclose a statement of the expenditure during the preceding financial year on all works and services chargeable to the Public Works Fund.

I have, &c.,
K. S. WILLIAMS,
Minister of Public Works.

The Controller and Auditor-General, Wellington.

STATEMENT OF NET EXPENDITURE ON ALL WORKS AND SERVICES CHARGEABLE TO THE PUBLIC WORKS FUND FOR THE YEAR 1925-26.

Vote.	Summary.	Appropriation.	Gross Expenditure.	Credits-in-Aid.	Net Expenditure.
	General Purposes Account—	£	£ s. d.	£ s. d.	£ s. d.
41	Public Works, Departmental	136,246	203,393 16 3	76,918 10 2	126,475 6 1
42, 43	Railways	2,050,000	2,179,385 10 1	190,771 4 1	1,988,614 6 0
44-51	Public Buildings..	336,500	287,169 5 8	2,991 9 0	284,177 16 8
52	Timber-supply and Sawmills for Public Works Department	3,000	10,435 2 8	20,327 14 2	*Cr.* 9,892 11 6
53	Acquisition and operation of Quarries ..	20,500	48,001 14 6	35,650 4 4	12,351 10 2
54, 55	Lighthouses and Harbour-works	19,350	9,409 8 2	1 16 0	9,407 12 2
56	Development of Tourist Resorts	52,450	43,813 12 0	327 19 11	43,485 12 1
57	Department of Immigration	200,085	288,573 5 8	181,052 6 9	107,520 18 11
58, 59	Roads, Bridges, and other Public Works ..	713,425	583,296 3 3	14,667 15 11	568,628 7 4
60	Telegraph Extension	995,000	1,045,014 8 0	113,353 12 8	931,660 15 4
61	Motor Transport Services	5,000	4,994 0 4	..	4,994 0 4
62	Contingent Defence	71,000	89,763 3 11	93 9 8	89,669 14 3
63	Lands, Miscellaneous	79,000	77,102 11 1	6,609 17 2	70,492 13 11
64	Irrigation, Water-supply, and Drainage ..	100,000	58,795 1 8	2,568 8 6	56,226 13 2
65	Plant, Material, and Stores	45,000	91,054 10 8	57,601 10 7	33,453 0 1
..	Unauthorized—Services not provided for ..	..	51,263 9 7	50,124 18 7	1,138 11 0
..	Transfer to Main Highways Account, Construction Fund	..	..	..	..
	Totals, General Purposes Account ..	4,826,556	5,071,465 3 6	753,060 17 6	4,318,404 6 0
66	*Electric Supply Account*	1,045,907	982,120 4 3	36,587 10 2	945,532 14 1
..	*Unauthorized—Services not provided for* ..	..	40 16 2	..	40 16 2
..	*Waihou and Ohinemuri Rivers Improvement Account*	..	49,204 8 6	1,296 19 6	47,907 9 0
	Totals, Public Works Fund	5,872,463	6,102,830 12 5	790,945 7 2	5,311,885 5 3

This statement includes only the expenditure on works, and does not include expenditure such as interest, sinking funds, and charges and expenses of loans.

J. J. GIBSON,
Accountant.

C. J. MCKENZIE,
Acting Engineer-in-Chief and Under-Secretary.

Examined and found correct.

G. F. C. CAMPBELL,
Controller and Auditor-General.

APPENDIX A—*continued.*

	Name of Vote.	Appropriation.	Gross Expenditure.	Credits-in-Aid.	Net Expenditure.
	PUBLIC WORKS FUND.	£	£ s. d.	£ s. d.	£ s. d.
	General Purposes Account—				
41	Public Works, Departmental	136,246	203,393 16 3	76,918 10 2	126,475 6 1
	Railways—				
42	Railway-construction	1,150,000	1,328,169 9 11	181,876 18 8	1,146,292 11 3
43	Additions to Open Lines	900,000	851,216 0 2	8,894 5 5	842,321 14 9
	Public Buildings—				
44	General	43,400	29,568 2 3	198 16 9	29,369 5 6
45	Courthouses	8,000	7,215 14 6	6 6 11	7,209 7 7
46	Prison Buildings and Works	25,000	24,905 17 1	710 3 0	24,195 14 1
47	Police-stations	16,000	16,594 8 10	..	16,594 8 10
48	Postal and Telegraph	94,000	90,063 4 0	197 5 5	89,865 18 7
49	Agricultural	16,100	7,934 1 6	2 8 0	7,931 13 6
50	Mental Hospital Buildings	92,000	78,386 7 0	551 15 1	77,834 11 11
51	Health and Hospital Institutions	42,000	32,501 10 6	1,324 13 10	31,176 16 8
52	Timber-supply and Sawmills for Public Works Department	3,000	10,435 2 8	20,327 14 2	*Cr.*9,892 11 6
53	Acquisition and Operation of Quarries	20,500	48,001 14 6	35,650 4 4	12,351 10 2
	Lighthouses and Harbour-works—				
54	Lighthouses	10,450	5,692 7 10	1 16 0	5,690 11 10
55	Harbour-works	8,900	3,717 0 4	..	3,717 0 4
56	Development of Tourist Resorts	52,450	43,813 12 0	327 19 11	43,485 12 1
57	Department of Immigration	200,085	288,573 5 8	181,052 6 9	107,520 18 11
	Construction and Maintenance of Roads, Bridges, and other Public Works—				
58	Roads, &c.	708,925	579,362 3 3	14,667 15 11	564,694 7 4
59	Roads on Goldfields	4,500	3,934 0 0	..	3,934 0 0
60	Telegraph Extension	995,000	1,045,014 8 0	113,353 12 8	931,660 15 4
61	Motor Transport Services	5,000	4,994 0 4	..	4,994 0 4
62	Contingent Defence	71,000	89,763 3 11	93 9 8	89,669 14 3
63	Lands, Miscellaneous	79,000	77,102 11 1	6,609 17 2	70,492 13 11
64	Irrigation, Water-supply, and Drainage	100,000	58,795 1 8	2,568 8 6	56,226 13 2
65	Plant, Material, and Stores	45,000	91,054 10 8	57,601 10 7	33,453 0 1
..	Unauthorized—Services not provided for ..	..	51,263 9 7	50,124 18 7	1,138 11 0
..	Transfer to Main Highways Account, Construction Fund	..	..	..	..
	Totals, General Purposes Account ..	4,826,556	5,071,465 3 6	753,060 17 6	4,318,404 6 0
66	*Electric Supply Account*	1,045,907	982,120 4 3	36,587 10 2	945,532 14 1
..	*Unauthorized—Services not provided for*	..	40 16 2	..	40 16 2
..	*Waihou and Ohinemuri Rivers Improvement Account* .	..	49,204 8 6	1,296 19 6	47,907 9 0
	Totals, Public Works Fund	5,872,463	6,102,830 12 5	790,945 7 2	5,311,885 5 3

APPENDIX B.

ANNUAL REPORT ON PUBLIC WORKS BY THE ACTING ENGINEER-IN-CHIEF.

The ACTING ENGINEER-IN-CHIEF to the Hon. MINISTER OF PUBLIC WORKS.

SIR,—

I have the honour, in the absence of the Engineer-in-Chief (Mr. Furkert) abroad, to submit the following report upon the various works under my control completed and in progress throughout the Dominion during the period from the 1st July, 1925, to the 30th June, 1926.

RAILWAYS.

ABSTRACT.

The following table shows the expenditure on Government railways in New Zealand up to the 31st March, 1926:—

Name of Railway.	Total Length of Railway or Section.	Open for Traffic.	Expenditure to 31st March, 1926.
	M. ch.	M. ch.	£
Kaihu Valley	24 32	24 32	179,118
Otiria–Ngapuhi	13 45	13 45	125,987
Opua Wharf – Onerahi	58 6	58 6	608,292
Kioreroa–Waiotira	19 79	19 79	417,357
North Auckland Main Trunk Railway (from Helensville)	172 35	80 63	2,942,998
Helensville – Te Awamutu, with Branches (including Auckland–Westfield Deviation)	215 35	160 63	3,990,238
Frankton Junction – Thames, with Branches	127 35	87 20	1,395,748
Thames Valley – Rotorua	69 33	69 33	421,748
Tauranga–Opotiki, with Branches	145 32	..	1,386,420
Gisborne–Opotiki	93 44	49 32	623,558
Napier–Gisborne (including Waikokopu Branch)	231 44	23 44	1 621,738
Wellington – Napier and Palmerston North (including Te Aro Extension, Greytown and Martinborough Branches, and Hutt Valley Railway)	258 62	233 12	2,950,164
Wellington–Waitara, with Branches	350 11	285 59	3,493,145
Stratford–Okahukura	112 47	47 40	1,439,172
North Island Main Trunk (Marton – Te Awamutu), including Raetihi Branch and Waipa Gravel-access Branch	225 79	218 39	3,058,705
Picton–Waipara (South Island Main Trunk Railway)—			
Picton southwards	92 38	56 6	656,027
Waipara northwards	90 45	44 14	378,740
Nelson–Greymouth	177 51	125 57	714,819
Stillwater – Arthur's Pass	51 41	50 41	2,045,196
Rolleston – Arthur's Pass (including Whitecliffs Branch)	92 59	84 45	1,029,453
Westport–Ngakawau	19 56	19 56	193,883
Westport – Ngakawau Extension to Mokihinui*	7 12	7 12	..
Mokihinui Colliery Line†	3 69	3 69	..
Westport–Inangahua	26 0	5 74	198,048
Ngahere–Blackball	3 40	3 40	147,532
Greymouth–Rewanui and Branches	11 34	11 34	329,743
Greymouth–Waitaha	50 32	38 68	355,853
Waipara–Waitaki, with Branches	459 34	413 70	2,835,798
Canterbury Interior Main Line—Oxford–Temuka	83 0	11 44	59,942
Waitaki–Bluff, with Branches	600 21	561 2	5,375,265
Otago Central	182 51	147 27	1,436,626
Invercargill–Kingston, with Mararoa Branch	117 4	97 44	393,767
Forest Hill Railway—Winton–Hedgehope‡	12 40	12 40	23,337
Western Railways	94 8	78 49	447,437
Preliminary surveys	..	..	45,452
General charges not yet apportioned	..	..	3,698
Miscellaneous	..	..	10,337
Stock of permanent-way on hand	..	..	22,458
Rolling-stock	..	..	10,124,091
Suspense Account, being proportion of cost of raising loan for Railways Improvement Authorization Act 1914 Account.	..	..	23,580
Total	4,275 49	3,145 79	§51,455,270
PROVINCIAL GOVERNMENT LINES, ETC.			
Canterbury (lengths included above)	..	..	731,759
Otago and Southland	..	..	372,522
Gisborne to Ormond Tramway	..	..	4,975
Midland Railway, valuation of works constructed by company	..	..	‖683,460
Grand total	4,275 49	3,145 79	53,247,986

* The funds for this extension—namely, £35,501 2s. 11d.—were provided by the Westport Harbour Board.
† The funds for purchase of this line, £15,745, were provided by the Westport Harbour Board.
‡ The expenditure on this line as a tramway was made by the Lands Department.
§ Includes expenditure on railways under Hutt Road and Railway Improvement, Railway Improvement Authorization Act, and Railway Improvement Authorization Act 1914 Accounts.
‖ Includes value for £150,000 paid to debenture-holders under the Midland Railway Petitions Settlement Act Amendment Act, 1903.

NORTH AUCKLAND MAIN TRUNK RAILWAY.

Okoro Section (24 m. 45 ch. to 34 m. 18 ch.; length, 9 m. 53 ch.).—A certain amount of preparatory work had been undertaken on this section during the previous year, and a start was only made with actual constructional operations at the beginning of the period now under review. Fencing was erected on both sides of the line from 28 m. 0 ch. to 28 m. 75 ch., and fourteen culverts, which consist of two 3 ft. arched concrete culverts and twelve concrete-pipe culverts ranging in diameter from 12 in. to 2 ft., were constructed. Earthworks have been completed for a distance of 2 m. 5 ch. from Okaihau Railway-station.

A light service tram 2 m. in length is being constructed from the end of the completed formation for the transport of excavating-machines and other plant required for the comparatively heavy earthwork at the end of the tram-line.

Two steam-shovels are employed on this section, and a large quantity of subsoil water in the form of underground streams and springs has caused difficulty in ensuring the stability of fillings. There is every indication that this treacherous country will be encountered for several miles north of Okaihau, and stone drains are being constructed on the foundation of every large filling. Two fillings which were built in 1909 were discovered to have slipped badly, and it was deemed advisable to deviate the line for a short distance at these places to avoid the treacherous ground. These deviations were completed during the year, and are standing well.

The construction of a short tunnel under the Okaihau–Ohaeawai Road was commenced in May last, and it has been completed for about 42 ft., or half of its entire length.

Some 32 ch. of platelaying and ballasting have been completed, and rails, &c. are on hand for several miles of the permanent track. Tenders have also been invited for the supply and delivery of 20,000 puriri sleepers.

Workmen's camps have been erected at Okaihau and at two other suitable localities. Each camp has been provided with a water-supply, and the Okaihau Camp has a sewerage system which discharges into septic tanks. Altogether 143 huts for single men, forty married quarters with washhouse, &c., two cookhouses, five sheds, as well as an office and other service buildings, have been erected.

Considerable prospecting has been undertaken to the left of the line at 27 m. for ballast, and detailed surveys have been made of a quarry-site and for 1¼ m. of tram-line from the railway to the proposed quarry. It is anticipated that, in addition to metal for ballasting and concreting, there will be an abundant supply of stone available from this quarry for construction of stone drain and walls to prevent slips in cuttings and subsidences in fillings on the treacherous country, and thus save a considerable sum of money in the completion of the line.

Paparoa Section (90 m. 30 ch. to 92 m. 6 ch.; length, 1 m. 56 ch.).—Work undertaken on this section during the year consisted principally of maintenance and cleaning up of Paparoa station-yard. A large quantity of road-metal was, however, handled for Otamatea County. This section was handed over to the Working Railways Department in November last.

Mareretu Section (92 m. 6 ch. to 96 m. 20 ch.; length, 4 m. 14 ch.).—The heaviest work on this section was the drainage of the seat of the bank at 94 m. 73 ch. by means of drives. These drainage drives were finished, and the stability of the bank is now restored. A particularly wet cutting on the western approach road to Mareretu Station necessitated the remetalling of 15 ch. of the road, as well as the construction of 8 ch. of stone drain and retaining-wall. The ordinary maintenance of the section also received attention, including the removal of several slips, and the section was handed over to the Working Railways Department in November last.

Waikiekie Section (96 m. 20 ch. to 107 m. 28 ch.; length, 9 m. 66 ch.).—Work-trains were engaged in clearing water-tables and small slips in addition to the usual track maintenance. As mentioned last year, difficulty was experienced owing to serious displacement of the lining at the entrance to Waikiekie Tunnel due to heavy ground-movements. It has been found necessary to reline portion of the tunnel, and this work, together with the inverting, has been completed. The approach road to Taipuha Railway-station is being given a coating of fine metal. This section was handed over to the Working Railways Department in November last.

Kirikopuni Section (107 m. 28 ch. to 121 m.; length, 13 m. 52 ch.).—The main objective during the year was to establish rail connection between Waiotira and Pukehuia, and this was achieved. The permanent track was laid as far as the Wairoa River Bridge at 118 m. 77 ch., with two lifts of ballast to Pukehuia, and the Railway Department is allowing its rolling-stock to run over this unopened length. Formation is now complete with the exception of a big bank in Kirikopuni station-yard and 1½ m. of access road between Paradise and Otiria Saddle. This bank, which is on treacherous river-flat country, has been very troublesome, and several months of work will be necessary before the trimming of Kirikopuni station-yard can be commenced.

Another serious subsidence occurred at the northern approach to the Wairoa Railway Bridge. This long and high approach bank over an old river-flat split in half longitudinally for about 7 ch. or 8 ch., one half sinking 14 ft. in five minutes, the other half remaining in its original position. This incident necessitated the borrowing of a further 11,000 cub. yd. of material to complete the bank. A further example of the treacherous nature of the country is given by a filling at Kirikopuni, which was 16 ft. in height above the flat. This filling sank and pushed up the surrounding country in waves, in some cases to within 2 ft. of the top of the filling. Over 30,000 cub. yd. of extra material have been placed on this filling to raise it to the required level, or sufficient to have constructed the bank 60 ft. high on a solid foundation.

Embankments on these old river-flats, which have a crust only a few feet thick, with a great depth of soft material underneath, have had to be widened at the base and also on top to distribute the weight over a greater area of ground, and several times the original estimated quantities of earth were tipped into the banks before they became anything like stable.

Serious slips have occurred between Tokatoka Tunnel and Pikiwahine station-yard, and without the use of steam-shovels it would have been difficult to cope with them. Altogether nine steam-shovels have been employed during the year on this section, with economical results, mainly in connection with removal of slips and extra filling for subsiding embankments.

The construction of an approach road about 2½ m. in length from Paradise to Kirikopuni is well advanced. Crushed metal from Tauraroa quarry is being landed on the river-bank in readiness for carting when weather conditions permit, and it is anticipated that the construction and metalling of the road will be completed before the end of next summer.

Only a limited amount of stone-drain and stone-wall building was undertaken last summer, owing to the heavy demand for metal for Waipu Road and completion of the line between Huarau and Portland; but it is anticipated that all of this class of work can be completed during next summer, as well as the final ballasting of the line between Waiotira and Pukehuia.

The formation of Pikiwahine station-yard was completed this year, and the roads within the station limits were metalled. At Omana, station buildings consisting of goods-shed, shelter-shed, four platelayers' cottages, and stock-yards are now complete, and metalling and erection of station-gates are in hand. The trimming of Pukehuia station-yard is complete, and metalling of yard and approach roads is in progress, as well as trimming and completion of formation at Kirikopuni Station.

There are several bridges on this section, and the following is a brief description of the work undertaken on each bridge during the year:—Bridge at 107 m. 31 ch.: Top adjusted owing to slight closing of abutments. Bridge at 110 m. 23 ch.: Permanent spans erected and riveted up. Bridge at 112 m. 25 ch.: Adjustment of top owing to slight closing of abutments with shrinkage of banks. Bridge at 113 m. 0·06 ch.: Three 30 ft. spans erected complete, and permanent top laid. Bridge at 113 m. 66 ch.: One 40 ft., two 30 ft., and two 25 ft. spans erected complete, and permanent top laid. Overbridge at 114 m. 40 ch: Concrete piers laid; erection of superstructure in hand. Bridge at 114 m. 70 ch.: One 40 ft., and two 30 ft. spans completed, and permanent top laid. Bridge at 115 m. 35 ch: Permanent top laid. Bridge at 117 m. 32 ch.: Three 30 ft. spans completed, and permanent top laid. Bridge at 117 m. 52 ch.: One 25 ft., and two 20 ft. spans erected complete, and permanent top laid. Overbridge at 117 m. 65 ch.: Permanent bridge erected complete; temporary bridge being dismantled. Wairoa River Bridge at 118 m. 77 ch.: Good progress has been made with this work since its commencement in November last. No difficulties were encountered in sinking of cylinders. Three permanent piers are now complete, and the first cylinder pier on south side of river has been sunk 22 ft. into the sandstone rock of the river-bed. False-work has been erected to midstream, and the concreting of Nos. 3 and 4 cylinders for the centre pier has been commenced. During month of June some delay was caused by floods, which did little, if any, damage. Seven 30 ft. spans have been riveted ready for erection. Bridge at 120 m. 0 ch: Pile-driving completed.

A certain amount of repair work has been necessary at Tokatoka Tunnel owing to the original section being rather light for the excessive pressure which has developed since the completion of the tunnel, and a further 80 ft. will receive attention this year.

Early in December last a passenger service for the convenience of settlers was commenced between Waiotira and Pukehuia, coincident with the handing-over of the line from Huarau to Portland to the Railway Department. This enables through passengers from Dargaville and Northern Wairoa to connect with express train at Waiotira for Auckland or Russell. The service has been well patronised, and over 4,200 passengers were carried up to the 20th June of this year. A goods service has also been run, and 610 tons of general goods and 9,107 head of mixed stock were handled.

Whangarei Branch Railway.

The three sections under construction were Oakleigh, Tauraroa, and Waiotira. Permanent stock-yards were renovated, and the whole area on east side of the Waiotira yard coated with 6 in. of metal. Additional stone drains and stone walls, which were completed early in the year, have had the desired effect, and there were no hold-ups of traffic by slips or subsidences. Material from a slip on the main line near Tokatoka Tunnel was utilized for widening Waiotira station-yard in order to provide for possible future extension.

These were the final works in the construction of this branch line, which connects Whangarei and other northern districts with the City of Auckland and the North Island railway system generally, and the three sections were handed over to the Railway Department on the 29th November last, along with the Paparoa, Mareretu, and Waikiekie Sections of the main line.

Auckland–Westfield Deviation.

The reconstruction of the Auckland station-yard from 0 m. to 1 m. is under the control of the Railway Department, and this report deals only with the work from there onwards which is being undertaken by this Department. A heavy embankment is being constructed across Judge's and Hobson Bays with spoil derived from large cuttings at Campbell's Point and Orakei. Three steam-shovels, supplemented by manual parties, have been continuously employed, and have completed 34 ch. of embankment at the Campbell's Point end and 38 ch. at the Orakei end, the combined output being about 150,000 cub. yd., or 40 per cent. of the whole. A heavy stone protection wall is being constructed in advance of the earthwork, the quantity of stone placed to date being about 30,000 cub. yd., or slightly under one-half of the required amount. The sites of culvert and sluice-gates at 1 m. 27 ch. and the bridge at 1 m. 42 ch. have been temporarily trestled.

The lighter formation from Orakei basin at 3 m. 20 ch. to the approach cutting to the Purewa Tunnel at 4 m. 57 ch. is well advanced, and spoil is being distributed by work-train to complete the widening of banks. In a few weeks the train will be tipping tunnel-spoil in the Orakei basin. The three cuttings above mentioned represent the major portion of the earthwork for the whole section.

To facilitate the handling of spoil and to get earlier access to the Purewa Tunnel a drive 18 ft. by 9 ft. was driven through the approach cutting at the north end, and continued through the tunnel to meet the bottom heading of the other end. In the approach cutting at the north portal at 4 m. 57 ch. a rising shaft was driven to the surface of the ground, and the cutting is being broken down through the shaft. To date about 30,000 cub. yd., or rather more than one-quarter of the cutting, have been removed by this means. The bottom heading, 35½ ch. in length, was completed in April last, by which time sufficient of the approach cuttings at each end had been removed to enable a start to be made with enlargement and lining. At the north end 54 ft. have been enlarged to full size, and 38 ft. lined with concrete and fully completed. At the south end progress was retarded by an extensive slip over the portal, but a length of walls and invert is completed. The tunnel will be 29½ ch. in length, lined with mass concrete throughout, and will carry two tracks.

The formation from the south portal, 5 m. 6 ch., to the Point England Road at 5 m. 70 ch., including the excavation of the subway at the road-crossing, is well advanced, and a rail connection will shortly be established between the tunnel and a rock cutting at 6 m. 60 ch., at which point a crushing plant is being erected to supply metal for concrete lining, bridges, &c. From 6 m. 60 ch. onward the route has been resurveyed, and some alterations are being considered.

Numerous small culverts and several large ones have been completed between 1 m. 33 ch. and 5 m. 70 ch. No permanent bridges have been commenced as yet, but several sites have been temporarily trestled to facilitate the disposal of earthwork. Designs for all of the bridges are in hand or completed.

Practically the whole population of staff, workmen, and their families are concentrated in villages at Campbell's Point, Orakei, and Purewa. At the latter point 86 married workmen's houses and 140 single men's huts have been erected. Metalled roads, electric light, water-supply, and sewerage system have been installed, and other features of the encampment are a Y.M.C.A. hutment, workmen's cookhouse and bathhouses.

East Coast Main Trunk Railway—Waihi Eastwards.

Athenree Section (0 m. 0 ch. to 8 m. 68 ch.; length, 8 m. 68 ch.).—The actual formation of this section has been completed for about two years, and a goods and passenger service was run throughout the year with satisfactory results. Two additional cattle-stops have been erected, and fencing and track kept in repair. Additional excavation was undertaken at Athenree yard in connection with the erection of a goods-shed. A road-diversion is being constructed at 7 m. 60 ch., and the surplus material is being deposited in Tuapiro bank on the Katikati Section. Platelaying is complete throughout the section, and guard-rails have been placed on all bridges with the exception of the Waimate Bridge at 2 m. 62 ch. Ballasting has been completed, and the metalling of Athenree and Waimata yards is almost finished. The total output for the year from the Athenree quarry was 18,200 cub. yd. of ballast, 1,900 cub. yd. screenings, and 196 cub. yd. spalls. 1,332 cub. yd. of the metal and 210 cub. yd. of screenings were sold to local bodies. A goods-shed has been erected at Athenree Station, and this section (with the few exceptions mentioned above) is now complete.

Katikati Section (8 m. 68 ch. to 16 m. 28 ch.; length, 7 m. 40 ch.).—Clearing on this section is almost finished. The line is fenced to 14 m. (including approaches to overbridge at 12 m. 59·50 ch.), and fencing generally is in an advanced state along the remainder of the section. Considerable draining has been done, and a stream-diversion at 15 m. 40·6 ch. has been completed. This section is fully manned as far as earthworks are concerned, and the formation is completed to 14 m. with the exception of a small amount of widening on the Tuapiro bank. Six cuttings have been completed, and seven others are being excavated. Some fillings along this section—particularly the one at 15 m. 45 ch.—are causing trouble through settlement. Culverting-work completed during the year consisted of four 12 in., two 18 in., four 24 in., and one double 48 in. pipe culverts, one 4 ft. box culvert, and one 6 ft. concrete culvert, while another 6 ft. concrete culvert is being constructed. A 4 ft. water-drive was excavated and lined at 14 m. 71 ch. Piles have been driven for a reinforced-concrete flat-top bridge at 10 m. 61 ch., and a bridge consisting of two 50 ft. and four 30 ft. spans on concrete piers supported on reinforced-concrete piles has been erected over Tuapiro Stream. The girders were fabricated at the Department's workshop at Mount Maunganui, shipped to the site, and lifted into position. Timber piers of subway bridge at 14 m. 71 ch. have been erected, and pile-driving on Tahawai Bridge is in progress. Excavation and concreting of foundations for overbridges at 15 m. 38·15 ch. and 16 m. 6·50 ch. is in hand. A road-diversion at 14 m. 71·40 ch. has been completed, and approach roads for a deviation of the main highway at Katikati Railway-station are nearing completion. Platelaying has been completed to 12 m. 5 ch., and trimming of formation to 14 m. The second lift of ballast is completed to 11 m. 65 ch., and metal has been spread for the third lift. Stock-yards are being constructed at Tahawai Station, and a contract has been let for buildings required at that station. An additional platelayer's cottage has been erected at Katikati, and electric light installed in the three cottages which were erected previously. A passenger and goods service has been run as far as the railhead at Tuapiro Stream, and will be extended shortly approximately 3 m. along the line to Tahawai Station. Work on this section as far as 14 m. is being undertaken by the Department with its own staff, but the work beyond that point is included in the contract let to Sir W. G. Armstrong, Whitworth, and Co.

Aongatete Section (16 m. 28 ch. to 21 m. 5 ch.; length, 4 m. 57 ch.).—Work on this section is being carried out under contract by Sir W. G. Armstrong, Whitworth, and Co. Clearing is finished, and most of the fencing has been erected. Good progress is being made with the earthwork, and eleven cuttings are finished. The majority of the banks have been completed except at bridges, but most of them will require widening. Four road-diversions have been formed and one metalled, and the construction of two others is in progress. Three 3 ft., two 4 ft., two 6 ft., and one 10 ft. culverts

have been constructed, and 300 lin. ft. of pipe culverts have been laid. A considerable quantity of side draining has also been undertaken.

The piles of the bridge over the Uretawa at 16 m. 46 ch. have been driven, and the caps are being placed in position. Abutment A of the bridge over Te Rereatukahia Stream at 18 m. 12·15 ch. has been erected, and the concreting of piers B, C, and D is being undertaken. At Te Mania Bridge at 18 m. 50 ch. the piles of piers A, B, and C have been driven, and driving is in hand at abutment D. Excavations for foundations of Aongatete Bridge at 20 m. 45 ch. were commenced, but, as the foundations proved to be unsatisfactory, pile-driving was suspended pending redesign of bridge. Pile-driving has since been restarted. Three overhead bridges are in course of construction. Platelaying has been completed from 20 m. 51 ch. to 21 m. 5 ch., including Aongatete station-yard, but ballasting-work is proceeding slowly. Station-yard buildings are nearing completion at Aongatete, and the approach road to the goods-shed is being metalled.

Apata Section (21 m. 5 ch. to 27 m. 70 ch.; length, 4 m. 14 ch.).—(Note: Short length is due to deviations from original line.) Clearing is finished, and good progress has been made with fencing. The earthwork is completed with the exception of the Wainui bank at 23 m., small portions of two cuttings, and part of the widening at Apata yard. The formation of road deviations and approaches to Apata Station has been completed, and three road-deviations metalled. The necessary side drains on the section have been excavated, and two 3 ft., two 4 ft., and one 6 ft. arched culverts have been constructed; another 6 ft. culvert and one 3 ft. arched culvert are being built, and 720 ft. of pipe culverts have been laid. A bridge of five 30 ft. plate-girder spans on pile piers has been erected over Whatakao Stream at 21 m. 9 ch. Bank-subsidence is causing considerable trouble at Wainui Stream Bridge at 23 m. 25 ch. The piles of a bridge at 27 m. 35 ch. have been driven, and the superstructure is being erected. Four overhead bridges have been erected, and another is approaching completion. Platelaying has been extended from the end of Aongatete Section to 22 m. 30 ch., and ballasting is in progress as far as 22 m. 4 ch. Four platelayers' cottages are being erected at Apata Station.

Te Puna Section (27 m. 70 ch. to 34 m. 78 ch.; length, 7 m. 2 ch.).—Clearing of section has been completed, and a further 3 m. 8 ch. of fencing erected during the year. Earthwork is complete with the exception of bank at Waipapa Bridge at 28 m. 56 ch. and the trimming of various cuttings. One 6 ft. culvert and one 12 ft. arched culvert have been constructed, 733 ft. of 12 in. pipe culvert have been laid, and two other arched culverts, 4 ft. and 6 ft. respectively, are under way. Piles for bridge at 28 m. 29 ch. have been driven, and superstructure is being erected. Timber piles for piers B, C, and D of Waipapa Bridge at 29 m. 29 ch. have been driven, as well as concrete piles for pier E. Concreting of piers F, G, and H is finished, and that at pier E is in hand. Mangawhai Stream Bridge at 31 m. 2·50 ch., consisting of five 30 ft. steel plate girders on pile piers, is finished except for some straightening; and a bridge consisting of nine 30 ft. steel plate-girder spans on timber piles has been erected over Te Puna Stream at 32 m. 7 ch. Three overbridges have been constructed, and four others are in hand. Platelaying is finished from end of section at 34 m. 78 ch. back to 31 m. 3 ch., and sidings are laid in Omokoroa and Te Puna Stations. Goods-shed, stock-yard, and station buildings are nearing completion at Omokoroa, and are being erected at Te Puna.

The construction of the line from 14 m. to 34 m. 78 ch. is being undertaken by Sir W. G. Armstrong, Whitworth, and Co. In addition to work detailed this company has erected a small shop at The Mount. Practically all permanent materials required for the work have now arrived, and all bridge girders have been riveted. The contractors have had six steam-shovels with necessary rolling-stock at work more or less continuously during the year, and removed a total of 620,000 cub. yd. of earthwork; and to date almost 1,000,000 cub. yd. have been removed of the estimated total of 1,300,000 in the contract. Four pile-driving outfits have been at work on the main bridges, and smaller outfits on piling for foundation work.

Tauranga Section (34 m. 78 ch. to 41 m. 5 ch.; length, 6 m. 7 ch.).—Earthworks on this section to its junction with Armstrong, Whitworth's contract have been completed, and banks widened to proper widths and heights. Good progress has been made with Te Puna Station access roads which are now complete with the exception of a culvert and a small bridge. Good progress has also been made on bridges. The Wairoa River Bridge, consisting of thirteen 60 ft. and two 30 ft. spans on concrete piers supported on reinforced-concrete piles, was commenced in June, 1925, and finished by November of that year. The girders were fabricated at the Department's workshop at Mount Maunganui, and, with the exception of one 60 ft. and the two small spans, were loaded on special skidways and floated into position by barges, using the rise and fall of the tide to load and place the girders. This method was both economical and speedy, the placing of twelve 60 ft. girders taking only twelve days. The special culverts and tidal flaps at 36 m. 70 ch. have had to be abandoned, and a bridge consisting of three 20 ft. spans substituted therefor. The piles for this have been driven, and the girders are being fabricated at The Mount. The last remaining three piers on the Waikareao Bridge at 39 m. 65 ch. were concreted during the year, and the girders which had been assembled at The Mount were placed in position in ten days by means of a steam-navvy which was used as a crane. A 3 ft. flat-topped culvert has also been built at 36 m. 11 ch. Plate-laying has been extended from 39 m. 66 ch. back to 34 m. 78 ch., and a further siding laid for engine-shed in Tauranga Station. Ballasting is complete back to 39 m. 68 ch., and 150 ch. of bottom lift were placed between 34 m. 78 ch. and 39 m. 60 ch. A considerable amount of work has been undertaken at Tauranga Wharf; the stone pitching under the wharf is finished, and the approach bank is nearly completed. Permanent rails and wagon-traverser have been placed on the wharf. The reclamation behind the wharf is in hand for the Tauranga Harbour Board, and filling-material is obtained from Otamoetai Station and strippings of Te Puke quarry. An engine-shed, coal-store, outside pit, and two 6,000-gallon vats have been erected at Tauranga Station, and five additional platelayers' cottages are under construction. Goods traffic has been run over the Wairoa River – Tauranga length since January last, and both passengers and goods are being conveyed from Tauranga to 40 m. 5 ch.

Te Maunga Section (41 m. 5 ch. to 45 m.; length, 3 m. 75 ch.).—This section has been open for all classes of traffic, and in addition to ordinary maintenance the formation of station-yard at Matapihi was completed, check-rails were laid on the Tauranga Bridge, and the three eastern spans were repainted with special paints.

Te Puke Section (45 m. to 54 m.; length, 9 m.).—This section has been operated for traffic and adequately maintained. The new cut from the Atuaroa Stream to the Kaituna River was undertaken for the Te Puke Drainage Board, and extended westwards to cross the railway-line at 52 m. 8 ch. The piles required for new bridge at 52 m. 8 ch. have been delivered, the bulk of the ironwork has been prepared at The Mount shops, and two 22 ft. plate girders have been assembled and strengthened. Maintenance of Te Puke Branch line has received attention, and 12,407 cub. yd. of metal were crushed and 26,720 cub. yd. of spalls obtained from the quarry. Additional stripping of an extensive nature is in progress at this quarry, and, as mentioned earlier, the material is being railed to the reclamation behind Tauranga Wharf.

Paengaroa Section (54 m. to 59 m. 67 ch.; length, 5 m. 67 ch.).—This section was operated and maintained for traffic.

Pongakawa Section (59 m. 67 ch. to 64 m. 15 ch.; length, 4 m. 28 ch.).—Goods and passenger traffic have been run on this section and the line maintained.

Otamarakau Section (64 m. 15 ch. to 71 m. 5 ch.; length, 6 m. 70 ch.).—This is another section which has been available for traffic. Some additional bank-widening has been undertaken where necessary, and for this purpose 2,143 cub. yd. of stripping was provided from Matata quarry; 60 ch. of fencing were erected, as well as all gates at Ohinepanea and Otamarakau station-yards. A considerable quantity of ballast from Matata quarry was distributed over this section, and approach roads to Pukehina, Ohinepanea, and Otamarakau Stations were metalled. A small goods-shed was erected at Ohinepanea.

Matata Section (71 m. 5 ch. to 79 m. 16 ch.; length, 8 m. 11 ch.).—This section is open for traffic, and general maintenance has received attention. A further 5,457 cub. yd. of strippings from Matata quarry were used in raising and widening fillings, over 5,000 cub. yd. of ballast from the same quarry were distributed along the section, and ballasting of Pikowai Station and construction and metalling of approach roads is complete. Two steam-shovels have been in use at Matata pit, and the output for the year was—metal, 37,875 cub. yd.; strippings, 50,228 cub. yd.; and spalls, 255 cub. yd. Practically the whole of the strippings was used on bank-widening; 12,281 cub. yd. of metal were sold to local bodies, and the remainder was used by the Department for railway-ballasting and metalling approach roads. Rock spalls were used for bridge-protection work.

Rangitaiki Section (79 m. 16 ch. to 87 m. 45 ch.; length, 8 m. 29 ch.).—Although this section has been open for all classes of traffic, a considerable amount of construction work has been undertaken: 30 ch. of fencing was erected between 83 m. and 84 m., 42·1 ch. of side drain dug, and 14,364 cub. yd. of strippings from Matata quarry were used in fillings. The formation of a level crossing at 81 m. 48·50 ch. is almost finished. The erection of two bridges of three 25 ft. girder spans, one with two 25 ft. spans, and another with three 20 ft. spans, was completed during the year, and permanent rails laid across them. Piles have been driven and timber-work erected for two other bridges. 12,110 cub. yd. of ballast from the Matata quarry was distributed, and ballasting of approach roads and loading-grounds for all stations is finished.

Awakeri Section (87 m. 45 ch. to 91 m. 40 ch.; length, 3 m. 75 ch.).—This section is open for all classes of traffic. Continual flooding of the Rangitaiki River in the early part of the year, however, caused disorganization of the service, but washouts were repaired and line again made safe for traffic. 24,096 cub. yd. of strippings from Matata quarry were used to make up fillings, practically all on the heavy approach fillings to the Rangitaiki Bridge. The erection of the Rangitaiki River Bridge at 88 m. is finished. During the year piers E to R were completed, 240 cub. yd. of concrete placed, and the girder spans, consisting of three 60 ft. and thirteen 30 ft. spans, were assembled at The Mount, railed to site, and placed in position. The temporary staging has been dismantled, and permanent rails laid across the bridge. A smaller bridge, consisting of three 20 ft. plate-girder spans, has been erected at 90 m. 51 ch., and a bridge of one 44 ft., two 25 ft., and two 15 ft. spans at 90 m. 65 ch. The piles of bridge at 88 m. 9 ch. have been driven, and a 3 ft. circular culvert, 24 ft. long, was completed at 89 m. 57 ch.

Taneatua Section (91 m. 40 ch. to 100 m. 6 ch.; length, 8 m. 46 ch.)—35 ch. of fencing was erected between 98 m. 45 ch. and 99 m. 20 ch., and 56 ch. on approach roads, stock-paddocks, and cottage-sites at Taneatua Station. Special fencing of approaches of overbridge at 99 m. 17 ch. is finished, and cattle-stops at 92 m. 40 ch. completed. An 18 in. pipe culvert, 24 ft. long, has been placed at 91 m. 47 ch. A considerable amount of work has been done in widening and raising fillings and repairing the various washouts which occurred in June and July, 1925. A caterpillar steam-shovel worked for five months in a borrow-pit at 97 m. 60 ch., with an output of 19,689 cub. yd., and this material, as well as 6,624 cub. yd. borrowed by hand-labour, was used for completing Taneatua station-yard and approach roads. The heavy approaches to overbridge at 99 m. 17 ch. have been completed, including metalling, and the overbridge is now in use. About 35 ch. of approach road to Taneatua Station was formed and metalled. Fillings throughout the section have been sown with grass, and formation is now complete except for a little work in station-yards and usual maintenance. 3,300 cub. yd. of rock spalls were obtained from quarry at cutting 93 m. 45 ch. for protecting the bank of the Whakatane River above the railway-bridge and the abutment and channel of the bridge at 98 m. 66 ch. A bridge consisting of two 25 ft. and one 20 ft. spans on timber pile piers has been erected at 91 m. 54 ch.; a 25 ft. span structure at 92 m. 41 ch.; a bridge with three 22 ft. spans on timber pile piers at 98 m. 66 ch.; and a bridge of four 22 ft. spans on timber pile piers at 99 m. 5 ch. All permanent bridges required on this section have now been erected and are practically completed.

The railhead has been extended from 98 m. 65 ch. to 100 m. 6 ch., and sidings laid in Peketahi and Taneatua station-yards. Over 8,000 cub. yd. of ballast from the Whakatane River has been distributed along the section, and ballasting is now well advanced, except in the station-yard, where a considerable quantity is still required. The old ballast-pit below the bridge was abandoned after the heavy floods in June and July last, and a new pit, which is being worked with a drag and scoop, was opened above the bridge with necessary siding and bins. Station buildings consisting of goods-shed, latrines, platform-front, and loading-bank front have been erected at Kiwinui; shelter-shed, goods-shed, and latrines at Pekatahi; and goods-shed, latrines, stock-yards, platform-front, loading-bank front, coal-store, outside ash-pit, 6,000-gallon vat, and 2,000-gallon vat at Taneatua, where a permanent water-supply has also been provided. Six platelayers' cottages and one Stationmaster's house are also being erected at Taneatua. Goods traffic was being run over this section as far as Pekatahi during the previous year, but a combined goods and passenger service was extended to Taneatua road-crossing in September last, and to Taneatua Station on 1st February of this year.

Mount Branch (0 m. to 4 m. 7 ch.; length, 4 m. 7 ch.).—Goods and passenger traffic is run over this line, and the usual maintenance has received attention. A further 18 in. earthenware pipe culvert has been placed at 0 m. 58 ch. Extensive repairs have been effected at The Mount wharf, including forty-eight new piles and the renewal of wales, braces, and most of the decking.

A considerable amount of work has been done at The Mount shops for departmental works in this district and other parts of the Dominion, as well as for other Government Departments and local bodies. The rolling-stock used in running traffic on the several sections of the unopened line has been kept in good order, and the work undertaken in this connection comprised repairs to eleven locomotives, three passenger-cars, and 230 wagons. Four 105 ft. steel truss spans, of a total weight of 300 tons, were fabricated for the Wairoa Bridge in Hawke's Bay and shipped to Waikokopu; ironwork was manufactured for six road-bridges in Tauranga district; and a large quantity of steelwork for a road-bridge across the Waihou River, near Thames, is in hand. A change-over from steam power to electric drive for motive power was recently made at these workshops. One 40 h.p. motor was installed to operate the compressor, and a 65 h.p. motor for the general shop plant. Electric light has also been installed throughout the workshop and in two platelayers' cottages. Washhouses have been erected for all married men employed along the line, and hut accommodation repaired where necessary.

Traffic.—As indicated under the different sections, the Department is running a goods and passenger service from The Mount and Tauranga to the present terminus at Taneatua. The gross revenue from traffic during the year amounted to £27,500.

Gisborne-Napier Railway (South End).

Tutira Section (10 m. 56 ch. to 28 m. 20 ch.; length, 17 m. 44 ch.).—The fencing of this section is practically completed except for a short length of line through unused Crown land. Ten steam-shovels have been employed practically continuously throughout the year on the earthwork, which is very heavy on this section, and good progress has been made. Work has been mainly concentrated on completion of the formation to the site of Waikoau Viaduct at 26 m. 60 ch., in order that materials for this large viaduct may be delivered by train instead of having to be conveyed by road transport, and it is hoped to achieve this result in about two months' time, when cuttings at 23 m. 35 ch., 24 m. 3 ch., and 24 m. 72 ch., and embankments at 25 m. 15 ch. have been completed.

The only large earthwork items between Waikoau Gorge and the end of the section are the cutting at 27 m. 15 ch. and an embankment immediately north of the bridge. The formation of Waikoau and Tutira station-yards is practically completed. The total amount of earthwork shifted during the year was 344,755 cub. yd., and of this quantity steam-shovels were responsible for 187,019 cub. yd., hand labour 150,316 cub. yd., and scoop teams 7,420 cub. yd.

Camps, plant, and other equipment were moved forward to Putorino and Mohaka Sections as different parts of the work to Waikoau Viaduct were finished, and a general removal of headquarters of this section from Waipunga to Mohaka Section will be effected at an early date. The culverting, except for formation drainage, had been almost completed previously, and only two water-drives and nine pipe culverts were constructed this year. The bridge at 11 m. 40 ch. has been reconstructed, the work including two 30 ft. and one 60 ft. spans, which were carried away by the flood which occurred in March, 1924. A commencement has been made with the foundations of the Waikoau Viaduct at 26 m. 60 ch.: pier C is almost completed, pier D is well advanced, and excavation for abutments A and F is in hand. The approach roads on either side have been formed, and preparations are being made for erection of the steelwork on its arrival. Platelaying was commenced on a large scale in May last, and has already reached 20 m. 0 ch. A special machine, which has been constructed for adzing sleepers, is operating with considerable benefit to the work, and it is expected that the railhead will reach Waikoau station-yard within a month, and the Waikoau Gorge about three months later. Ballasting except for boxing in, is complete as far as 16 m. 40 ch., and there is one lift on the next 2 miles.

Telephone-line construction has received attention, and the operating capacity is being brought up to the latest railway standard. Most of the timber required for the works has been supplied from the Department's sawmill at Makomako. Two extra cottages have been erected at Waikoau. Accommodation for employees on the construction work has received special attention: ninety-eight single huts and twelve married men's houses have been erected, as well as two cookhouses, and a recreation-hall at Waikoau, which has been well patronized.

Putorino Section (28 m. 20 ch. to 37 m. 35 ch.; length, 9 m. 15 ch.).—Fencing on the right of the line has been erected throughout from 28 m. 37 ch. to 31 m. 7 ch., and partly to 35 m. 8 ch.; and on the left from 28 m. 35 ch. to 31 m. 55 ch., with small lengths from there to 35 m. 8 ch. Earthworks on this section, except for the Matahoura Gorge, are much lighter than on Tutira Section, and the

formation work on it is well in hand. Most of the light work, which can be formed by scoop teams has been completed, and the heavier cuttings are now being manned and equipped with plant from Tutira Section. Two steam-shovels are now engaged on the more important work, and another two will be transferred to other cuttings shortly. A total of 74,199 cub. yd. of earthwork was shifted during the year, principally by scoop teams. Culverting had been proceeded with prior to formation work, and is still being prosecuted vigorously. Twelve pipe culverts, one arched culvert, and three water-drives were built during the year. A commencement has been made with Matahoura station-yard. Matahoura Gorge Viaduct and Sandy Creek bridges are the only large structures on the section, and the steel for the former has been ordered, together with that required for Waikoau Gorge Bridge on Tutira Section. A start will be made with the concrete foundations when the foundations for Waikoau Bridge are finished. Two concrete-block cottages are being erected at Matahoura Station. Special steel moulds have been used successfully in the manufacture of the concrete blocks. The telephone-line along this section is being reconstructed in order to carry more wires. Several road deviations have been constructed.

Mohaka Section (37 m. 35 ch. to 50 m. 56 ch.; length, 13 m. 21 ch.).—This is another heavy section, and the important points, which would otherwise hold up construction, are being equipped with plant and manned. The work so far has consisted of culverting and making approach cuttings to tunnels, of which there are three on this section. As mentioned previously, the headquarters of the construction staff on this railway will be transferred later to Kotemaori, which is in the midst of the heavy work on this section, and close to the longest tunnel on the route to Wairoa. It is unfortunate that access to this long tunnel is very awkward owing to high approach cuttings at either end, which require considerable time to complete. The unavoidable delay which has thus occurred in starting the tunnel will, however, have beneficial results in that the transport of materials to the site will be cheaper when other portions of the line are completed. Culverting has received much attention, and nine water-drives, three of which are of a large size, have been constructed. Other culverts are in hand. The approach cutting to north end of No. 2 Chimney Creek Tunnel is finished, and those at the north end of No. 1 Chimney Creek and the south end of No. 2 are almost completed. A central depot for stores, repair work, &c., and a large camp have been established between these two tunnels. The northern portal of No. 2 tunnel has been built, and a commencement made with the driving of the tunnel itself. It is expected that both of these tunnels will be well in hand this year. Earthwork material shifted during the year totalled 67,888 cub. yd.; of that amount hand-labour was responsible for 14,332 cub. yd., and the remainder is divisable almost equally between steam-shovels and scoop teams. In order to house the employees on this section it has been necessary to create a large camp at Chimney Creek, and in addition to the large number of required dwellings, a small temporary recreation-hall has been provided pending the arrival of the larger building from Tutira.

Waihua Section (50 m. 56 ch. to 58 m. 58 ch.; length, 8 m. 2 ch.).—The large tunnel approach cutting at 52 m. 70 ch. is finished, an approach road has been constructed and metalled, a water-drive built near the tunnel-mouth, a commencement made with the boring of the tunnel, and arrangements made for delivery of metal for concrete lining. No other work has been undertaken on this section except telephone-line construction.

Wairoa Section (58 m. 58 ch. to 70 m. 14 ch.; length, 11 m. 36 ch.).—Small lengths of fencing have been erected. This, generally speaking, is a light section, and operations so far have been confined to the length of about 2 miles adjacent to Waihua Tunnel, which, with the Wairoa River Bridge, is the largest job on the section. The northern approach to the tunnel is finished, but the southern approach is still in hand. Here a cutting is being excavated where it was originally intended to tunnel, owing to unsuitable tunnel country being encountered. A start will shortly be made with the tunnel portal. Nine culverts have been built, and two road-deviations have been formed and fenced, and are now being metalled. The steel has been obtained and is being fabricated at Mount Maunganui workshops for the Wairoa River Bridge, which consists of four 105 ft. spans and two short landing-spans. Arrangements have also been made for cylinder-sinking. 31,500 cub. yd. of earthwork was shifted during the year, and of this a steam-shovel was responsible for 12,000 cub. yd., scoop teams 10,000 cub. yd. and hand gangs 9,500 cub. yd. A road has been constructed to Waihua Beach, where a large quantity of metal has been obtained for tunnel, culvert, and roading purposes. It is proposed to complete this section at an early date, in order that materials for the heavy work on Mohaka and Waihua Sections may be conveyed by rail from the Port of Waikokopu.

Waikokopu Branch Railway.

Nuhaka Section (0 m. 41 ch. to 17 m. 12 ch.; actual length 18 m. 24 ch.).—The formation of the Wairoa station-yard is being expedited, and 8,600 cub. yd. of stripping from the Wairoa ballast-pit has been placed in the yard, 32 ch. of access road formed, 32 ch. of fencing erected, and 50 ch. of ditches cut. A goods-shed 60 ft. by 30 ft. is nearing completion, and will be available for goods traffic in about two months' time when the access road and a line to same will be ballasted. The water-supply for this section is being obtained under arrangements made with the Wairoa Borough Council, and a permanent connection has been made to the borough supply. The Awatere Bridge at 1 m. 21 ch., consisting of three 25 ft. spans, has been completed. A bridge at 1 m. 25 ch. (five 20 ft. spans) is under construction, and a temporary bridge, 100 ft. in length, has been built to accommodate traffic during construction of the permanent bridge. This is the last bridge to be completed on the section. An additional 48 in. culvert has been provided at 4 m. 6 ch. In order to adequately maintain the section for traffic, 1,500 cub. yd. of ballast were obtained from the Wairoa pit. Strippings from the Wairoa pit and sand from the 10 m. peg have also been used to form Whakaki station-yard, where

access roads 13 ch. long have been formed and metalled, and the goods-yard area metalled. 1,100 cub. yd. of sandstone from Waikokopu has been hauled to the vicinity of 7 m., and used for protecting the bank against the Whakaki Lagoon waters. One private crossing has been completed with gates.

Waikokopu Section (17 m. 12 ch. to 23 m. 23 ch.; length, 6 m. 11 ch.).—The Nuhaka Bridge, of six 60 ft. spans, at 17 m. 50 ch., and the bridge at 21 m. 23 ch., consisting of one 50 ft., two 30 ft., and one 25 ft. spans, all on concrete piers, have been completed. Ballasting has been completed to the wharf approach, including loops in the Waikokopu station-yard. A 30-ton weighbridge has been placed on right of line at 23 m. 16 ch., and a goods service has been run over the section.

Waikokopu Harbour.—An increasing amount of shipping continues to use this harbour, and during the year additional facilities have been provided. The wharf itself is being strengthened by the addition of further spring piling. Copperwork has been repaired, &c., and a quantity of stone has been placed round the piles as a protection against scour. An anchorage beacon has been erected, and the goods-shed enlarged to cope with the increasing traffic. The principal thing, however, in connection with the year's operations has been the sinking of the hulk "Talune" to form a temporary breakwater. This hulk, which was purchased from the ship-breakers, was towed from Auckland to Waikokopu, and, after being partially filled with stone, was sunk in such a position as to form a protection from the prevailing seas. After the hulk had been sunk, the stone filling of it was completed, and the gap between the hulk and the shore is being filled with large boulders. The effect of this small breakwater has been very satisfactory, and it is now only on very rare occasions, even when heavy seas are running, that steamers are unable to work at the wharf.

The following figures show the increase in goods traffic as compared with the previous year:—

		1924–25.	1925–26.	
Boats worked the wharf		51	110	
Goods outwards (wharf)	(tons)	3,000	6,680	(not including meat).
Goods export, meat, hemp, &c., (included in above)	(tons)	..	3,730	
Goods inwards (wharf)	(tons)	3,400	2,680	(goods).
			335,000	sup. ft. timber.
Goods local (flax)	(tons)	2,900	3,500	
Goods, local, stock	(trucks)	..	367	
Total goods	(tons)	9,300	17,900	

In addition to the above most of the materials required by the Public Works Department for railway construction and other activities have been landed at this wharf. All meat exported by the Wairoa Farmers' Co-operative Company, and flax from the Wairoa Flax-mill, were railed to Waikokopu and lightered on to the Home boats, as in the previous year. Sand and live-stock have been shipped regularly to the local works.

Stratford - Main Trunk Railway (East End).

Matiere Section (0 m. to 10 m. 23 ch.; length, 10 m. 23 ch.).—The formation of this line, including tunnels and bridges as well as road overbridges and deviations, has been completed for some time, with the exception of one private crossing, and little more than maintenance was undertaken during the period now under review. Station buildings have been erected at Tuhua and Matiere, and ballasting of the line completed. No serious slips occurred this year, and goods and passenger traffic was run without interruption.

Ohura Section (10 m. 23 ch. to 19 m. 10 ch.; length, 8 m. 67 ch.).—Fencing of a total length of 3¾ miles has been erected. The main-line formation has been completed to 16 m. with the exception of a filling over Waitangata Stream at 13 m. 12 ch., where a temporary bridge is still in use. The formation is also complete from 16 m. 20 ch. to 16 m. 55 ch., and from 16 m. 68 ch. to 18 m. 12 ch., and is nearing completion between 18 m. 12 ch. and 19 m. 6 ch. The only cutting remaining unfinished is that through the watershed of the Ohura and Waitewhena Rivers at 16 m. 60 ch. This cutting, in which a steam-shovel is working, has proved troublesome on account of the swamp and old slips through which it is being cut. The total quantity of earthwork removed on the section during the year was approximately 80,000 cubic yards, 50 per cent. of which was hard papa.

Considerable work has been done in the formation of several road-deviations, and approaches to road overbridges. The formation of the station-yard at Niho Niho is almost complete, and similar work at the Kopuha siding, involving heavy embankment and the use of two steam-shovels, is in hand. Good progress has been made with the Ohura station-yard, and the completion of approach roads now in hand to both passenger and goods sidings will enable traffic to be handled when rail-head and ballast reach the station. 206 lin. ft. of concrete-pipe culverts, ranging from 9 in. to 36 in. diameter have been laid under road-diversions and station approaches, and culvert-work on this section is almost complete. Diversions of the Waitangata Stream at 13 m. 15 ch., Waitewhena River at 18 m. 12 ch., and Mangaparere Stream at 18 m. 61 ch. have been completed.

The Ohura River bridges at 14 m. 64 ch., 15 m. 47 ch., and 15 m. 68 ch., built during the year, are substantial structures with mass concrete piers and steel superstructures. The piers of a bridge over the Waitewhena River at 17 m. 36 ch. are finished; one 30 ft. girder span has been launched, the remainder of the steelwork is at the site, and riveting up of the 45 ft. span is in progress. The piers are completed of a bridge over the same river at 18 m. 12 ch., and a portion of the steelwork has been delivered at the site. Pile-driving has been completed for two concrete piers of the Mangaroa River Bridge at 18 m. 32 ch., and three timber piers. One concrete pier is nearing completion and the other is in hand.

The permanent rails have been laid from 14 m. 50 ch. to 15 m. 71 ch., and the temporary tram junction moved on from 14 m. 50 ch. to 15 m. 20 ch. The first lift of ballast is complete to 15 m. 50 ch., and six private level crossings have been completed. The settlers have had the advantages of a freight and passenger service throughout the year to Toi Toi via the temporary tramway.

Stratford – Main Trunk Railway (West End).

Raekohua Section (47 m. 40 ch. to 50 m. 60 ch.; length, 3 m. 20 ch.).—No permanent work was undertaken on this section with the exception of the erection of two platelayers' cottages at Raekohua station-yard, and operations on this and Heao Section have consisted principally of tram-line construction, erection of accommodation for workers, and preliminary work in connection with the several tunnels on these two lengths of railway. The tram-line was laid to the end of the section, 3 m. 16 ch. (tram-line chainage), including two sidings on Tangarakau Flat, and ballasted throughout. Two locomotives are employed on this tram-line hauling from Tahora materials and plant required in connection with the works, clearing slips, and running a bi-weekly passenger service, which was commenced in April last, from Tangarakau Flat to the present terminus of the opened line at Tahora. Numerous slips occurred on the tram-line, and one large one held up traffic for ten days. A road-bridge consisting of one 100 ft. hardwood truss with two 35 ft. girder landing-spans on concrete piers has been erected across the Tangarakau Stream close to the proposed railway-bridge at 50 m. 54 ch, and was used in the extension of the tram-line to Heao Section. Special attention is being given to accommodation for workmen, and the township reserve at Raekohua has been laid out for a workmen's camp, with the married quarters on the north side of the Raekohua Stream, the single quarters on the south side, and staff cottages alongside the platelayers' cottages. The buildings already erected comprise fifty-eight married quarters, seventy-three single quarters, three cottages, and two huts for staff, and a large cookhouse, which has been in use since December last. Part of Tahora School and portion of Tariki School were moved to the flat and erected there, and there are at present seventy children attending the school. Two platelayers' cottages commenced in June are well in hand. A good water-supply has been provided, the water-drive completed last year being walled in and used as a reservoir, from which a pipe leading to the camp reticulation gives a 50-lb. pressure-supply.

Heao Section (50 m. 60 ch. to 57 m. 0 ch.; length, 6 m. 20 ch.).—The country traversed by this section of railway is of a very mountainous nature, and consequently the work is very heavy and involves the driving of four tunnels with a total length of 132 ch. In order to complete the section as promptly as possible it has been necessary to undertake a considerable amount of preliminary work in order to give vehicular access for service purposes to portions of the work which would otherwise have to wait until the first tunnels were driven. As this would delay the final completion of the line, a tramway and an extensive jig-line system over the main ridge are being constructed, and are almost complete. A walking-track over this hill was formed on an easy grade, and fascined, to enable work to be commenced on the eastern end of the tunnel, and on some of the line-construction ahead, until the jig-line over the hill is finally completed. As the electric locomotives which are being used in the tunnel are 2 ft. 6 in. gauge a third rail has been laid on the 3 ft. 6 in. tram-line between the tunnel and the power-house, so that it is usable by rolling-stock of both gauges. A power-house has been erected and the plant, which was mostly transferred from Mangahao and Otira, is being installed to generate sufficient electrical energy to operate the tunnels, jig-lines, locomotives, &c. Some of this machinery is already working. A transmission-line has been run from the power-house to the tunnel, and to the top of the jig-line. The electric-locomotive power-line is being constructed, and the compressed-air line has been run from the power-house to No. 1 tunnel, and pipes laid out over the jig-line for forward work. A small dam has also been built at 3 m. 67 ch., and water-piped down for the power-house. In January last excavation was started at the approach to No. 1 tunnel, but a commencement could not be made with the actual tunnel-driving and construction ahead until May. Since then, however, good progress has been made with earthworks between 51 m. 12·50 ch. and 52 m. 5·10 ch. The first length of No. 1 tunnel at 51 m. 15·46 ch. has been excavated, and the top heading pushed ahead 12 lin. ft. The excavation for the portal is complete, and concreting of the first length and portal is well advanced. A stream-diversion to left of line at 51 m. 65 ch. is in hand, and another at 52 m. 2 ch. on the same side has been completed.

Opunake Branch Railway.

Kapuni Section (0 m. to 7 m.; length 7 m.).—The fencing of this section is complete, including approach fences for overbridges at 0 m. 43 ch. and 1 m. 22 ch., road-crossings, and station-yards. The decking has been repaired on the Hastings Road overbridge. The pulling of the track was completed, and fettling carried on by one gang.

Auroa Section (7 m. to 12 m.; length 5 m.).—Fencing has been completed. Permanent sleepers have been laid on Kaupokonui River Bridge at 7 m. 8 ch., Dunn's Creek No. 1 and No. 2 bridges, and on Otakeho Stream Bridge, at 11 m. 41 ch.; while stone protective works were completed at Dunn's Creek No. 1 bridge (west abutment); Omiri inlet (9 m. 21 ch.); Mangawhero Stream Bridge at 9 m. 41 ch. (west abutment); and Otakeho River Bridge, 11 m. 38 ch. (west abutment). All work has been completed at Auroa and Mangawhero Stations. Two private crossings have been constructed, as well as two sets of cattle-stops. The pulling and lifting of the main line has been completed. The platelaying and ballasting of the section, including station-yards, &c., are finished.

Pihama Section (12 m. to 16 m. 40 ch.; length, 4 m. 40 ch.).—The fencing of this section was completed during the year. The erection of telephone-lines is finished. All outlet and inlet drains are finished; concrete ends were placed on thirteen pipe culverts; and an 18 in. concrete-pipe culvert

was placed at 13 m. 44 ch., as well as a 12 in. entrance pipe-culvert under Patiki Road. Four sets of level crossings have been provided, and all work was completed at Pihama station-yard, including metalling, platform-ramp and loading-bank, goods-shed, station buildings, latrines, and stock-yard. The platelaying throughout the section, including Pihama station-yard and laying of permanent rails on Oeo River Bridge at 15 m. 7 ch., and Ouri Bridge at 16 m. 11 ch. was completed, as well as the second and third lifts of ballast. The erection of three concrete-block cottages for platelayers was also completed during the year.

Opunake Section (16 m. 40 ch. to 23 m. Actual length, 5 m. 70 ch.).—Fencing is complete throughout, and the erection of telephone-line is finished. All earthworks were finished, including seven cuttings between 16 m. 58 ch. and 22 m. 55 ch. Surplus material from these cuttings was used in forming Waitieka station-yard and in widening banks. One 18 in. concrete-pipe culvert, one 2 ft. concrete-pipe culvert, two 2 ft. flat-top concrete culverts, and one 6 ft. flat-top concrete duplicated culvert were constructed during the year; the wing walls of culverts at 21 m. 44 ch. were raised; and inlet and outlet drains of culverts at 19 m. 24 ch. and 21 m. 44 ch. were enlarged. The permanent sleepering and painting of Punehu River Bridge at 17 m. 52 ch., Taungatara River Bridge at 18 m. 48 ch., Mangahume Stream Bridge at 20 m. 75 ch., and the Waiaua River Bridge at 22 m. 8 ch. were completed. The eastern abutments of the Taungatara and Mangahume Steam Bridge and western abutment of the Waiaua River Bridge have also been protected with stone. Two private concrete overbridges with 9 ft. roadway have been erected at 21 m. 15 ch. and 21 m. 39 ch., and the construction of Eltham Road overbridge at 21 m. 65 ch. has been completed, and approaches raised, metalled, and fenced. Three sets of level crossings with cattle-stops were completed, as well as crossings under the Punehu and Waiaua River bridges. The platelaying of the main line and Punehu, Waitieke, and Opunake station-yards was completed and ballasting is finished throughout the section.

The work undertaken at Punehu station-yard included the completion of formation, which was heavy, and metalling, as well as completion of 9½ ch. of stone drain on left side, shelter-shed, loading-bank front and platform-ramp, and erection of gates.

At Waitaki Station the formation and metalling of the station-yard was completed, in addition to platform-ramp and loading-bank, shelter-shed, goods-shed, latrines, gates, and fencing. Work at Opunake station-yard included completion of formation and metalling, platform and loading-bank front, washout and feed-vat, pump and pipe-line, stock-yard, ash-pit, erection of gates and fencing, station buildings, foot-warmer, and lamp-shed, goods-shed, coal-shed, engine-shed, latrines, six platelayers' cottages in concrete blocks, and one Stationmaster's residence. The formation and metalling of the yard was completed, and a stone drain was also constructed from engine-shed to culvert at 22 m. 56 ch.

During the last ten months of the year a steady output was maintained from the Kaupokonui ballast-pit. A crusher was installed in December last to utilize boulders sorted out from the ballast and the crushed metal has been used for metalling on approach roads to station-yards and ballasting. The output of the ballast-pit to the 30th June was 32,000 cub. yd. of ballast, 4,382 cub. yd. of crushed metal, 1,160 cub. yd. of boulders, and 3,984 cub. yd. of stripping.

A goods service with two trains each way per week was run over the whole length of the line during the year for the convenience of settlers, and eleven special passenger-trains were run between November last and the 30th June. The only works now requiring attention on this branch are a turntable at Opunake station-yard, and three private level crossings, and arrangements have been made for handing the line over to the Railway Department during the present month.

Palmerston North Railway Deviation.

This deviation, which has been authorized for the purpose of diverting railway traffic from the centre of the town of Palmerston North, and to enable modern marshalling-yards to be constructed, was commenced on a small scale on the 1st of last month with unemployed labour, which has been engaged mostly in drainage work, and preliminary earthwork in the new goods-yard.

Hutt Valley Railway Duplication.

This work, which was commenced in April, 1925, has made good progress, and is now well on the way to completion. The crossing on the Main Hutt Road, which involved the shifting of six dwelling-houses, lifting and relaying of gas, water, and sewerage mains, and the erection of an overhead bridge and approach ramps, is complete in all details, and was finally opened for traffic in April last. Meanwhile formation work was well advanced on each side of the Hutt Road, and, on completion of the overhead crossing, permanent-way was laid and ballasted, and a connection made between the open line and all parts of the construction works, including the various factories which have sprung up along the new line. Traffic to the extent of 2,000 tons monthly is now being handled for one firm alone by the Public Works Department.

Double shifts were employed on the formation work throughout the summer months, and a drag-line, operating in the shingle-beds of the Hutt River, did splendid work, but has been severely handicapped by floods since April last. However, the major part of the formation is well in hand, and should be completed on time.

The piers for the double-track bridge, with footway, over the Hutt River are well advanced despite considerable flood difficulties, and the critical portion in the river-bed is completed. The use of a quick-setting cement in the casting of the first set of piles allowed an immediate start to be made with the driving. Fabricated steel for one track has arrived, riveting of girders is well in hand, and two complete spans have been railed to site and launched forward on their piers. The overhead bridges at Cuba Street, Randwick Road, and White's Line are under construction, and a steam-shovel is being

installed on the Gracefield Road foothills to expedite the formation of the ramps, the industrial-area line, and new Petone Workshops site. The layout of the various station-yards is sufficiently far advanced to permit of the erection of station buildings, overhead footbridges, and other appointments. Off Randwick Road a siding has been laid throughout the Mandel Estate, thus allowing factory-cut houses to be railed from Frankton to the individual house-sites on this estate. The permanent survey from Waterloo Road at 10 m. to the point of junction with the existing railway at Silverstream, 16 m. 5 ch., was completed early in the year, and a satisfactory scheme evolved for dealing with road and railway through Taita Gorge.

MIDLAND RAILWAY.

Kawatiri Section (59 m. 17 ch. to 63 m. 10 ch.; length, 3 m. 73 ch.).—The different classes of work on this length were well advanced last year, and were completed during the period now under review. The principal items undertaken were completion of formation, including the widening of some 14 ft. cuttings to 16 ft.; the erection of approximately 4 m. of fencing, and a similar length of telephone-line; erection of protective works from 62 m. 19 ch. to 62 m. 21 ch., 62 m. 30 ch. to 62 m. 33 ch., and at 63 m.; and completion of bridges at 62 m. 37 ch. and 62 m. 41 ch., as well as a road overbridge and approaches at 62 m. 74·2 ch. The laying of permanent rails from 61 m. 10 ch. to 63 m. 10 ch., including loop and back-shunt in Kawatiri station-yard, and the ballasting of the line from 59 m. 17 ch. onwards, completed the platelaying and ballasting. A passenger-platform, shelter-shed, goods-shed, latrines, and stockyards were erected at Kawatiri station-yard. A goods service was commenced for the convenience of settlers on the 1st November last. The whole section was ready for handing over to the Working Railways Department on the 26th May, but a bad slip occurred at the end of the section, and the line was taken over by the Railway Department only as far as 63 m. 8 ch.

Murchison Section (63 m. 10 ch. to 86 m.; length, 22 m. 70 ch.).—With the exception of a cutting from 63 m. 14 ch. to 63 m. 18 ch., and embankment from 63 m. 45 ch. to 63 m. 51 ch., earthwork and culverts are practically complete to 64 m. 58 ch., and formation is in hand from 66 m. 50 ch. onwards. The headquarters, including workmen's huts, stores, &c., are being transferred from Pikomanu to the site of the Gowan station-yard.

WESTPORT – INANGAHUA RAILWAY.

Cascade Creek Section (5 m. 70 ch. to 9 m.; length, 3 m. 10 ch.).—The formation from 8 m. 70 ch. to Cascade Creek at 9 m. has been finished, and approximately 3,000 cub. yd. of slips were removed during the twelve months. Culverting-work has been completed with the exception of stringers required on open culverts. The position as regards bridging is that the bridge at 6 m. 37 ch., consisting of five 20 ft. rolled-steel joist spans on pile piers and abutments, is erected; the piers and one abutment of bridge at 7 m. 65 ch. have been completed, and a temporary truss is carrying traffic; the excavation for the foundations of the piers of bridge at 8 m. 7 ch. is completed, concreting of piers C and D is in hand, and a temporary trestle is carrying traffic; the piles and abutments of Little Cascade Creek Bridge have been erected, amd the girders are in place. All the girders required for bridges have been assembled.

Platelaying has reached Little Cascade Creek Bridge, and is now being undertaken on that structure. Ballasting has been completed to 8 m. 35 ch. A ballast-pit, consisting of 5 acres in Section 250, Block XII, Kawatiri Survey District, has been fenced, and gravel from this pit has been used as aggregate for the concrete piers of the various bridges.

A survey has been made and plans prepared for the proposed coal-sidings at Cascade Creek.

LAWRENCE – ROXBURGH RAILWAY.

Miller's Flat Section (34 m. 69 ch. (approx.) to 49 m. 59 ch.; length, 14 m. 70 ch.).—This section was practically complete at the end of the previous year, and was handed over to the Railway Department on the 16th December last. A goods-train was run on three days a week until the end of November, when the settlers were given the advantages of a daily service until the line was included in the general railway system. Inwards goods consisted of 2,118 tons general goods, 310 tons timber, 398 sheep, and 36 cattle; while outwards consisted of 667 tons fruit and general goods, 92 tons timber, 525 sheep, and 19 cattle.

Roxburgh Section (49 m. 59 ch. to 58 m. 69 ch.; length, 9 m. 10 ch.).—Fencing is being erected generally on one side only, and is finished except for the Roxburgh station-yard. Formation work, which was commenced on this section in July last, is practically complete to 56 m. 9 ch., and about one-third of the formation of the remaining $2\frac{3}{4}$ m. has been finished. A telephone-line on a metallic circuit has been erected along the full length of the section. Culverting is complete except for three 4 ft. arched culverts, and two pipe culverts. Temporary bridges have been erected at the side of the permanent line at 49 m. 60 ch., 49 m. 67 ch., and 50 m. 37 ch., and are being used by work-trains. A light temporary bridge has also been erected on the centre-line at 53 m. 59 ch. for transport of spoil for fillings, and to facilitate construction of concrete piers of the permanent bridge. The foundations for the latter bridge are being excavated. The railhead has reached 53 m. 40 ch., and the first lift of ballast has been completed to 52 m. 40 ch. with ballast from a pit at 50 m. 55 ch., where a steam-shovel is operating. A Stationmaster's house and two platelayers' cottages have been erected at the Roxburgh terminus, and sites have been laid out for seven additional cottages.

OREPUKI – WAIAU RAILWAY.

Orawia Section (48 m. 23 ch. to 56 m. 41 ch.; length, 8 m. 18 ch.).—The small amount of work which required attention at the end of the previous year has been completed, and the line was taken over by the Railway Department on the 20th October, 1925. A goods service, which was commenced in September, 1924, was continued until the line passed out of the control of this Department.

SURVEYS OF LINES UNDER CONSTRUCTION, NEW RAILWAYS, ETC.

North Auckland Main Trunk.

Surveys, which entailed a considerable amount of work, have been completed in connection with the extension of the railway from Rangiahua to Mangamuka, and comparative estimates of cost prepared of the different routes. Trial surveys have also been completed for a branch line to connect Dargaville and the Kaihu Valley Railway with the main line at Kirikopuni.

East Coast Main Trunk Railway.

Paeroa–Pokeno.—Permanent pegging has been completed from Paeroa to Pokeno, a distance of 42 m., and plans are being prepared as opportunity offers. A preliminary estimate has also been prepared for purposes of economic investigation.

Rotorua – Taupo Railway.

The permanent survey has been completed from 5 m. 20 ch. to 19 m., and a further 2 m. of trial-line surveyed.

Gisborne – Wairoa Railway.

Trial lines for four routes between Gisborne and the Wairoa–Waikokopu Railway have been completed during the year. One of these routes, commencing at Nuhaka, ran up the Nuhaka River and into a 3½ m. tunnel under the Wharerata Saddle and then down the Mangakaiwharangi Stream to the Gisborne flats. Three routes were surveyed from Waikokopu up the Kopuawhara Stream. The first route necessitated a long tunnel direct from this stream into the Mangakaiwharangi, then down this stream to the Gisborne flats. Two other routes were surveyed nearer the coast, each of which, after having three tunnels of much shorter length than those on the two former routes, ran down the Kopua Stream on to the flat country at Gisborne. The plans of these four routes are now completed, and detail estimates for each will be available at an early date.

The total distance of the shorter coastal route from Waikokopu to the junction with the Gisborne Ngatapu Railway near Makaraka is approximately 33 m. Well over 90 m. of trial line have been run, and the routes have been very thoroughly considered.

Stratford – Main Trunk (East End).

Tatu Section.—Trial-line surveys are being carried out to estimate the respective merits of various routes between Ohura Station and the Heao Valley, but are not yet sufficiently advanced to enable a decision to be reached.

Stratford – Main Trunk (West End).

The survey and permanent pegging of the main line and deviations to 57 m. on Heao Section were completed, and plans prepared.

Midland Railway (Nelson End).

The land-plan survey of the Kawatiri Section has been completed, and the permanent-line survey between 73 m. and 74 m. on Murchison Section. The proposed route between the latter point and 82 m. over which trial line has been completed follows the right bank of the Buller River, but over the next 8 m. trial lines are being run on both banks of the river in order to determine which is the more favourable for railway-construction.

South Island Main Trunk Railway.

In order to determine the best route between Parnassus and the Kahautara River on the above line of railway a trial survey has been made for a distance of 16 m. from the Charwell Valley, down the Greenburn Valley, across Sawyer's Creek, Kahautara River, Linton Creek, and Cribb Creek to connect with the former survey from Kaikoura.

Portion of the line now dealt with had been previously surveyed some considerable time ago, but on the basis of 1 in 40 grades which would not be acceptable for present day practice.

The country traversed is very steep and difficult, and the cost of construction will be very high.

Westport – Inangahua Railway.

The centre-line has been pegged and levelled and cross-sectioned from Cascade Creek (10 m.) to 18 m. 68 ch. and from this point a trial line has been pegged, levelled, and cross-sectioned to 25 m. 50 ch., where the survey connects with the previously surveyed line from Reefton at the 60 m. 16 ch. peg. The plans, &c., are now being prepared.

Otago Central Railway—Cromwell Northwards.

The trial survey of the route via Lowburn, crossing the Clutha River at Cromwell and at Bendigo, has been completed to 71 m., and alternative routes and bridge-site have been surveyed at the gorge in Cromwell.

CONSTRUCTION AND MAINTENANCE OF ROADS AND BRIDGES.

Kirikopuni–Parakao Road (Whangarei and Hobson Counties).—A modern road thirteen miles in length has been formed from the terminus of the North Auckland Main Trunk Railway at Kirikopuni Station to Parakao in the Mangakahia Valley. The majority of the bridges have been erected, and two miles and a half have been metalled 14 ft. wide from the junction with the Whangarei–Dargaville Main Highway at Kirikopuni Township. It is proposed to dump metal from Tauraroa Quarry during the present winter, and to metal another three miles to the junction of the Pekapekarau Road in the spring, and to also instal a crushing plant in the middle of the remainder of the road and complete the metalling from that quarry.

Iwitaua Road (Hokianga County).—161 ch. of road has been formed. This is an important connection between Hokianga, Mangonui, and Whangaroa Counties.

Mangamuka–Victoria Valley Road (Hokianga and Mangonui Counties).—78 ch. of road has been widened, 103 ch. metalled, and 280 ch. blinded.

Mohuiti Road (Hokianga County).—102 ch. of road has been formed. This is one of the most important connections in Hokianga between Broadwood and Mangamuka.

Duncan's Road (Mangonui County).—106 ch. of road formed.

Herekino—Whangape Road (Mangonui County).—690 ch. of road re-formed.

Kaiangaroa–Fairburn Road (Mangonui County).—141 ch. of road formed; four stock-bridges erected.

Kaitaia–Herekino Road (Mangonui County).—67 ch. have been felled, 135 ch. formed, and one stock-bridge erected.

Lake Ohia–Taipa Road (Mangonui County).—92 ch. formed and 36 ch. metalled.

Mangonui–Stony Creek Road (Mangonui County).—71 ch. formed and 102 ch. metalled.

Oruru Fern Flat–Mangamuka Road (Mangonui County).—Widening road to 16 ft. has been in hand over a length of 416 ch., and 82 ch. has been felled. 42,000 sup. ft. of kauri and totara has been cut and delivered to depot.

Takahue–Herekino Road (Mangonui County).—Re-formation has been carried out over a length of 490 ch.

Waipapakauri–Hohoura Road (Mangonui County).—186 ch. have been cleared. Formation has been in hand over 524 ch. This is part of the Far North roading scheme.

Waipapakauri–West Coast Road (Mangonui County).—102 ch. formed and 11 ch. fascined.

Whakapaku Road (Mangonui County).—108 ch. of road formed.

Aponga–Titoki Road (Whangarei County).—100 ch. of road formed.

Mareretu–Waikiekie–Keays Road (Whangarei and Otamatea Counties).—The following work has been completed: Stumping, 74 ch.; re-formation, 102 ch.; formation, 204 ch.; drains, 25 ch.; eleven culverts; slips cleared, 2,153 yd.

Parua–Taheke Road (Whangarei County).—156 ch. of formation completed.

Waimatenui Road (Whangarei County).—236 ch. of formation completed; an important connection to Mangatapere–Kaikohe Main Highway junctioning at the Mangakahia Bridge.

Tutamoe Road (Whangarei County).—131 ch. of formation completed.

Waipu–Oakleigh Road (Whangarei County) (Substitution of Road for Railway).—During the year all the formation works were completed, all the culverts built, and fourteen bridges erected. The bridges are on ironbark pile piers with superstructure of rolled steel joists and hardwood decking, &c. The Waipu end of the road was metalled from Alison's quarry, which was opened up in the neighbourhood of 12 m. 20 ch. Access to this quarry involved the metalling of 1¼ m. of Alison's Road. At the Oakleigh end a temporary railway-track was laid for a distance of 8 m. and metal for this end was obtained from the Tauraroa Quarry. After the new year eighteen 1½-ton trucks were engaged on contract carting the required metal from the dumps along the road. Steam-shovels were installed to load the lorries. The road was completed before the end of June, 1926, and the metalling of the whole 17 m. length occupied about four months and a half. Traffic was turned on to the new road from the 3 m. peg to Waipu in May, and on to Oakleigh as soon as the weather broke badly. Maintenance gangs are now employed attending to removal of flood damage and to ordinary maintenance work.

Kahoe–Hill–Stony Creek Road (Whangaroa County).—Metalling has been in hand over a length of 71 ch.

Oika Road (Whangaroa County).—150 ch. of formation has been completed.

Hoteo River Bridge (Mangakura Road) (Rodney County).—263 ft. long of three 39 ft. and five 29 ft. spans, ferro-concrete pile piers, and steel joist superstructure. Abutments and piers all completed, and also superstructure on six spans and steel joists only on the remaining two spans. One approach is also in hand.

Coromandel–Colville Road (Coromandel County).—A total length of 5 m. 73 ch. has been completed, of which 1 m. 32 ch. was carried out during the period. Extensive slips have been cleared and culverts put in.

Awaroa–Mahoe Road (Kawhia County).—6 m. 35 ch. of road widened and handed over to local body; 17 ch. in bad places metalled 9 ft. by 8 in.

Kawaroa Road (Kawhia County).—4 m. 53 ch. formed 12 ft. and 14 ft. wide.

Oparau Bridge No. 2: (Oparau Block Road) (Kawhia County).—Bridge of one 61 ft. truss and one 20 ft. stringer span on driven piles has been erected. The formation of approaches is nearing completion.

Waipa River Bridge (Tauraroa Valley Road) (Otorohanga County).—Contract completed for erection of bridge of 110 ft. span, P.W. truss design on concrete abutments, with land span of 20 ft. Approaches are now in hand.

Makomako Road (Raglan County).—1 m. 37 ch. re-formed and widened to 14 ft. and handed over to local body.

Crosbie Settlement Track (Thames County).—2 m. 41½ ch. of road constructed to date. Most of the excavation is in heavy rock. 81½ ch. were constructed during the period.

Tapu to Coroglen Road (Thames County).—Tapu Section: On this section the road has been reconditioned, culverts put in, and slips cleared.

Taranoho Section: This road is now complete to 7 m. 9 ch. and is in hand to 8 m. 19 ch., of which 85·25 ch. are complete. During the period 96 ch. have been constructed, slips cleared, and numerous culverts placed.

Coroglen Section.—Completed work extends to 3 m. 40·5 ch., of which 71½ ch. have been constructed during period. Both light formation and solid rock have been encountered. Several slips over the whole length have been removed and culverts placed.

Orakei Block Roads (Auckland Suburbs).—Road-lines have been traversed and levelled over most of the block to enable roads to be located. Formation has been commenced as a relief work for unemployed on the road running northwards from the Orakei Bridge.

Opotiki – East Cape Road (Opotiki County).—A further 3 m. of formation has been completed, and material assembled for the Hawai Stream Bridge and the Torere Stream Bridge. A contract for the erection of these bridges has just been let. A further 2 m. of surfacing has been finished, and road as far as the Motu River is now in good order.

Opotiki–Matawai, via Waioeka Road (Opotiki County).—A further 2½ m. of this road, in very heavy work, is practically finished. Considerable slips have occurred, which have delayed the completion of the present contract. The whole road suffered severely from the heavy floods of May, June, July, 1925. Materials have been delivered for the Omaukoro and the Sulphur Creek Bridges, and tenders let for the erection. An engineering survey of a further 3 m. has been made, and tenders for further sections will be called immediately. A small amount of work has been done on other roads in the Waioeka Valley—viz., Moody Road, Oponae and Waiata Roads.

Great West Road (Rotorua County).—About 1½ m. has been formed 12 ft. wide.

Rotorua–Tauranga Direct Road (Rotorua County).—About 1 m. of road has been metalled on various sections, while the Mangapouri Bridge, consisting of one 40 ft. and two 30 ft. R.S.J. spans, and one 16 ft. timber span on concrete piers, is practically finished. The construction of an important deviation in the Mangapouri Gorge has just been let by contract.

Pukehangi Road (Rotorua County).—1½ m. of formation completed.

Rotorua–Atiamuri Road (Rotorua County).—A considerable amount of work has been done on this road. About 5 m. has been re-formed with necessary culverts and side drains; 1½ m. of surfacing has been completed.

Rotowhero–Galatea Road (Rotorua County).—2 m. of this road has been re-formed.

Okahu River Bridge (Whakatane County).—Timber has been delivered to this site, and a start has been made with the erection.

Ruatahuna–Waikaremoana Road (Whakatane County).—3 m. of 14 ft. of formation has been completed, and road is now finished to the school site and Mission House at Huiarau.

Te Whaiti – Ruatahuna Road (Whakatane County).—Considerable flood damage has been repaired on this road, and repairs to the Mimi Creek Bridge have been carried out.

Urewera Road (Whakatane County).—Between 0 m. and 20 m. 40 ch. the road is being maintained, and the extraordinary flood damage caused in June, 1925, has been repaired. This involved shifting 35,000 cub. yd. of slips and widening, in addition to minor repairs to culverts. Small bridges (at 2 m. 3 ch.) 50 ft. long and (at 5 m. 46 ch.) 55 ft. long have been completed. Bridge across Waimana Stream at 3 m. 70 ch., consisting of one 80 ft. one 25 ft., and one 15 ft. span is almost completed. Timber has been delivered for small bridge at 8 m. 24 ch., and for the 80 ft. truss bridge at 10 m. 35 ch. Timber is being cut in the bush for the bridge at 17 m. 62 ch. During the year a small petrol-driven sawmill plant was erected at the 13 m. peg, and 20,000 sup. ft. of bridge timber has been cut out. Between 20½ m. and 25 m. 5 ch. a 6 ft. track has been repaired sufficiently to let traffic through. A further 37 ch. of track between 32 m. and 33 m. was completed, and 80 ch. between 34 m. 5 ch., and 35 m. 5 ch. Between 35 m. 5 ch. and Maungapohatu 2 m. of track is in hand, while 4 m. 30 ch. of this section has been laid out.

Waimana Bridge at Waimana (Whakatane County).—This bridge, consisting of three 61 ft. and one 20 ft. span has been completed.

Tuaraiangaia Block Roads (Whakatane County).—A 6 ft. track has been carried from 2½ m. to 4½ m. and this work is now completed.

Huirua Block Road (Waikohu County).—2 m. 47 ch. of formation have been completed, and sixteen culverts, totalling 336 lin. ft., have been installed.

Repongaere Settlement Road (Cook County).—35 ch. of metalling completed on this road.

Waimiha – Ongarue Road (Ohura County).—2 m. 66 ch. of formation completed.

Kiritehere Road (Waitomo County).—2 m. 7 ch. of formation completed.

Whakamaro Road (Waitomo County).—1 m. 54 ch. of formation completed.

Kopaki – Mangapeehi Road (Waitomo County).—2 m. 24 ch. of formation in hand.

Waipa River Road (Ranganui Section) (Waitomo County).—1 m. 12 ch. of formation in hand.

Raetihi–Ohura (Harris' Hill Deviation) (Waimarino County).—This important deviation was completed during the year, 1 m. 1 ch. being constructed.

Whangamomona Valley Road (Whangamomona County).—80 ch. of formation completed. This gives access to the last section down the river at present.

Moeawatea Ridge Road (Eltham County).—2 m. 48 ch. of formation completed. Most of this has now been gazetted a county road.

Popoekoea Bridge (Dannevirke County).—This bridge, consisting of two rolled-steel joist spans with timber deck on concrete piers, has been completed.

Tutira – Pohokura Road (Hawke's Bay County).—The formation 6 m. to 8 m. has recently been put in hand as a relief work to help to reduce the number of unemployed.

Erepeti Road (Waipaoa Block) (Wairoa County).—This work is in hand. 95 ch. have been formed, and one 4 ft. box culvert has been installed and a 6 ft. by 5 ft. drive at 2 m. 48 ch., has been completed.

Mangawhero Stream Bridge (Tutaekuri Block Road) (Wairoa County).—This bridge, which is 71 ft. long, has been completed, together with the approaches.

Waiau Stream Bridge No. 2 (Wairoa County).—This work is now in hand. The material has been ordered, and most of it is at the bridge-site.

Tinui – Pakowai Road (Castlepoint County).—32 ch. metalled, 120 ch. dray-road formed, and 176 ft. culverts placed.

Tuturumuri Soldiers' Settlement Roads (Featherston County).—110 ch. of dray-road formed.

Otamapopua Soldiers' Settlement Road (Kiwitea County).—138 ch. of dray-road formed.

Motukai Settlement Road (Masterton County).—18 ch. of dray-road formed; 118 ft. of culverting placed.

O'Brien's Road (Masterton County).—85 ch. of road metalled.

Coalgate – Lake Coleridge Road (Selwyn County).—General maintenance has been carried out.

Double Hill Runs Road (Ashburton County).—The contractor has completed the deviation from 5 m. 23 ch. to 5 m. 36 ch. (Todhunter's), consisting of formation, pipe culverts, and metalling; also a deviation round Terrible Gully, consisting of formation, open fords, and metalling.

Pukaki – Mount Cook Road (McKenzie County).—The 40 m. from Pukaki to the Hermitage has been maintained and improved during the period by metalling, putting in pipe culverts, clearing slips, water-tables, &c. 2,664 cub. yd. of pit-gravel has been carted out and spread on the road, 257 cub. yd. of boulders carted out and filled into washouts, 43 cub. yd. of boulders placed in gabion nets to divert the Twins Creek, and 275 cub. yd. of slips cleared out of cuttings; 92 lin. ft. of 12 in. and 16. lin. ft. of 18 in. concrete-pipe culverts have been put in, and 50·1 ft. of concrete pipes have been made on the ground ready for laying. The Twins and Bush Creeks have given considerable trouble during the year on account of so much rain in the locality, but the whole length is now in fair order for traffic.

Ashley Gorge Road (Ashley and Oxford Counties).—The 12 m. from the Main–Rangiora–Oxford Highway to the Lees Valley has been maintained and improved during the period by clearing slips, water-tables, filling in ruts, and putting in earthenware-pipe culverts to take the place of the old storm-drains; twelve sets of pipe culverts have been put in, and eight more sets have still to be put in to complete the work. The heavy rain during the months of September and December brought down a lot of slips and scoured the road badly in places. Also the September flood again damaged the Ashley Gorge Bridge.

Coalgate – Lake Coleridge Road (Selwyn County).—34 m. have been maintained and improved by metalling, grading in loose shingle and filling in ruts, clearing slips and water-tables, repairing bridges, &c.; 7,500 cub. yd. of pit-gravel broken to a 2½ in. gauge and carted out and spread on the road. The Horarata Bridge has been repaired by putting in two new stringers, eight new deck-planks, and new running-planks throughout. A 16 ft. span bridge, 17 ft. road-way, has been erected to take the place of the concrete culvert which had broken down. The road is in fair order for traffic throughout.

HYDRO-ELECTRIC WORKS.

Horahora.

Good progress has been made with the construction work which is being carried out at Horohoro with the object of increasing the capacity of this station, and practically all that now remains to be done to complete the work is the concreting of the balance box for the Ransome-Rapier gate, the sealing with concrete of a constructional opening under the Boving gate, and the erection of a light footbridge along the crest of the weir.

During the period the construction of the permanent weir and three gates was pushed along. While the Glenfield and Kennedy gate was being excavated, the foundations for the Boving gate were excavated and concreted, and after the completion of the Kennedy gate the water was diverted through it.

The old timber and stone weir was raised at the south end for a length of 300 ft. by stone gabions and sandbags, which effectively sealed the greater portion of the river from the south channel.

A secondary gabion dam, sealed with fine gravel and earth, was constructed in front of the Ransome and Rapier gate site, and the excavating and concreting for the gate piers and adjoining weir sections were then completed.

As it is considered that there will be considerable traffic between Horahora and Arapuni, improvements are being made on the road in order that it may be passable under all weather conditions.

Arapuni.

The Arapuni hydro-electric development scheme, which is being constructed under contract by Messrs. Sir W. G. Armstrong, Whitworth, and Co., has made substantial progress during the year, and the following is a brief statement of the work undertaken during the twelve months by the contractors.

Almost 3 m. of Putaruru–Arapuni access road has been metalled on the original gravelled surface. The permanent reticulation and lighting for the village, the sewerage system, and a portion of the telephone system have been completed, as well as a concrete reservoir for water-supply to the village, the reservoir now being in use. Water-mains have been laid to a point near the west end of the suspension bridge, and a temporary water-supply is being provided from Huihuitaha Stream.

The tunnel to divert the Waikato River is nearing completion. The first 400 ft. from the outlet end were in good-standing, fairly hard tuff, and no timbering was necessary in this length. The following 270 ft. were in similar material, which contained large heads, and had to be securely timbered. 50 ft. at the intake were driven in fine tuff, which required close timbering, and which broke away above the timber. This was removed after the concrete lining had been placed, and the space packed with rhyolite stones in concrete.

It is intended to remove the barriers at the inlet and outlet ends of the tunnel by driving galleries and drilling holes; then firing an extensive series of charges of explosives, and leaving the river to carry the debris away. The galleries at the inlet barrier have been driven, and most of the holes for receiving charges in outlet barrier have been drilled. It is anticipated that both series of charges will be fired during July.

The valve shaft from which the heavy gates to close the tunnel will be operated has been concreted to a height of 56 ft. 6 in. from the tunnel invert. The cast-iron frames for the sluice-gates are concreted in position, and the gates which were assembled on the surface are now being erected at the bottom of the shaft.

Preparatory work for the making and placing of stone gabions to form the upper auxiliary dam, which will divert the full river-flow into the tunnel, was commenced some months ago, and fourteen gabions, each weighing approximately 5 tons, have been placed in the river. A large electrically operated crane, capable of lifting 10 tons, with a mast 110 ft. high and a jib 90 ft. long, is being used for this purpose.

The cut-off wall on the west side of the main dam is excavated and concreted, and the east cut-off wall is partially excavated and concreted. Delay has occurred with the latter wall owing to cracks in the country, and for this reason portion of this cut-off wall has been excavated down to level 142 ft., which is 33 ft. below the level of the cut-off wall shown on contract drawings. The cracks are still open at level 142, and it is proposed to attempt to seal them with cement grout.

Pending completion of diversion of the Waikato River, not a great deal of work could be done on excavation for the main dam. However, 3,590 cub. yds. of concrete have been placed in the dam abutment, mostly by chuting.

Excavation of the head-race at the inlet was continued by hydraulic sluicing, and after the harder material near the inlet was passed, good results and progress were obtained by this method in the light pumicious material. At the north end excavation was continued by hand, and the whole length is now practically completed.

Further excavation of the eight recesses for the Penstock gates has been done.

The excavation of the spillway weir extension has been carried on almost continuously, and is nearing completion. A start was made during June with the concreting of spillway at the east end.

Excavation for the power-house and machinery foundations, although nearing completion, has been practically at a standstill for some months owing to difficulty experienced in constructing a coffer-dam along the river-edge. This latter was started in January, and is unlikely to be completed at the present rate of progress until early in August.

In excavating the foundations, a fine tuff, which is inferior in strength to the coarser tuff above, was met with at about level 158. Three trial holes sunk by the contractors indicate that the stronger and coarser tuff will be reached again at a level suitable for the foundations as first proposed by them.

A large quantity of the structural steelwork and steel reinforcement for the power-house building is on the site and at Putaruru Railway-station.

A commencement was made in October with the excavation of Penstock Tunnels. At first 8 ft. by 6 ft. pilot tunnels were driven from the power-house end on line and grade for the full lengths, and these are being enlarged to full size, working from the inlet downwards. The ground pierced by these tunnels is fairly good, and timbering has only been necessary through the columnar rhyolite, not because it is heavy country, but to prevent small pieces falling on workmen. Satisfactory progress is being made with the enlargements, and the steel linings are on the site. Excavation of the pitometer chamber is in progress.

The levelling of the site of the outdoor transformer station has been completed, and the excavation and concreting of the foundations for three turntables has been done. A substantial portion of the galvanized-steel framing is on the site, as well as turntables, trucks, and steel frames for outdoor building.

The erection of the high-level suspension bridge over the Waikato River was carried on spasmodically during the year, but is now nearing completion. The erection of the wire netting sides, tarring and sanding of the deck, and painting of the steel tower still remain to be done.

The nearest practicable source of stone for aggregate for the concrete in these construction works is at Muku Creek, 9 m. in a direct line up the Waikato River from the site of the works. This quarry has been opened up, and the contractors have provided and erected an aerial ropeway for transport of the stone as crushed. This ropeway was completed and trial runs made in November, and has worked satisfactorily except for minor adjustments. This ropeway and all the machinery at the quarry are driven by electric power supplied from Horahora over a 11,000-volt transmission-line erected by the contractors between Arapuni and the quarry. The plant for the quarry was transported by launch and barge on the Waikato River from a point 2 m. above Arapuni. The con-

tractors are now installing a steam-shovel at the quarry-face for the more expeditious handling of the stone there. The quarry stone is of good quality greywacke, and concrete made with it has given good tests. Sand for concrete is being obtained from Waiteti Flat ½ m. below the power-house site, and although it contains a percentage of pumice, satisfactory tests are being obtained.

The rainfall for the twelve months was 62·83 in.

Waikaremoana.

A commencement was made last April with the preliminary work in connection with the first stage of the Waikaremoana hydro-electric development. The normal discharge from the lake emerges from undergound channels at a level of about 450 ft. below the lake, and the water in river originating here will be conveyed to a power-house situated at an elevation of 650 ft. below outfall. The development now contemplated is the installation of two 20,000 k.v.a. units.

The present small installation is being enlarged to generate extra electrical current which will be required for construction purposes. Preliminary work, such as the erection of accommodation for workmen, transfer of construction plant, &c., is being actively prosecuted in readiness for commencing the major scheme at an early date. The testing of foundations for the principal works has also been continued, and a start made with the diversion of the river to Lake Kaitawa as well as preliminary work on intake to pipe-line from that lake.

Mangahao.

Although this scheme has now been in operation for nearly two years, there were still a few items connected with construction which required attention last year. A footbridge of 28 ft. span was erected for access to the pipe-line in place of the tram-line bridge. Some excavation and levelling were undertaken on the front and side approaches to the power-house. 59 lin. ft. of retaining-wall was erected, and 433 ft. of drain placed. The headworks of the water-cooling system were also completed.

Engineering surveys, plans, and cross-sections were made of 5 m. 45 ch. of the Mangaore Stream tail-race, extending from the power-house to the Manawatu River. Four bridges, of a total length of 253 ft., were erected over this tail-race, 1,100 ft. of 4 ft. by 4 ft. gabions placed, and 750 ft. of log and fascine protection.

Stone pitching on the embankment of the Mangahao No. 1 dam was completed, as well as 205 lin. ft. of parapet wall. As the rock-faces in the gorge immediately below the dam were being scoured somewhat by the discharge over the automatic gates of the large overflow of water during floods, it was considered advisable to trim and bench the rock abutting the dam on both banks, and to protect it with a heavy reinforced-concrete facing.

The Wanganui Substation, which comprises switch-room, workshop, garage, oil-stores, stable, and two cottages, has been completed, as well as the substation at Waipukurau, and some small additional work at Dannevirke, Masterton, and Mangamaire Substations. The Napier Substation buildings are nearing completion.

Mangahao Upper (No. 3) Dam.—This dam formed an essential part of the original scheme for the development of power at Mangahao, but it was decided to delay the construction of it until the other two dams had been completed. Its relative value for storage purposes is shown by the following data, giving the effective volumes of the respective dams: Tokomaru dam No. 2 (completed), 44,600,000 cub. ft.; Mangahao dam No. 1 (completed), 65,800,000 cub. ft.; Mangahao dam No. 3, 168,000,000 cub. ft.

The extension of the service-road in the Mangahao Valley from No. 1 dam was completed to the new dam-site, and opened for traffic on 30th October, 1925. The work undertaken on this road during the year included the formation and metalling of 2 m. 54 ch. and the placing of 843 lin. ft. of concrete culverts, as well as the erection of a hardwood timber bridge, 129 ft. in length, with concrete piers and abutments, over Blackwood's Creek; a bridge 33 ft. long, in local timber, over Tram-line Creek; and a bridge, 180 ft. in length, in local timber and multiple cable, over Mangahao River. The road-excavation was unusually heavy owing to the steep nature of the country, and included the removal of some extensive slips.

In order to facilitate an early start with the construction of the No. 3 dam, a considerable quantity of construction plant and material was conveyed up No. 1 dam reservoir by launch, and then by tram-line with petrol-locomotive traction, before the construction of the service-road. A light tram-line suspension bridge, 144 ft. long, has been erected across the Mangahao above the dam-site. The necessary bushfelling and clearing was carried out along the new road for the transmission, telephone, and water-level-indicator lines, which were extended and completed over the 3 m. to No. 3 dam. The capacity of the transmission-line was increased subsequently by partly duplicating and partly relaying between the dam-site and the power-house. The substation with the necessary transformers, switchboards, &c., was also completed in October.

The provision of accommodation for workers involved fairly extensive bushfelling, clearing, and excavation owing to the limited area of level ground available. Buildings erected include three bathhouses, a large cookhouse complete with a baker's oven, Y.M.C.A. hall, school, four staff cottages, sixteen married quarters in timber, twenty-one married quarters (part timber and part tents), hut accommodation for 158 men, and tent accommodation for 78, together with water-supply, sanitation and drainage, electric light, roads and tracks. The organization and activities of the Y.M.C.A. have done much to improve the social conditions and interests of the men. Practically all service buildings required have been erected.

Borings have been taken with a keystone drill over the area of the dam-site in order to determine the geological formation of the old alluvial terraces.

The excavation of the dam foundation to bedrock is practically complete with the exception of the under-water section in the gorge; and, including the core-wall trench, which has been completed to a width of 5 ft. and maximum depth of 69 ft. for a distance of 410 ft., the excavated materials total almost 16,000 cub. yd. The core-wall trench was developed on three-shift work by sinking shafts, driving along the bottom levels, and stoping upwards. It is timbered throughout.

A by-pass tunnel of 8 ft. diameter and 352 ft. long was driven through rock on the side of the gorge. A gate shaft, 9 ft. by 5 ft. by 51 ft. deep, has also been completed through rock for this tunnel, and the invert of the tunnel has been concreted throughout, together with 96 ft. of arch.

The main crushing, screening, and mixing plant is being established on the hillside above the gorge, at a sufficient altitude to eliminate concrete hoisting plants. A quarry with excellent rock has been opened up adjacent to the crushers, although the main aggregate supply will be shingle from the Mangahao River. Two shingle-trap crib dams were constructed in the river in connection with this shingle-supply, but were destroyed by a severe flood before they were finished, and another dam of heavier construction has been erected. Completed excavation for bins, quarry-line and hauler-line totalled 3,560 cub. yd. 414 ft. of trestled hauler-line have been erected. A supplementary crushing and screening plant for concrete work on the core-wall, by-pass tunnel, &c., has been erected near the fine shingle deposits formed at the head of No. 1 dam reservoir. The lay-out includes 555 ft. of trestled incline tram and a reserve shingle-dump in which 2,800 cub. yd. have already been placed. A stand-by quarry has also been opened adjacent to the crusher. Timber required in connection with the No. 3 dam and other sections of the work has been obtained from the departmental sawmill at Arapiti, which had an output of 650,000 sup. ft. for the year. 9,800 ft. of tram-track have been laid in connection with these plants and the general lay-out.

Lake Coleridge.

Good progress has been made with the duplication of this installation, and the work was almost completed at the end of the period.

The construction of the tunnel itself, which was carried out under contract by Messrs. Beban and party, has been completed, a total length of 58·61 ch. having been excavated and 64·36 ch. of lining having been placed in position.

The contractors experienced considerable difficulty on account of the large amount of water met with, especially at the faces worked from the centre shaft. The water flowing up through the shingle in the floor of the tunnel also made the placing of the invert concrete a difficult operation. At the outlet end of the tunnel a serious fall of earth occurred which resulted in the loss of three men's lives. Owing to the porous nature of the ground and the considerable water-pressure behind it it was found necessary to force cement grout in behind the lining in portions of the tunnel and surge-chamber, 15 ch. of the tunnel being treated in this manner.

In order to make a suitable inlet connection with the tunnel a large circular steel caisson was sunk 25·5 ft. into the lake-bed, or 46·5 ft. below the lake-level. The sinking of this caisson was commenced by excavating the material with an orange-peel grab; sinking had not, however, proceeded very far before rock was met with, and it became necessary to use compressed-air methods. The rock itself was very broken, and one of the principal difficulties which arose was due to the fact that the whole periphery of the caisson, which is 19 ft. external diameter, was not in rock, a crevice about 5 ft. deep existing on the outer edge. The material in the crevice was, however, grouted into a solid mass, and obviated any further sinking of the cylinder.

After the completion of all other work in connection with the intake a log grid was placed on the caisson and the temporary top removed. This latter operation was effected by raising the bulkhead used when sinking under compressed air and thus enabling the top to be floated off when water was let into the subaqueous tunnel. The remaining 15 ft. of excavation and the lining of the subaqueous tunnel were completed after the sinking of the steel caissons.

The lining of the gate shaft was carried out, and further excavation was undertaken at the mouth of the gate shaft in order to avoid slips.

The cross-drive from the gate shaft towards No. 1 tunnel was excavated and concrete-lined with the exception of 10 ft. near No. 1 tunnel. This will be left until No. 7 and 8 generators are in commission, when it will be possible to shut down No. 1 tunnel and complete the work. The two head-gates for the No. 2 tunnel and the one for the cross-drive have been installed.

The excavation and lining of the surge-chamber was completed, and the three Penstock gates were placed in position. The small connecting-drive between the new and the old surge-chambers was also completed, and the gate at the new surge-tank installed. The third pipe-tunnel leading out of the surge-chamber was excavated, and the three tunnels concreted and the pipes placed therein.

The concrete piers for supporting the pipe-line between the surge-chamber and No. 1 anchor-block were completed. All concrete anchor-blocks were also completed as the pipes were laid.

The pipe-line, which was built under contract, has been practically completed, and the power-house was finished early in the period by the contractors.

The excavation of the new tail-race and the widening of the existing tail-race, involving 11,500 cub. yd. of material, was carried out largely by means of a drag-line, and was completed comparatively early in the period.

RIVER IMPROVEMENT AND PROTECTIVE WORKS.

Wairoa River.

Tokatoka Stop-banks.—During the year the extensive construction of new stop-banks along the Wairoa River frontage of the Ruawai Flats, to replace the original inadequate stop-banks for protection against flood waters and high tides, has continued. Work is being done by drag-line excavator, a total of 5¼ m. of stop-bank, and 1 m. of "G" and Smith's canals enlargement, representing in the aggregate 108,500 cub. yd. of earthwork, was done during the twelve months. Three 3 ft. culverts and one 4 ft., all with flood-gates, were built, and in addition 600 cub. yd. of rock spalls were deposited as foreshore protection along a length of the completed stop-banks.

Aratapu Drainage.—The widening to 20 ft. of 47 ch. of the outlet to Aratapu Creek has been completed; the Hobson County Council contributed towards the cost of the upper 18 ch.

Waihou and Ohinemuri Rivers.

This major work of rivers improvement, and protection of adjoining lands from flooding, has again made substantial progress this year.

Upper Waihou River.—The stop-banks on this section are now complete, the bulk of the work for period consisting of soiling and grassing of about 2½ m. of stop-bank.

Lower Waihou River.—An important feature on this section was the completion and the commissioning in August last of the 12 in. electrically-operated suction dredge, Waihou No. 2. The 10 in. steam-suction dredge Waihou No. 1 also commenced work in the Lower Waihou after completing in the Upper Waihou. Both these machines are now working two shifts. The river-bottom is being dredged and spoil placed in stop-banks, and good progress is being made. A drag-line excavator is following behind the suction dredges, soiling the stop-banks as made. The construction of concrete flood-gated culverts under the site of the stop-bank is in hand.

Ohinemuri River.—Willows have been cleared from both banks of this river from 4 m. 35 ch. to Criterion Bridge with a stump-extractor, which was called upon to do some very heavy work. The main drain at Paeroa has been widened for a distance of 41 ch. from the flood-gate, and only 2 ch. remain unwidened.

Hikutaia Creek.—A drag-line excavator, which commenced operations in this creek in October last, has excavated the canal 33 ft. wide at the bottom for a length of 33 ch. The stream above the cut has been widened for a distance of 32 ch. on the left bank, and the spoil deposited on the stop-bank. Willow-clearing has been carried out on both banks for a distance of 155 ch.

Gaugings were taken and flood data collected for record purposes on the occasion of the flood in the Ohinemuri River in May last.

Taieri River.

This work is designed to protect the Taieri Plains from the periodical flooding which has occurred in the past, and during the year under review the work has been actively carried on. A good deal of survey work has been done in advance of the construction plant, and to examine in detail the proposals for a large pumping-station to be erected at lower end of plains, and for protection of Berwick and 700 acres in its vicinity.

Construction work was continued on the stop-bank from Outram down-stream, and a length of 2 m. is nearing completion. A drag-line and work-train are in use on this portion of the work. Scooping teams and dray teams have completed certain important sections of the stop-banks, and a 1½ cub. yd. drag-line, working two shifts, has built a heavy section 1½ m. long near Henley. Altogether, these several methods of construction resulted in the placing of 210,000 cub. yd. of earthwork in stop-banks.

The 10 in. suction dredge, to be electrically operated, has now been built. It will operate on channel construction or improvement, and in building stop-banks in swampy locations near Lake Waihola and Maori Lake, where other types of machine are unsuitable. Various unforeseen factors delayed the completion of this machine, but it is now in commission.

In addition to the work outlined above, willow-clearing in the vicinity of Allanton has been carried out.

MARINE.

Lighthouses.

Three Kings.—After a very thorough investigation of the advantages of a direction-finding apparatus as against a lighthouse to guard this locality, it was decided to install a wireless direction-finding apparatus at Cape Maria van Diemen. The material has been obtained, and the station is now in course of erection.

Piako River Leading-lights.—It has been decided to replace the existing small oil-burning beacons by an automatic acetylene light placed on a pile structure at the channel-entrance. The apparatus has been procured and the erection of the pile beacon is being arranged.

Matakana Point.—The new automatic light on this point has now been erected and is in operation: it consists of an open-flame acetylene burner in a dioptric lens of 500 mm. diameter, with flasher, &c., and is controlled by an automatic sun-valve.

Cape Foulwind.—The conversion of this light from a watched oil-burner to automatic operation is now practically completed. The work has consisted in the erection of a 30 ft. concrete tower with the latest type of Dalen incandescent burner and mantle-exchanger. This outfit will be the first of

its kind to be installed on the New Zealand coast, and will be the most powerful unattended light which we have adopted so far.

Puysegur Point.—A small wireless sending and receiving set has been installed here, and building erected to house it. The previous method of commucation was by means of a long land telephone-line which traversed very rough broken country and was a continual source of trouble and expense.

Stephens Island.—This station has also been equipped with a wireless sending and receiving set similar to that at Puysegur Point. Previously this station was served by cable to the mainland, but upkeep was expensive, and, as a large amount of renewals would shortly have had to be faced, it was thought better to install the wireless outfit.

Dog Island.—The optical and illuminating apparatus of this lighthouse being very much out of date, it was decided to replace it with a standard second-order dioptric lens and incandescent oil-burner. This has now been carried out, and the new light is functioning very satisfactorily. Plans have also been prepared for a new keeper's residence to take the place of one which is now in a bad state of repair, having been in use since 1868.

Kahurangi Point.—An order has been placed for the necessary apparatus to convert this light from watched to automatic operation. The machinery has been received, and it will be installed very shortly. This light is in a somewhat difficult and inaccessible situation, and although it is not proposed to leave it wholly unattended it will only be necessary to retain one keeper.

French Pass Beacon.—It is now proposed to install a new acetylene beacon at this channel in place of the existing oil light, and this should be in operation before long.

Pencarrow Lighthouse.—The existing fog-signal at this lighthouse has not been at all satisfactory for some time past, and after careful investigation it was decided to install one of the latest compressed air signals operated on the diaphone principle. The apparatus has been ordered and the excavation of the site for its erection is in hand.

Godley Head Lighthouse.—A similar fog-signal to that described for Pencarrow has been ordered for this lighthouse. A considerable amount of experimental work has been carried out to determine the best location, and it is anticipated that the new signals will greatly assist shipmasters at these busy ports during foggy weather.

Harbour-works.

Opunake.—Work is being carried out in this harbour by the Opunake Harbour Board, but, on account of difficulty in obtaining stone, the estimated cost of the work appeared likely to be exceeded. On this account an investigation was made into the various phases of the work, and a report was prepared accordingly.

Westport.—The most important work at this port is the maintenance of an adequate depth of water on the bar and at the various berthages. During the year the "Eileen Ward" dredged and conveyed to sea 257,460 cub. yd. of material, the majority being taken from the bar. The bucket dredge "Mawhera" was hired from the Greymouth Harbour Board to clear up the berthage area and to dredge out an area for swinging larger ships than can be handled at present. It is hoped that this latter improvement will lead to a considerable increase in the bunkering trade. No work has been necessary on the training-walls and the eastern or western breakwaters, which are in good order. The installation of electric lights to replace the present kerosene lights is in hand, and a small automatic acetylene light is also being provided. The various buildings in connection with the work have been well maintained, and the fleet and plant generally are in good order with the exception of the old bucket dredge and hoppers, which have outlived their usefulness and are being scrapped.

Karamea Harbour.—A substantial addition to the existing wharf has been built in order to cope with the growing timber trade, and all plans, &c., have been prepared for a comprehensive layout of skidways to serve the milling industry. An addition is also approved in connection with the wharf-shed in order to facilitate the sorting of cargo, &c. Surveys have been carried out in order to determine the best route for tramway to the stone outcrop on the Oparara River. The existing training-wall has demonstrated its utility, and it is now proposed to provide an annual sum which will ensure its replacement in stone within the period of life of the existing wooden structure.

Little Wanganui.—Plans have been prepared and a contract let for a new wharf at this port. Work is now in hand, and it is expected that the work will be completed early in the existing period.

Russell.—Plans and specifications were prepared for a concrete wharf at this port, but owing to a very great difference of opinion locally as to the best site the actual construction work has been very considerably delayed. The matter has, however, been finally settled by a referendum of the settlers, and a contract let for the work.

Tryphena Harbour, Great Barrier Island.—Provision was made last year for a sum of money to provide a wharf in this harbour. Unfortunately a difference of opinion exists between the local residents as to the most suitable site. In order to determine this point a Commission was appointed, which visited the island, took very full evidence, and made definite recommendations. It is hoped, therefore, that the matter may now proceed on the lines of that recommendation.

Elmlie Bay.—During the year the above wharf was repaired and strengthened.

General.

A large number of applications have been received from local bodies and private individuals for the approval of works involving marine interests. Each of these has been carefully investigated and, where desirable, approved. Among the various applications were the following:—

Wharves.—Hoanga, Northern Wairoa River; Huia Bay, Manukau Harbour; Torehine Block, Coromandel; Church Bay, Waiheke Island; Maraetai, Auckland Harbour; Tokatoka, Northern Wairoa River; Collingwood: White Point, Parua Bay, Whangarei; Pahia, Bay of Islands; Sulphur Point, Tauranga.

Wharf-sheds.—Kerikeri, Bay of Islands.

Boat-sheds and Landings.—Islington Bay, Rangitoto Island; Miro Tiro Bay, Tory Channel; Waikawa Bay; Cannibal Cove, Queen Charlotte Sound; Marerua Creek, Otamatea River; Awaroa River; Manganese Point, Whangarei Harbour; Anikiwi Bay, Queen Charlotte Sound; Tongaporutu; Oruawheno Stream, Kaipara Harbour.

Foreshore Licenses.—Whangaroa, Kohu-Kohu, Hokianga River; Netherton, Waihou River; Omaha, Hauraki Gulf; Whenuakite River, Coromandel; Collingwood Harbour; Onakaka Inlet; Torehine Block, Coromandel; Church Bay, Waiheke Island; Cannibal Cove, Queen Charlotte Sound; Waikato River; Awaroa River; Paritutu Bay, Coromandel; Hukatere, Kaipara Harbour; Waikawau, Coromandel Peninsula; Kawau Island.

Harbour-works.—Whakatane Harbour; Bluff Harbour; Port Ahuriri (Napier Harbour Board); Whangarei; New Plymouth; Gisborne Harbour Board.

Boat-slips and Sheds.—Freeman's Bay, Auckland; Whangarei Harbour; Half-moon Bay, Stewart Island.

Timber-booms.—Whangaparapara Harbour, Great Barrier Island.

Reclamations.—Oriental Bay, Wellington; Balena Bay, Wellington.

DEFENCE WORKS.

Waikato Camp, Ngaruawahia.

A large number of workmen were employed on the construction of this base, which is to serve as training-camp, ordnance depot, and mobilization base. Good progress was made during the year with the different classes of work. A water-supply is obtained from the Waikato River, and a pump and motor are installed in pump-house for pumping the water from a settling-tank alongside the river to a concrete reservoir of 80,000 gallons capacity at the camp. Distribution-mains have also been laid throughout the camp, and most of the buildings connected thereto.

Electric lighting has been installed throughout the camp. Transmission-lines were erected to the camp by the Power Board from transformers at the railway-crossing on the Great South Road; and distribution-mains have been erected within the camp by the Department, which has also completed the wiring of a considerable number of buildings.

About 20 ch. of 9 in. earthenware sewerage-pipes have been laid, with necessary manholes, inspection-pipes, &c., and connections to cookhouse, wash-ups, messrooms, and ablutions. A 6 in. tiled drain was laid in the bottom of the sewer-trench for the purpose of draining the ground and keeping the foundation for the sewer-pipes dry. An open drain, 32 ch. long, with an average depth of 3 ft., has been dug through the camp area for the purpose of draining the training-ground and adjacent swamp.

A portion of the old Ngaruawahia-Taupiri Road has been cleared of blackberry and gorse for its full width, formed 22 ft. wide, and surface-sanded, and is in good order. 40 ch. of the main street along Military Camp Road has been formed and sanded to a width of 40 ft.

A further 40 acres of scrub-cutting was done this year, as well as stumping, ploughing, and disc, chain, and tine harrowing of that area, and the 100 acres which had been cut previously. This land will require constant attention for a few years to eradicate blackberry and gorse.

Very substantial barbed-wire fencing has been erected around the whole of the magazine area, and also post-and-wire fencing around two cottages.

The railway-siding into the camp was completed at the beginning of the year, and a tram-line approximately 52 ch. long has been constructed from the ammunition unloading-shed past the magazines to the magazine laboratory.

Excavation for seven magazine buildings has been completed this year, and three of these buildings which were started last year are now completed.

Married men's quarters, Nos. 5 and 6, of similar design to railway platelayers' cottages, in concrete-block construction, have been completed, and No. 4 is almost finished.

An officer's cottage, of similar design to a Stationmaster's dwelling, has also been erected, as well as quarters for single men.

A cookhouse, 61 ft. by 28 ft., inside measurements, with concrete floor and walls, has been erected, and equipped with one 1,000-men and one 500-men cookers, hot-water service from an "Ideal" boiler, coppers, coal-bunkers, &c., and containing butcher's shop, bread-room, &c. A small building has also been erected alongside the cookhouse for accommodation of cooks.

Wash-up buildings, 16 ft. by 15 ft. inside measurements, with concrete floor and walls, have been erected at either end of the cookhouse, and will be supplied with hot water from the "Ideal" boiler in the cookhouse.

Two messrooms, each 202 ft. by 30 ft., in two compartments, and making four rooms in all, and with seating-accommodation for 250 men, have been built. The walls were constructed with 4 in. concrete-block cavity walls, on concrete foundations. Tables, forms, bread-rooms, and lockers have been provided, and each building has seventy-two windows and ten skylights. An ablution building to accommodate 108 men has also been erected, with concrete trough and floor, and the trough connected with the camp sewerage system.

A commencement has just been made with the erection of the reinforced-concrete building to accommodate the Ordnance stores. This building will occupy ground-space of 320 ft. by 100 ft.

Admiralty Fuel-oil Depot, Devonport.

During the year fuel-oil storage tank No. 2, of 1,250,000 gallons capacity, has been erected complete, while its reinforced-concrete safety impounding-wall has been built, and the whole of the oil piping system with the many valves and fittings has been laid. The sister tank (No. 1, built last year) has been in service for many months, and fuel-oil was also stored in tank No. 2 upon its completion although the necessary oil-pumping machinery had not then been received from England. It was practicable to pump the oil to the storage tanks direct by the oil-tanker's pumps, and for the time being the warships are obtaining their fuel from the tanks by gravitation.

The obsolete steam machinery with the associated boilers has been removed from the dock workshop engine-room to give floor-space for the fuel-oil depot machinery. Foundations for the main oil-pump and for the 80 horse-power stand-by electric-generator set are nearly finished, and the erection of this machinery will be undertaken immediately upon delivery.

The "Foamite" fire-fighting electrically-driven pumps, with tanks, piping, equipment, and steam boiler, have been installed, while the new buildings for housing such plant are now being erected.

Following upon the decision to provide extra wharf accommodation, an order was placed for the additional length of oil-main, with the necessary valves and fittings.

IRRIGATION.

Central Otago.

General.—The past year has been a transition period from old to new works. All existing schemes are practically finished, except for extra works required to irrigate the properities of fresh applicants for water, and are in full working-order, and all irrigators requiring water were supplied during the 1925-26 season. The total area irrigated under all Government schemes was 27,314 acres, occupied by 279 settlers, as against 19,897 acres, with 239 irrigators, during the previous season. Two new schemes, Arrow and Hawkdun, were commenced during the year.

Ida Valley Scheme.—The replacing of the Bonanza flume with a twin siphon, and the construction of concrete measuring-weir at the end of the upper Bonanza were completed during the year. A new weir was built on the German Hill Race at Poolburn diverting-weir; and sections of the latter race were enlarged in places. Two cottages for racemen were also transferred from Chatto Creek and re-erected; a new stable was erected at the Manorburn dam, and maintenance of all structures has received attention. During last season water was supplied to forty-nine irrigators on 10,603 acres.

Galloway Scheme.—Work has been completed on the distributary system; 80 ch. of distributary race and 4 ch. of fluming were constructed, improvements were made to the measuring-weir, and a scour-gate is being placed in the diverting-weir. Maintenance of all structures has received attention. In addition to irrigation construction, a demonstration plot of 8 acres has been levelled and laid out in the border-dyke system in readiness for sowing in the spring. 2,066 acres of the 2,240 acres commanded were irrigated this season by twenty-three irrigators, and a report on an extension to bring in a further 600 acres of land has been prepared.

Manuherikia Scheme.—Work on this section consisted chiefly of completing minor details of construction. The only items of any magnitude undertaken during the year were the completion of the third line in Chatto Creek siphon and the construction of 23 ch. of distributary race. All structures have been maintained, flumes painted, &c. A raceman's cottage was transferred from Chatto Creek and re-erected near Springvale. A demonstration plot of 10 acres has been laid out on this scheme under the border-dyke system, and is ready for sowing in the spring. During the past season water was supplied to sixty-two irrigators on 4,967 acres.

Earnscleugh Scheme.—The construction of 1 m. 25 ch. of pipe-line and 5 m. 55 ch. of races during the year completed the extension of this scheme. Hardly any work was required on the original scheme, but a demonstration plot of 15 acres has been worked up and laid down under the border-dyke system. Half of this area has been sown in permanent pasture, and the remainder will be sown in lucerne in the spring. During the past season 1,845 acres were irrigated by fifty-one settlers.

Last Chance Scheme.—80 ch. of distributary race and 32 ch. of fluming were constructed during the year, and the scheme is practically complete as far as new works are concerned. Maintenance, however, has been rather heavy, and more than the usual amount of repair work is required before next season. Water was supplied to twenty-six settlers, who irrigated 2,293 acres.

Ardgour Scheme.—Work on this scheme has been confined to maintenance and minor replacements, with the exception of 15 ch. of race-lining which is at present in hand. 1,494 acres were irrigated by fourteen settlers.

Tarras Scheme.—This scheme was completed during the year, and practically all the settlers were supplied with water. Despite the difficult nature of the work in the gorge, very little trouble has been experienced, with the result that only the normal amount of first year's repairs and additional work has been necessary, and there should be no difficulty in providing a reliable service in future. The work completed during the year consisted of 5 m. of main race and 12½ m. of distributary races, with numerous boxes, crossings, &c. The office was converted into a raceman's cottage, and all surplus buildings and stores transferred to Arrowtown. Water was supplied to nine settlers, who irrigated 1,144 acres.

Teviot River Scheme.—Work undertaken during the year, outside of maintenance, was almost negligible, and there were no supply difficulties beyond inconvenience caused by a few breaks. Water was supplied to thirty-five settlers for irrigating 2,758 acres.

Bengerburn Scheme.—Beyond a small amount of maintenance at the beginning of the period no work has been done on this scheme, which has been operating under a board of control.

Hawkdun Scheme.—The repairing of the Eweburn reservoir has been completed; renovating and rebuilding of the Wedderburn siphon, 39 ch. in length, is well advanced, and 40 ch. of the main race have been enlarged to full size. The survey of the distributary races is well in hand, and should be completed by the spring, 72 m. of race having been laid off to date. This scheme is ready for a quick start at construction work as soon as the winter is over.

Arrow River Scheme.—The survey of this scheme was completed, agreements obtained, and construction-work commenced. 1¾ m. of benching for the gorge pipe-line has been completed, and 35 ch. of main race made.

General Surveys.

The plans of the storage area of the Upper Manuherikia scheme have been plotted, the reservoir-site resurveyed and plotted, and the site explored with test-pits. The race-line from the dam-site to Hills Creek Saddle has been permanently pegged, and the levels for pumping determined. The whole of this information is now being worked up, and will be available shortly.

Preliminary estimates have been prepared for the Roaring Meg scheme, and a report submitted regarding an alternative scheme.

The plans of the Luggateburn and Pisa Creeks schemes are complete, and reports and estimate are being prepared.

A report and estimate have been submitted regarding Miller's Flat scheme.

The Lagoon Creek scheme at Hawea has been surveyed and a water-right secured, and a proposed agreement, including charges, placed before the settlers.

METAL-QUARRIES.

Tauraroa Quarry (North Auckland).—This quarry was opened originally to obtain ballast for railway-construction, and expenditure in connection therewith was charged to the vote for railway-construction. However, as large quantities of the metal are used on other works, the working-charges are now debited to the vote for acquisition and operation of quarries, which is credited with the value of the metal supplied to works. It became necessary during the year to increase the plant, owing to the large quantity of metal required for railways and roads distributed over a wide area from as far south as Wayby to Towai in the north, including main highways and the road from Oakleigh to Waipu. The output during the year consisted of 102,695 cub. yd. of crushed metal and 19,023 cub. yd. of spalls. As the metal was produced at a low rate, a considerable saving was effected in the cost of works.

Te Wera Quarry (Taranaki).—This is another quarry which was opened originally to obtain ballast for railway-construction, but which is now supplying metal for roads and other works as well. Although there was a slight decrease in the sales to local bodies as compared with the previous year, the total output was 20,949 cub. yd. The principal customers were local bodies (5,865 cub. yd.) and Railway Department (4,219 cub. yd.), and 10,865 cub. yd. were used by the Department for ballasting on railway-construction and road-metalling.

TRAMWAYS.

Auckland.—The Eden Park extension has been completed in accordance with the plans mentioned in the Order in Council, but has not been passed by the Department pending the aquisition by the City Council of a small piece of land to provide the standard clearance at a corner on the recreation-ground. Thirteen additional semi-steel cars, Nos. 191 to 203, were built during the year and passed for traffic.

Wellington.—The tram track was duplicated in Onepu Road, Kilbirnie, for a distance of approximately ½ m., and for almost 10 ch. along Kilbirnie Crescent. An extension along Wallace and John Streets, 29½ ch. in length, to connect with the existing track in Riddiford Street, was also inspected and passed for traffic. Five new cars were built and placed in commission.

Christchurch.—A loop was constructed between Idris Road and Heathfield Street on the Fendalton line. New piles were driven throughout the entire length of the viaduct across Clifton Bay at Sumner, owing to a tidal scour 3 ft. in depth. Four new cars were constructed and placed in traffic.

Dunedin.—A tramway extension, approximately 70 ch. in length, was constructed by the Dunedin City Corporation from George Street along Albany, Forth, and Union Streets to Logan Park, and was used for handling traffic to and from the New Zealand and South Seas Exhibition.

GENERAL.

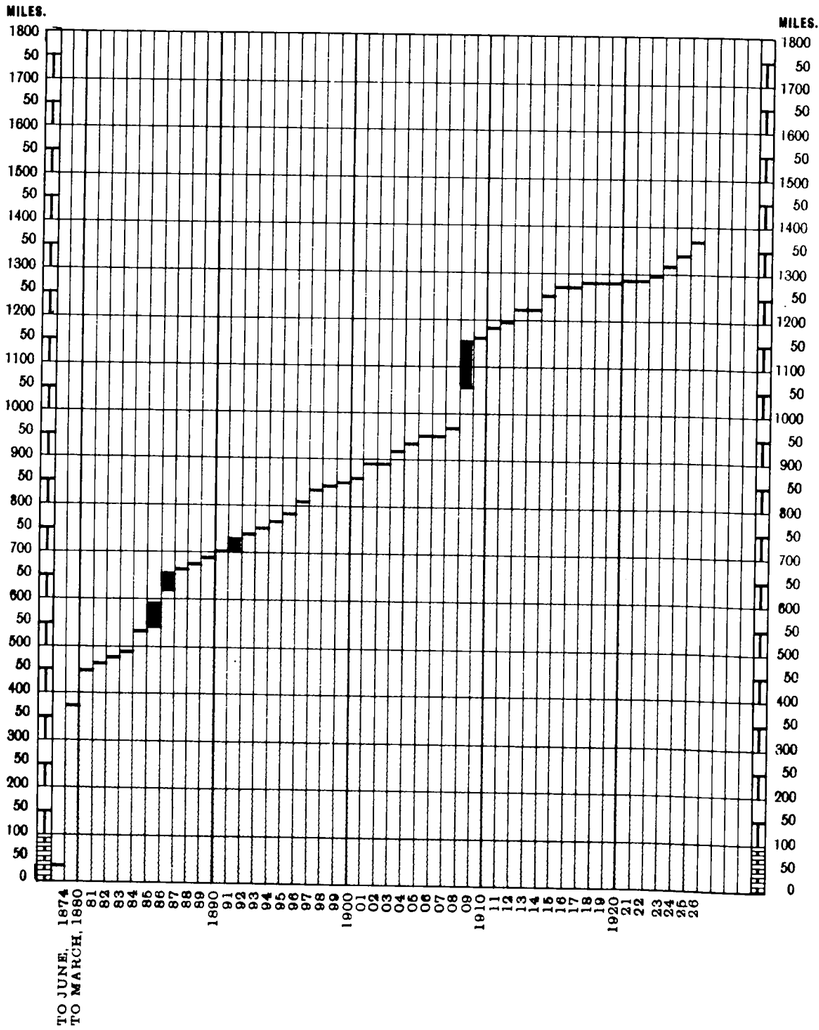
For details of the public-buildings works and electrical operations, please see separate reports by the Government Architect and the Chief Electrical Engineer.

The past year has been a period of great activity, and I desire to express my appreciation of the whole-hearted service rendered by the full staff of the Department.

C. J. McKenzie, Assoc.M.Inst.C.E.,
Acting Engineer-in-Chief.

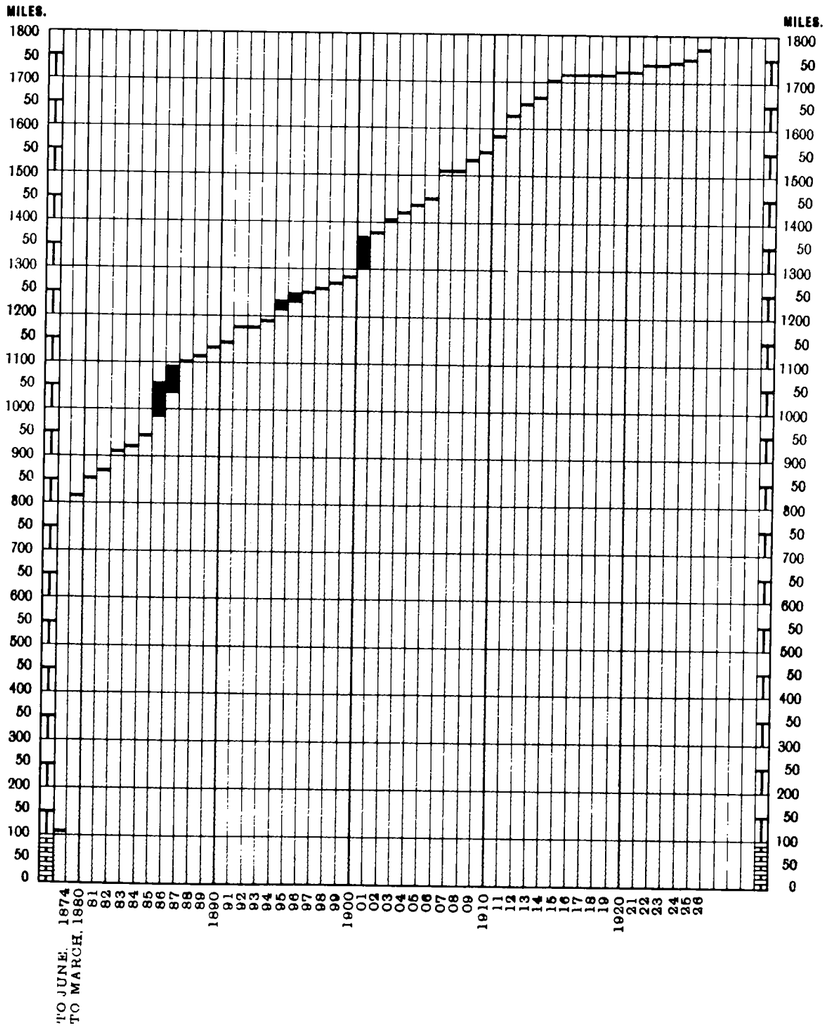
NUMBER OF MILES OPEN OF GOVERNMENT LINES.

NORTH ISLAND.



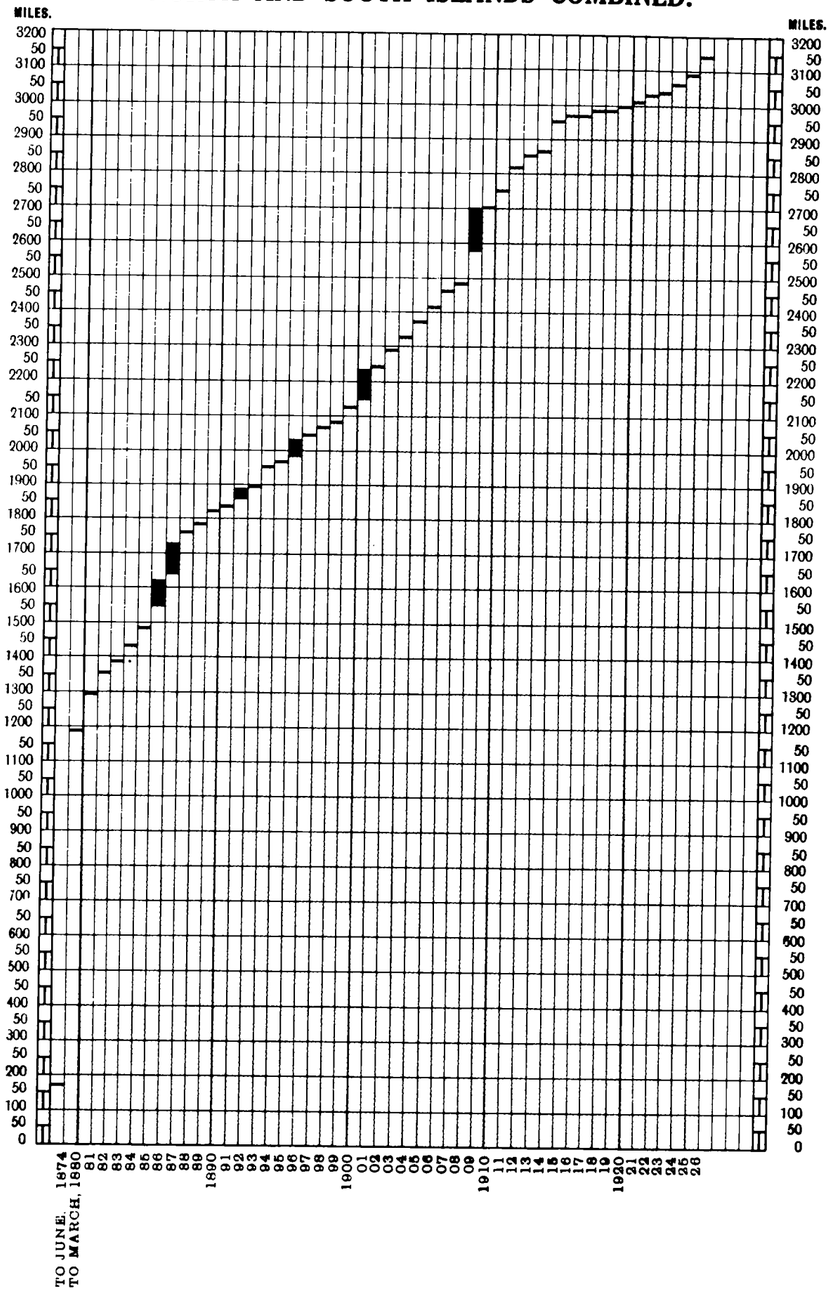
NUMBER OF MILES OPEN OF GOVERNMENT LINES.

SOUTH ISLAND.



NUMBER OF MILES OPEN OF GOVERNMENT LINES.

NORTH AND SOUTH ISLANDS COMBINED.



Private railways acquired by the Government shown thus: ■

PUBLIC WORKS
Engineer's Department
NEW ZEALAND.

F. W. FURKERT, M.INST.C.E.
ENGINEER-IN-CHIEF.

PUBLIC WORKS MAP
SHOWING THE RAILWAYS
SOUTH ISLAND
OF
NEW ZEALAND
1926

— Scale of Miles —

10 0 10 20 30 40 50 60 70 80

— REFERENCE —

GOVERNMENT RAILWAYS.

Opened - - ——————
Under construction - - - - - - -
Proposed - - ——————
Explored - - - - - - - - -

PRIVATE RAILWAYS.

Opened - - ——————

168° 169° 170° 171° 172° 173° 174°

40° 41° 42° 43° 44° 45° 46° 47° 48°

TASMAN SEA

PACIFIC OCEAN

C. Farewell
GOLDEN BAY
D'Urville Id
French Pass
COOK STRAIT
TASMAN BAY
Karamea R.
KARAMEA BIGHT
Mokikinui R.
C. Foulwind
C. Campbell
Buller River
Murchison
Roto iti L.
Rotoroa L.
Tory Channel
WELLINGTON
CLOUDY BAY
Wairau River
Awatere River
Clarence R.
Kaikoura Peninsula
Conway R.
Waiau-ua R.
Hurunui R.
Arahura R.
Arthur's Pass
Abut Hd
PEGASUS BAY
Waimakariri R.
Ashley R.
Banks Peninsula
Rakaia R.
Ashburton R.
Hinds R.
Rangitata R.
CANTERBURY BIGHT
Waitaki R.
Taieri R.
Clutha R.
Haast R.
JACKSON'S BAY
Mt Cook 12349ft
Mt Sefton 10359ft
Mt Harper
L. Tekapo
Pukaki L.
L. Ohau
L. Wanaka
L. Hawea
L. Wakatipu
L. Te Anau
Manapouri L.
Monowai L.
Hauroto L.
Ada L.
Milford Sound
Foveaux Strait
SOLANDER Id
The Bluff
RUAPUKE Id
STEWART Id
MASON BAY
Port William
East Head
S.W. Cape
Port Pegasus
Shag Point
C. Saunders
OTAGO HAR.
LYTTELTON HAR.

DISTANCES BY RAILWAY BETWEEN PRINCIPAL PLACES.

	Miles.	Miles.
Bluff to Invercargill	17	
Invercargill to Lumsden	50	
Lumsden to Kingston	37	
Bluff to Kingston		**104**
Invercargill to Gore	39	
Gore to Balclutha	47	
Balclutha to Milton	17	
Milton to Dunedin	36	
Invercargill to Dunedin		**139**
Invercargill to Orawia		**64**
Invercargill to Tokanui		**34**
Balclutha to Tahakopa		**43**
Dunedin to Cromwell		**155**
Dunedin to Port Chalmers		**8**
Gore to Lumsden		**37**
Gore to Waikaka		**16**
Waipahi to Edievale		**26**
Milton to Miller's Flat		**52**
Dunedin to Oamaru	78	
Oamaru to Timaru	53	
Timaru to Ashburton	47	
Ashburton to Rolleston	38	
Rolleston to Christchurch	14	
Dunedin to Christchurch		**230**
Christchurch to Lyttelton		**7**
Oamaru to Hakataramea		**43**
Timaru to Fairlie Creek		**39**
Christchurch to Greymouth		**147**
Christchurch to Little River		**36**
Christchurch to Waiau		**82**
Christchurch to Parnassus		**85**
Picton to Wharanui		**56**
Nelson to Glenhope		**59**
Greymouth to Reefton		**47**
Reefton to Inangahua		**19**
Greymouth to Ross		**39**
Westport to Mokihinui Colliery		**31**

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PUBLIC WORKS
Engineer's
Department
NEW ZEALAND.

F. W. FURKERT, M.INST.C.E.
ENGINEER-IN-CHIEF

PUBLIC WORKS MAP
SHOWING THE RAILWAYS
OF NORTH ISLAND
NEW ZEALAND
1926

— Scale of Miles —

10 0 10 20 30 40 50 60 70 80

— REFERENCE —

GOVERNMENT RAILWAYS.

Opened - - ———
Under construction - - - - - -
Proposed - - ———
Explored - - - - - - - -

PRIVATE RAILWAYS.

Opened - - ———

DISTANCES BY RAILWAY BETWEEN PRINCIPAL PLACES.

	Miles.	Miles.
Wellington to Palmerston North	87	
Palmerston North to Wanganui (Aramoho Junction)	60	
Aramoho to New Plymouth	104	
Wellington to New Plymouth		**251**
Wellington to Palmerston North	87	
Palmerston North to Woodville	18	
Woodville to Napier (Spit)	97	
Wellington to Napier via Manawatu		**202**
Wellington to Woodville	115	
Woodville to Napier (Spit)	97	
Wellington to Napier via Wairarapa		**212**
Auckland to Onehunga		**8**
Auckland to Hamilton (Frankton Junction) ..	85	
Hamilton to Ongarue	75	
Ongarue to Taumarunui	15	
Taumarunui to Ohakune	50	
Ohakune to Waiouru	17	
Waiouru to Marton	68	
Marton to Wellington	116	
Auckland to Wellington		**426**
Auckland to Hamilton (Frankton Junction) ..	85	
Hamilton to Te Aroha	30	
Te Aroha to Thames	33	
Auckland to Thames		**148**
Auckland to Rotorua		**171**
Auckland to Whangarei		**133**
Dargaville to Donnelly's Crossing		**24**
Whangarei to Opua		**53**
Kawakawa to Okaihau		**29**
Gisborne to Motuhora		**49**
Thames to Waihi		**33**
Stratford to Tahora		**48**

BY AUTHORITY: W. A. G. SKINNER, GOVERNMENT PRINTER, WELLINGTON.

ANNEXURE I TO APPENDIX B.

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926.

NORTH ISLAND.

NOTE.—Column 11: For detail information as to dates of openings of such portions of lines as are not given in this table see tables of lengths of lines in Public Works Statements, 1904–21.

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Kawakawa-Grahamtown (Onerahi)	Kawakawa ..	7 16	Opua Wharf - Kawakawa	7 16	0 57	7 73	..	..	..	..	..	..	..	..	..	7 16
	Kawakawa-Kamo ..	41 48	Kawakawa-Towai ..	21 18	0 61	21 79	..	..	..	12 April,1911	..	..	..	..	..	21 18
			Towai-Hukerenui ..	4 30	0 33	4 63	..	..	..	2 May, 1910	..	..	..	..	..	
			Hukerenui-Kamo ..	16 0	3 29	19 29	..	..	..	..	..	..	..	..	..	27 2
	Kamo-Grahamtown	9 22	Kamo-Kioreroa ..	6 52	2 27	8 79	..	..	..	..	..	..	..	..	..	
			Kioreroa-Onerahi ..	2 50	1 16	3 66	..	..	..	2 Oct., 1911	..	..	..	..	..	2 50
	Kawakawa-Hokianga	48 38	Otiria-Kaikohe ..	16 25	1 45	17 70	..	..	..	1 May, 1914	..	..	..	..	..	16 25
			Kaikohe-Okaihau ..	8 20	0 34	8 54	..	..	..	29 Oct., 1923	..	..	8 20	..	..	8 20
			Okaihau-Hokianga ..	23 73	2 06	25 79	20 73	2 40	0 40	..	..	..	..	..	..	..
Kaihu Valley	Kaihu Valley ..	24 32	Dargaville-Booms ..	17 21	0 75	18 16	..	..	..	..	..	..	..	..	..	19 58
			Booms-Tarawhati ..	2 37	0 25	2 62	..	..	..	1 June, 1914	..	..	..	..	..	
			Tarawhati-Donnelly's Crossing	4 54	0 38	5 12	..	..	..	5 Feb., 1923	..	4 54	..	..	..	4 54
North Auckland Main Trunk Railway	Dargaville–N.A.M.T. Railway	18 40	Kirikopuni–Dargaville	18 40	..	..	18 40	Trial	..	..	..	..	..	..	..	..
	Kaipara Northwards	83 39	Kirikopuni–Waiotira	13 56	1 44	15 20	..	2 35	11 21	..	..	..	..	..	..	..
			Waiotira–Mareretu ..	9 44	1 20	10 64	..	..	..	29 Nov., 1925	..	..	..	..	9 44	9 44
			Mareretu–Paparoa ..	4 16	0 25	4 41	..	..	..	29 Nov., 1925	..	..	..	..	4 16	4 16
			Paparoa-Huarau ..	1 56	0 36	2 12	..	..	..	29 Nov., 1925	..	..	..	..	1 56	1 56
			Huarau-Maungaturoto	2 5	0 38	2 43	..	..	..	1 April, 1920	..	..	..	..	..	2 5
			Maungaturoto-Ranganui	4 25	0 61	5 6	..	..	..	1 April, 1920	..	..	..	..	..	4 25
			Ranganui-Kaiwaka ..	2 35	0 62	3 17	..	..	..	1 Aug., 1914	..	..	..	..	..	2 35
			Kaiwaka - Te Hana ..	8 65	1 3	9 68	..	..	..	18 Mar. 1913	..	..	..	..	..	
			Te Hana-Wellsford ..	3 27	0 58	4 5	..	..	..	16 May, 1910	..	..	..	..	..	
			Wellsford-Wayby ..	3 18	0 28	3 46	..	..	..	1 April, 1909	..	..	..	..	..	
			Wayby-Hoteo ..	3 40	0 13	3 53	..	..	..	13 May, 1908	..	..	..	..	..	
			Hoteo-Kaipara Flats	2 45	0 13	2 58	..	..	..	11 June, 1907	..	..	..	..	..	45 42
			Kaipara Flats-Woodcock's	3 5	0 16	3 21	..	..	..	17 Nov., 1905	..	..	..	..	..	
			Woodcock's-Ahuroa	2 41	0 16	2 57	..	..	..	18 May, 1905	..	..	..	..	..	
			Ahuroa-Helensville ..	18 41	1 75	20 36	..	..	..	..	..	..	..	..	..	

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued*.

NORTH ISLAND—*continued*.

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Whangarei Branch Railway	Whangarei Branch..	19 79	Kioreroa-Portland ..	5 23	0 37	5 60	..	..	..	3 April, 1920	..	..	..	..	..	5 23
			Portland-Waiotira ..	14 56	1 39	16 15	..	..	..	29 Nov., 1925	..	..	..	..	14 56	14 56
Kaipara-Waikato	Kaipara-Newmarket	35 73	Helensville-Newm'rk't	35 73	6 66	42 59	..	..	..	..	..	..	..	..	..	35 73
	Onehunga Branch ..	2 73	Penrose - Onehunga Wharf	2 73	1 70	4 63	..	..	..	..	..	..	..	..	..	2 73
	Auckland-Waikato ..	100 13	Auckland-Te Awamutu	100 13	16 66	116 79	..	..	..	..	..	..	..	..	..	100 13
	Auckland-Westfield	9 68	Deviation via Orakei	9 68*	1 10	10 78	9 68	9 68	..	..	..	..	..	..	..	..
	Auckland City Branch—Kingsland Station to Auckland Station via Western Park and Freeman's Bay	2 60	Auckland City Branch	2 60	..	2 60	2 60	Prelim.	..	..	..	..	..	..	..	..
Waiuku Branch	Waiuku Branch Railway	12 69	Paerata-Patumahoe	5 4	0 78	6 2	..	..	..	10 Dec., 1917	..	..	..	..	..	5 4
			Patumahoe-Waiuku	7 65	1 3	8 68	..	..	..	10 May, 1922	..	7 65	..	..	..	7 65
Huntly-Awaroa	Huntly-Awaroa ..	8 75	Huntly-Awaroa ..	8 75	1 18	10 13	..	..	..	16 June, 1924	..	..	..	1 55	..	8 75
Survey, new lines	Waikokowai Branch Railway	8 25	Waikokowai ..	8 25	..	8 25	8 25	..	..	..	..	..	..	..	..	..
Surveys, new lines	Paeroa-Pokeno ..	40 15	Paeroa-Pokeno ..	40 15	..	40 15	40 15	..	..	..	..	..	..	..	..	..
Waikato-Thames	Waikato-Thames ..	62 58	Frankton Junction-Thames	62 58	10 17	72 75	..	..	..	..	..	..	..	..	..	62 58
Hamilton-Cambridge	Hamilton-Cambridge	12 2	Ruakura Junction-Cambridge	12 2	3 14	15 16	..	..	..	..	..	..	..	..	..	12 2
Paeroa-Waihi	Paeroa-Waihi ..	12 40	Paeroa-Waihi ..	12 40	1 30	13 70	..	..	..	9 Nov., 1905	..	..	..	..	..	12 40
East Coast Railway	Waihi - Opotiki, or East Coast Railway	139 53	Waihi-Tauranga ..	38 33	2 38	40 71	..	15 69	22 44	..	..	..	..	..	..	..
			Tauranga-Te Maunga Junction	3 75	0 17	4 12	..	..	3 75	..	..	..	..	..	..	..
			Te Maunga Junction-Te Puke	9 0	1 38	10 38	..	..	9 0	..	..	..	..	..	..	..
			Te Puke-Paengaroa..	5 67	1 16	7 3	..	..	5 67	..	..	..	..	..	..	..
			Paengaroa - Pongakawa	4 28	0 56	5 4	..	..	4 28	..	..	..	..	..	..	..
			Pongakawa-Otamarakau	6 70	0 52	7 42	..	..	6 70	..	..	..	..	..	..	..
			Otamarakau-Matata	8 11	0 46	8 57	..	..	8 11	..	..	..	..	..	..	..

* Double track.

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued*.

NORTH ISLAND—*continued*.

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
East Coast Railway—*contd.*	Waihi-Opotiki—*ctd.* ..		Matata-Rangitaiki	8 29	1 77	10 26	..	..	8 29	..	..	..	..	..	..	..
			Rangitaiki-Awakeri	4 2	0 65	4 67	..	..	4 2	..	..	..	..	..	..	..
			Awakeri-Taneatua ..	8 47	1 10	9 57	..	..	8 47	..	..	..	..	..	..	..
			Taneatua-Opotiki ..	26 26	..	26 26	26 26	..	..	..	..	..	..	..	..	..
	Branch Lines ..	..	Mount Maunganui-Te Maunga Junction	4 27	0 67	5 14	..	..	4 27	..	..	..	..	..	..	..
			Te Puke Quarry ..	3 0	0 20	3 20	..	..	3 0	..	..	..	..	..	..	..
			Moturiki Quarry § ..	1 0	0 10	1 10	..	..	..	..	..	..	..	..	..	..
			Whakatane Branch	7 5	..	7 5	7 5†	..	..	..	..	..	..	..	..	..
			Whakatane Ballast Siding	0 33	..	0 33	..	..	0 33	..	..	..	..	..	..	..
Thames Valley-Rotorua	Thames Valley-Rotorua	69 33	Morrinsville-Rotorua	69 33	5 27	74 60	..	..	..	..	..	..	..	..	..	69 33
New survey	Rotorua-Taupo ..	53 30	Rotorua-Taupo ..	53 30	..	53 30	53 30*	..	..	..	..	..	..	..	..	..
Gisborne-Rotorua	Gisborne-Opotiki ..	92 44	Gisborne Wharf-Kaiteratahi	13 10	2 45	15 55	..	..	..	..	..	..	..	..	..	
			Kaiteratahi-Karaka	5 5	0 71	5 76	..	..	..	13 April, 1905	..	..	..	..	..	
			Karaka-Puha ..	1 75	0 24	2 19	..	..	..	20 May, 1907	..	..	..	..	..	
			Puha-Waikohu Bridge	3 29	..	3 29		..	..	28 May, 1908	..	..	..	..	..	
			Waikohu Bridge-Waikohu	0 35	0 32	0 67	..	..	..	1 April, 1909	..	..	..	..	..	49 32
			Waikohu-Otoko ..	7 75	0 32	8 27	..	..	..	6 April, 1912	..	..	..	..	..	
			Otoko-Rakauroa ..	6 60	0 32	7 12	..	..	..	2 Nov., 1914	..	..	..	..	..	
			Rakauroa-Matawai ..	5 65	0 50	6 35	..	..	..	2 Nov., 1914	..	..	..	..	..	
			Matawai-Motuhora	4 78	0 61	5 59	..	..	..	26 Nov., 1917	..	..	..	..	..	
			Motuhora-Motu ..	2 10	..	2 10	2 10	..	..	..	..	..	..	..	..	..
			Motu-Opotiki ..	41 2	..	41 2	41 2	Estim.	..	..	..	..	..	..	..	..
Gisborne-Napier	Napier-Wairoa ..	72 05	Napier-Eskdale ..	11 73	1 31	13 24	..	..	..	23 July, 1923	..	..	11 73	..	..	11 73
			Eskdale-Tutira ..	17 52	1 07	18 59	..	9 53	7 79	..	..	..	..	..	..	..
			Tutira-Putorino ..	9 15	0 55	9 70	..	19 15	..	..	..	..	..	..	..	..
			Putorino-Mohaka ..	13 23	0 50	13 73	..	13 23	..	..	..	..	..	..	..	..
			Mohaka-Waihua ..	8 02	0 20	8 22	..	8 02	..	..	..	..	..	..	..	..
			Waihua-Wairoa ..	12 00	1 70	13 70	..	12 00	..	..	..	..	..	..	..	..
	Gisborne-Wairoa ..	72 42	Gisborne Station-Makaraka	3 5	..	3 5	..	..	..	..	..	..	..	..	..	..
			Makaraka-Ngatapa ..	11 51	1 29	13 0	..	..	11 51	15 Dec,, 1924	..	..	..	11 51	..	11 51
			Ngatapa-Wharekopae	4 69	..	4 69	0 19	3 0	1 50§	..	..	..	..	..	..	..
			Wharekopae-Waikura	5 40	..	5 40	5 40	..	..	..	..	..	..	..	..	..

* Trial survey. † Preliminary survey. ‡ Permanent survey. § Rails taken up.

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued*.

NORTH ISLAND—*continued*.

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Gisborne-Napier	Gisborne-Wairoa—*continued*.		Waikura-Waterfall ..	6 66	..	6 66	5 6	Perm.	..	..	..	..	..	..	..	..
							1 60	Prelim.	..	..	..	..	..	..	..	..
			Waterfall-Hangaroa	4 0	..	4 0	4 0	"	..	..	..	..	..	..	..	..
			Hangaroa-Te Reinga	17 11	..	17 11	17 11	"	..	..	..	..	..	..	..	..
			Te Reinga-Marumaru	9 40	..	9 40	9 40	"	..	..	..	..	..	..	..	..
			Marumaru-Wairoa ..	10 0	..	10 0	4 0	Perm.	..	..	..	..	..	..	..	..
							6 0	Prelim.	..	..	..	..	..	..	..	..
	Wairoa-Waikokopu..	24 35	Wairoa-Nuhaka ..	18 24	1 18	19 42	..	..	18 24	..	..	..	..	..	..	..
			Nuhaka-Waikokopu	6 11	0 49	6 60	..	..	6 11	..	..	..	..	..	..	..
New surveys	Wairoa-Gisborne (Nuhaka Route) ..	70 55	Nuhaka-Gisborne..	36 40	..	36 40	..	..	..	..	..	..	..	..	..	..
						16 15	..	Trial	..	..	..	..	..	..	..	..
"	Wairoa-Gisborne (Waikokopu Route)		Waikokopu-Gisborne	34 15	..	18 00	..	Prelim.	..	..	..	..	..	..	..	..
Napier-Woodville and Palmerston North	Napier-Woodville ..	96 65	Napier Spit-Woodville	96 65	15 5	111 70	..	..	..	..	..	..	..	..	..	96 65
	Woodville-Palmerston North	17 21	Woodville-Palmerston North	17 21	0 51	17 72	..	..	..	..	..	..	..	..	..	17 21
Wellington-Woodville	Woodville-Wellington	115 79	Woodville-Wellington [Te Aro]	115 79	21 73	137 72	..	..	..	..	..	..	..	..	..	115 79
	Greytown Branch ..	3 7	Woodside-Greytown	3 7	0 64	3 71	..	..	..	..	..	..	..	..	..	3 7
	Featherston-Martinborough	11 50	Featherston-Martinborough	11 50	..	11 50	11 50	..	..	..	..	..	..	..	..	..
	Greytown-Martinborough	4 62	Greytown-Martinborough	4 62	..	4 62	4 62	Trial	..	..	..	..	..	..	..	..
Rimutaka Incline Deviation Surveys	Coach-road Route ..	9 0	Kaitoke-Featherston	9 0	..	9 0	9 0	Prelim.	..	..	..	..	..	..	..	..
	Tauherenikau Route	21 30	Upper Hutt-Woodside	21 30	..	21 30	21 30	..	..	..	..	..	..	..	..	..
	Wainui-o-mata Route	31 40	Petone-Pigeon Bush	31 40	..	31 40	31 40	..	..	..	..	..	..	..	..	..
	Coast Route ..	52 0	Petone-Pigeon Bush	52 0	..	52 0	52 0	..	..	..	..	..	..	..	..	..
	Coast Route ..	70 0	Petone-Carterton, via Martinborough	70 0	..	70 0	70 0	..	..	..	..	..	..	..	..	..
	Wellington-Manawatu	83 37	Wellington-Longburn	83 37	15 76	99 33	..	..	..	7 Dec., 1908*	..	..	..	..	..	83 37
Foxton-New Plymouth	Foxton-Patea ..	120 44	Foxton-Patea ..	120 44	14 75	135 39	..	..	..	..	..	..	..	..	..	120 44
	Route Improvement Surveys	26 7	Turakina-Matarawa	11 67	..	11 67	11 67	..	..	..	..	..	..	..	..	..
			Aramoho-Goat Valley Tunnel	7 40	..	7 40	7 40	..	..	..	..	..	..	..	..	..
			Kai Iwi-Okehu ..	3 60	..	3 60	3 60	..	..	..	..	..	..	..	..	..
			Nukumaru-Waitotara	3 0	..	3 0	3 0	Prelim.	..	..	..	..	..	..	..	..

* Date of purchase.

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued.*

NORTH ISLAND—*continued.*

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Foxton-New Plymouth —*contd.*	Patea Waitara and New Plymouth	72 29	Patea-New Plymouth Breakwater	72 29	11 52	84 1	..	..	..	..	..	..	..	..	..	72 29
	Bull's Branch ..	3 79	Bull's Branch ..	3 79	..	3 79	3 79	Prelim.	..	..	..	..	..	..	..	..
	Wanganui Branch ..	3 29	Aramoho-Wanganui	3 29	2 23	5 52	..	..	..	..	..	..	..	..	..	3 29
Stratford-Main Trunk	Stratford-Main Trunk	90 10	Stratford-Toko ..	6 26	0 40	6 66	..	..	..	..	..	..	..	..	..	
			Toko-Oruru ..	4 72	0 36	5 28	..	..	..	1 Mar., 1905	..	..	..	..	..	
			Oruru-Huiroa ..	4 50	0 35	5 5	..	..	..	1 April, 1908	..	..	..	..	..	
			Huiroa-Te Wera ..	6 77	1 16	8 13	..	..	..	20 June, 1910	..	..	..	..	..	
			Te Wera-Pohokura	8 55	0 65	9 40	..	..	..	1 Aug., 1912	..	..	..	..	..	
			Pohokura-Whangamomona	6 13	0 45	6 58	..	..	..	1 July, 1914	..	..	..	..	..	47 40
			Whangamomona-Kohuratahi	4 53	0 29	5 2	..	..	..	7 Jan., 1918	..	..	..	..	..	
			Kohuratahi-Tahora	5 14	0 37	5 51	..	..	..	21 Nov., 1924	..	..	..	5 14	..	
			Tahora-Raekohua ..	3 20	..	3 20	2 67	0 33	..	..	..	..	..	..	..	..
			Raekohua-Heao ..	6 20	..	6 20	3 20	Perm.	..	..	..	..	..	..	..	..
							3 0	Prelim.								
			Heao-Ohura ..	14 0	..	14 0	0 74	Perm.	..	..	..	..	..	..	..	..
							13 6	Prlim.								
			Ohura-Matiere ..	8 67	1 21	10 8	..	4 40	4 27	..	..	..	..	..	..	..
			Matiere-Okahukura ..	10 23	1 10	11 33	..	..	10 23	..	..	..	..	..	..	..
	Stratford-Ongarue—Deviations	33 40	Mangaroa-Puketutu	33 40	..	33 40	33 40	Prelim.	..	..	..	..	..	..	..	..
		14 0	Aramatai-Hangatiki	14 0	..	14 0	14 0	Prelim.	..	..	..	..	..	..	..	..
	Puketutu-Mangaroa Deviation	30 0	..	30 0	..	30 0	30 0	Prelim.	..	..	..	..	..	..	..	..
	Opunake-Mountain Rd.	23 10	Opunake-Eltham ..	23 10	..	23 10	23 10	..	..	..	..	..	..	..	..	..
	Te Roti-Moturoa ..	55 65	Te Roti-Kapuni ..	7 0	1 19	8 19	..	..	7 0	..	..	..	..	..	..	..
			Kapuni-Auroa ..	5 0	0 33	5 33	..	..	5 0	..	..	..	..	..	..	..
			Auroa-Pihama ..	4 40	0 27	4 67	..	..	4 40	..	..	..	..	..	..	..
			Pihama Opunake ..	5 70	1 3	6 73	..	0 75	4 75	..	..	..	..	..	..	..
			Opunake-Stony River	18 70	..	18 70	18 70	..	..	..	..	..	..	..	..	..
			Stony River-Moturoa	14 45	..	14 45	14 45	..	..	..	..	..	..	..	..	..
	Manaia Branch ..	5 50	Manaia-Kapuni ..	5 50	0 78	6 48	..	4 25	1 25	..	..	..	..	..	..	..
	Mount Egmont Branch	8 77	Manganui Section ..	5 74	2 3	7 77	..	..	..	1 April, 1908	..	..	..	..	..	6 0
			Quarry Section ..	3 3	0 60	3 63	..	1 58	1 25	..	..	..	..	..	..	..

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued.*

NORTH ISLAND—*continued.*

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. c
North Island Main Trunk Railway	Marton-Te Awamutu	209 69	Marton Junction-Mangaweka	31 67	4 61	36 48	..	..	..	..	..	..	..	..	..	
			Mangaweka-Taihape	13 1	1 61	14 62	..	..	..	10 Sep., 1904	..	..	..	..	..	50 58
			Taihape-Mataroa ..	5 70	0 61	6 51	..	..	..	1 June, 1907	..	..	..	..	..	
			Mataroa-Waiouru ..	18 10			..	..	..	30 June, 1908	..	..	..	..	..	
			Waiouru-Erua ..	30 63	12 50	97 28	..	..	..	13 Feb., 1909	..	..	..	..	..	84 58
			Erua-Taumarunui ..	35 65			..	..	..	9 Nov., 1908	..	..	..	..	..	
			Taumarunui-Te Awamutu	74 33	6 20	80 53	..	..	..	..	..	..	..	..	..	74 33
	Waipa Gravel Access Branch	7 40	Otorohanga ..	7 40	..	7 40	..	..	..	..	..	..	..	..	..	..
	Raetihi Branch ..	8 50	Raetihi Section ..	8 50	1 7	9 57	..	..	..	18 Dec., 1917	..	..	..	..	..	8 50
	Central Route Deviation Surveys	30 0	Ohakune to Mokau-Retaruke Divide	30 0	..	30 0	30 0	Prelim.	..	..	..	..	..	..	..	..
		34 0	Makatote Gorge-Marae-Kowhai	34 0	..	34 0	34 0	Prelim.	..	..	..	..	..	..	..	..
		20 0	Marae-Kowhai-Ohura Valley	20 0	..	20 0	20 0	Explor.	..	..	..	..	..	..	..	..
	Ngaire-Ongarue ..	103 58	Ngaire Section ..	38 73	..	38 73	38 73	..	..	..	..	..	..	..	..	..
			Tangarakau Section	26 0	..	26 0	26 0	..	..	..	..	..	..	..	..	..
			Heao Section ..	10 70	..	10 70	10 70	..	..	..	..	..	..	..	..	..
			Ohura Section ..	27 75	..	27 75	27 75	..	..	..	..	..	..	..	..	..
	Waitara-Tangarakau	46 75	Waitara Section ..	46 75	..	46 75	46 75	..	..	..	..	..	..	..	..	..
	Urenui Route ..	12 0	Urenui to Tangitu River	12 0	..	12 0	12 0	Prelim.	..	..	..	..	..	..	..	..
	Hastings-Te Awamutu	170 0	Hastings-Te Awamutu	170 0	..	170 0	170 0	Prelim.	..	..	..	..	..	..	..	..
	Totals ..	2803 65	..	2803 65	223 28	3034 46	1051 53	107 56	185 44	..	..	7 65	20 13	18 40	30 12	1372 7

NOTE.—Taonui and Lichfield Branches not mentioned above, as the rails have been taken up.

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued.*

SOUTH ISLAND.

NOTE.—Column 11: For detail information as to dates of openings of such portions of lines as are not given in this table see tables of lengths of lines in Public Works Statements, 1904-21.

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.										
							Surveyed.	Under Formation.	Under Platelaying.	Opened.							
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Nelson-Roundell	Nelson-Belgrove ..	22 73	Nelson-Belgrove ..	22 73	2 52	25 45	..	..	..	..	..	..	..	..	..	22 73
Midland Railway	Stillwater - Belgrove (via Tadmor)	146 75	Stillwater-Reefton S.	37 30	4 79	42 29	..	..	..	..	..	..	..	..	..	
			Reefton S.-Reefton N.	1 30	1 0	2 30	..	..	..	31 Mar., 1907	..	..	..	..	..	
			Reefton N.-Cronadun	5 38	0 56	6 14	..	..	..	7 Aug., 1908	..	..	..	..	..	57 32
			Cronadun-Landing ..	8 40	0 45	9 5	..	..	..	June, 1914	..	..	..	..	..	
			Landing-Inangahua	6 0	0 10	6 10	1 26	..	..		..	..	..	..	..	
			Inangahua-Murchison	23 53	..	23 53	2 0	Trial	..	..	..	..	..	..	..	..
							21 53	Prelim.	..	..	..	..	..	..	..	..
			Murchison-Kawatiri	22 70	..	22 70	13 70	..	..	..	..	..	..	..	..	..
							9 0*	3 0	..	..	..	..	..	..	..	..
			Kawatiri-Glenhope ..	3 73	0 15	4 8	..	..	3 73	..	..	..	..	..	..	..
			Glenhope-Tui ..	9 42	0 55	10 17	..	..	..	2 Sep., 1912	..	..	..	..	..	
			Tui-Kiwi	3 17	0 34	3 51	..	..	..		..	..	..	..	..	
			Kiwi-Tadmor ..	5 9	0 29	5 38	..	..	..	18 Dec., 1908	..	..	..	..	..	37 61
			Tadmor-Kohatu ..	10 29	0 69	11 18	..	..	..	7 Aug., 1906	..	..	..	..	..	
			Kohatu-Belgrove ..	9 44	0 62	10 26	..	..	..	..	..	..	..	..	..	
	Brunner-Springfield	92 68	Brunner-Otira ..	42 27	2 68	45 15	..	..	..	..	..	..	..	..	..	
			Otira-Arthur's Pass	8 14	5 38	13 52	..	..	..	26 May, 1924	..	..	..	8 14	..	
			Arthur's Pass - Cass	14 67	0 20	15 7	..	..	..	1 July, 1914	..	..	..	..	..	
			Cass - Broken River ..	15 22	1 29	16 51	..	..	..	10 Dec., 1910	..	..	..	..	..	92 68
			Broken River - Otarama	7 40	0 30	7 70	..	..	..	29 Oct., 1906	..	..	..	..	..	
			Otarama-Springfield	4 58	0 16	4 74	..	..	..	29 Oct., 1906	..	..	..	..	..	
Blackball Railway	Ngahere-Blackball ..	3 40	Ngahere-Blackball ..	3 40	1 20	4 60	..	..	..	16 July, 1910	..	..	..	..	..	3 40
Greymouth-Nelson Creek	Greymouth - Nelson Creek	7 51	Greymouth-Brunnerton-Stillwater	7 51	6 18	13 69	..	..	..	..	..	..	..	..	..	7 51
Westport-Ngakawau	Westport-Ngakawau	19 56	Westport-Ngakawau	19 56	8 12	27 68	..	..	..	..	..	..	..	..	..	19 56
Westport-Ngakawau Extension	Ngakawau - Mokihinui	7 12	Ngakawau-Mokihinui	7 12	1 18	8 30	..	..	..	..	..	..	..	..	..	7 12
	Mokihinui Colliery Line	3 69	Mokihinui-Seddonville	3 69	0 25	4 14	..	..	..	..	..	..	..	..	..	3 69
Westport-Inangahua	Westport-Inangahua Junction	26 0	Westport-Te Kuha ..	5 74	0 10	6 4	7 20	Prelim.	..	1 April, 1912	..	..	..	..	..	5 74
			Te Kuha - Inangahua Junction	20 6	..	20 6	12 66*	4 0	3 0	..	..	..	..	..	..	..

* Permanent.

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued*.

SOUTH ISLAND—*continued*.

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
State Colliery, or Coal Creek Railway	Greymouth - Point Elizabeth Collieries	5 1	Greymouth-Runanga Colliery	5 1	2 10	7 11	..	..	..	1 Dec., 1904	..	..	..	..	..	5 1
	Extension ..	3 69	Runanga Colliery-Point Elizabeth Collieries	3 69	2 20	6 9	..	..	..	21 Jan., 1914	..	..	..	..	..	3 69
	" ..	2 44	Runanga to Seven-mile	2 44	1 40	4 4	..	..	2 44	3 Sept., 1923	..	..	2 44	..	..	2 44
Greymouth-Hokitika	Greymouth-Hokitika	24 37	Greymouth-Hokitika	24 37	2 10	26 47	..	..	..	..	..	..	..	..	..	24 37
Kumara Branch	Kumara Branch ..	4 10	Kumara Branch ..	4 10	..	4 10	4 10	..	..	..	..	..	..	..	..	..
Hokitika-Ross	Hokitika-Ross ..	15 75	Hokitika-Ruatapu ..	7 10	0 61	7 71	..	..	..	9 Nov., 1906	..	..	..	..	..	7 10
			Ruatapu-Ross ..	7 21	0 69	8 10	..	..	..	1 April, 1909	..	..	..	..	..	7 21
			Survey to Ross Township	1 44	..	1 44	1 44	..	..	..	..	..	..	..	..	..
New survey	Ross-Waitaha ..	10 0	Ross-Waitaha ..	10 0	..	10 0	2 54	..	..	..	..	..	..	..	..	..
Picton-Waipara	Picton - Kaikoura ..	92 38	Picton-Seddon ..	33 45	3 26	36 71	..	..	..	..	..	..	..	..	..	
			Seddon-Kaparu ..	6 30	0 76	7 26	..	..	..	13 April, 1911	..	..	..	..	..	56 6
			Kaparu-Ward ..	8 15	1 20	9 35	..	..	..		..	..	..	..	..	
			Ward-Mirza ..	3 38	0 30	3 68	..	..	..	4 Dec., 1915	..	..	..	..	..	
			Mirza-Wharanui ..	4 38	0 34	4 72	..	..	..		..	..	..	..	..	
			Wharanui-Kekerangu	7 0	..	7 0	7 0	1 18	3 20	..	..	..	..	..	..	..
			Kekerangu - Hapuka River	29 32	..	29 32	29 32	..	..	..	..	..	..	..	..	..
	Hapuka River-Mendip Hills	40 50	Hapuka River - Limestone Creek	23 0	..	23 0	23 0	Prelim.	..	..	..	..	..	..	..	..
			Limestone Creek-Conway River	7 0	..	7 0	..	..	..	..	..	..	..	..	..	..
			Conway River - Mendip Hills	10 50	..	10 50	5 0	Prelim.	..	..	..	..	..	..	..	..
	Mendip Hills - Parnassus	5 61	Mendip Hills ..	5 61	..	5 61	2 0	3 61	..	..	..	..	..	..	..	..
	Parnassus-Waipara	44 14	Parnassus-Mina ..	8 43	1 14	9 57	..	..	..	1 Sept., 1912	..	..	..	..	..	
			Mina-Domett ..	3 63	0 70	4 53	..	..	..	1 Aug., 1910	..	..	..	..	..	
			Domett-Tormore ..	3 10	0 66	9 24	..	..	..	14 Nov., 1906	..	..	..	..	..	44 14
			Tormore-Ethelton ..	5 28			..	..	..	21 Mar., 1907	..	..	..	..	..	
			Ethelton-Scargill ..	8 51	0 51	9 22	..	..	..	3 Nov., 1905	..	..	..	..	..	
			Scargill-Waipara ..	14 59	1 2	15 61	..	..	..	..	..	..	..	..	..	
Hurunui-Waitaki	Main Line.. ..	206 7	Culverden-South Waitaki	206 7	64 68	270 75	..	..	..	..	..	..	..	..	..	206 7
		13 0	Culverden-Achray ..	5 23	0 10	5 33	..	..	..							
			Achray-Rotherham ..	1 75	0 43	2 38	..	..	..	15 Dec., 1919	..	..	..	..	..	13 0
			Rotherham-Waiau ..	5 62	1 3	6 65	..	..	..							

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued.*

SOUTH ISLAND—*continued.*

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.										
							Surveyed.	Under Formation.	Under Platelaying.	Opened.							
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Hurunui-Waitaki —*contd.*	*Branches,—*															
	Rangiora - Oxford	21 76	Rangiora-Oxford West	21 76	2 36	24 32	..	..	..	..	..	..	..	..	..	21 76
	Eyreton (from Main Line)	20 7	Main Line - West Eyreton-Bennett's	20 7	1 61	21 68	..	..	..	..	..	..	..	..	..	20 7
	Lyttelton ..	6 26	Lyttelton - Christchurch	6 26	..	6 26	..	..	..	..	..	..	..	..	..	6 26
	Southbridge ..	25 31	Hornby-Southbridge	25 31	3 17	28 48	..	..	..	..	..	..	..	..	..	25 31
	Little River-Akaroa	42 10	Lincoln - Little River	22 46	2 5	24 51	..	..	..	..	..	..	..	..	..	22 46
			Reconnaissance ..	19 44	..	19 44	19 44	Prelim.	..	..	..	..	..	..	..	..
	Springfield ..	30 60	Rolleston-Springfield	29 63	3 7	33 67	..	..	..	..	..	..	..	..	..	30 60
			Springfield-Coal-mine	0 77												
	Whitecliffs ..	11 38	Darfield-Whitecliffs	11 33	1 53	13 11	..	..	..	..	..	..	..	..	..	11 38
			Whitecliffs to Bridge	0 5												
	Rakaia - Ashburton Forks	22 20	Rakaia-Methven ..	22 20	2 65	25 5	..	..	..	..	..	..	..	..	..	22 20
	Ashburton ..	29 46	Tinwald-Springburn	27 29	1 52	29 1	..	..	..	..	..	..	..	..	..	27 29
			Extension ..	2 17	..	2 17	2 17	..	..	..	..	..	..	..	..	..
	Opawa and Albury to Fairlie Creek and Burke's Pass	55 8	Washdyke-Eversley	36 5	2 45	38 50	..	..	..	..	..	..	..	..	..	36 5
			Preliminary survey ..	19 3	..	19 3	19 3	Prelim.	..	..	..	..	..	..	..	..
	Waimate ..	17 43	Studholme-Waimate	4 42	1 3	5 45	..	..	..	..	..	..	..	..	..	12 63
			Waimate-Waihao Downs	8 21	0 54	8 75	..	..	..	..	..	..	..	..	..	
			Waihao Downs-Serpentine	2 65	..	2 65	..	2 65	..	..	..	..	..	..	..	..
			Serpentine-Kelcher's	1 75	..	1 75	..	1 75	..	..	..	..	..	..	..	..
Canterbury Interior Main Line	Oxford-Temuka ..	83 0	Oxford-Sheffield ..	11 44	0 27	11 71	..	..	..	..	..	..	..	..	..	11 44
			Surveyed ..	21 7	..	21 7	21 7	..	..	..	..	..	..	..	..	..
			Reconnaissance ..	50 29	..	50 29	50 29	Prelim.	..	..	..	..	..	..	..	..
Waitaki-Bluff and Branches	Main Line ..	246 69	South Waitaki-Bluff	246 69	59 13	306 2	..	..	..	..	..	..	..	..	..	246 69
	Branches,—															
	Duntroon - Hakataramea	37 33	Pukeuri-Duntroon ..	21 75	1 35	23 30	..	..	..	..	..	..	..	..	..	21 75
			Duntroon-Hakataramea	15 38	1 5	16 43	..	..	..	..	..	..	..	..	..	15 38
	Ngapara ..	14 76	Waiareka-Ngapara ..	14 76	1 31	16 27	..	..	..	..	..	..	..	..	..	14 76
	Livingstone ..	16 40	Windsor-Tokorahi ..	12 0	0 50	12 50	..	0 5	..	..	..	..	..	..	..	11 75
			Survey (trial) ..	4 40	..	4 40	4 40	Prelim.	..	..	..	..	..	..	..	..
	Palmerston - Waihemo	8 55	Palmerston-Dunback	8 55	0 54	9 29	..	..	..	..	..	..	..	..	..	8 55
		0 65	Surveyed ..	0 65	..	0 65	0 65	..	..	..	..	..	..	..	..	..

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued*.

SOUTH ISLAND—*continued*.

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.										
							Surveyed.	Under Formation.	Under Platelaying.	Opened.							
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Waitaki-Bluff and Branches —*contd.*	*Branches*—contd.															
	Inch Valley Railway	2 29	Inch Valley-Lime Kiln	2 29	0 23	2 52	..	..	..	..	..	..	..	..	..	2 29
	Port Chalmers ..	1 9	Glendermid - Port Chalmers	1 9	3 40	4 49	..	..	..	..	..	..	..	..	..	1 9
	Green Island ..	2 44	Burnside-Saddle Hill	2 44	0 52	3 16	..	..	..	..	..	..	..	..	..	2 44
	Green Island to Brighton	4 65	Surveyed	4 65	..	4 65	4 65	..	..	..	..	..	..	..	..	..
	Fernhill Colliery Line	1 60	Abbotsford to Fernhill Colliery	1 60	0 24	2 4	..	..	..	..	..	..	..	..	..	1 60
	Kaikorai Valley Railway	2 60	Surveyed	2 60	..	2 60	2 60	..	..	..	..	..	..	..	..	..
	Outram ..	8 78	Mosgiel-Outram ..	8 78	0 68	9 66	..	..	..	..	..	..	..	..	..	8 78
	Lawrence ..	21 76	Clarksville-Lawrence	21 76	2 2	23 78	..	..	..	..	..	..	..	..	..	
	Lawrence - Roxburgh	37 3	Lawrence - Big Hill	7 33	0 44	7 77	..	..	..	1 Aug., 1910	..	..	..	..	..	49 55
			Big Hill - Beaumont	5 36	0 45	6 1	..	..	..	15 Dec., 1914	..	..	..	..	..	
			Beaumont - Miller's Flat	14 70	0 38	15 28	..	..	..	16 Dec., 1925	..	..	..	..	14 70	
			Miller's Flat - Roxburgh	9 24	..	9 24	..	7 16	2 08	..	..	..	..	..	..	..
	Lovell's Flat - Tuapeka Mouth	23 20	Surveyed	23 20	..	23 20	23 20	..	..	..	..	..	..	..	..	..
	Balclutha - Tuapeka Mouth	22 0	Surveyed	7 0	..	7 0	..	..	..	..	..	..	..	..	..	..
			Trial Survey ..	15 0	..	15 0	..	..	..	..	..	..	..	..	..	..
	Crichton-Tuapeka Mouth	11 60	Surveyed	11 60	..	11 60	11 60	..	..	..	..	..	..	..	..	..
	Stirling - Hill End (via Stoney Creek)	11 43	Trial Survey ..	11 43	..	11 43	11 43	..	..	..	..	..	..	..	..	..
	Balclutha - Appleby Junction or Catlin's - Seaward Bush	105 49	Balclutha-Owaka ..	19 20	1 63	21 3	..	..	..	..	..	..	..	..	..	
			Owaka-Catlin's ..	3 38	0 30	3 68	..	..	..	1 Aug., 1904	..	..	..	..	..	
			Catlin's-Houipapa ..	2 30	0 9	2 39	..	..	..	17 Dec., 1909	..	..	..	..	..	
			Houipapa-Puketiro ..	7 11	0 43	7 54	..	..	..	1 Feb., 1915	..	..	..	..	..	42 67
			Puketiro-McLennan	5 29	0 59	6 8	..	..	..	1 Feb., 1915	..	..	..	..	..	
			McLennan-Tahakopa	5 19	0 38	5 57	..	..	..	1 Feb., 1915	..	..	..	..	..	
			Tahakopa-Marinui ..	23 63	..	23 63	23 63	Prelim.	..	..	..	..	..	..	..	..
			Marinui-Tokanui ..	6 0	..	6 0	6 0	..	..	..	..	..	..	..	..	..
			Tokanui-Waimahaka	8 27	0 64	9 11	..	..	..	20 Sept., 1911	..	..	..	..	..	
			Waimahaka-Appleby	24 52	1 50	26 22	..	..	..	..	..	..	..	..	..	32 79
	Waipahi - Heriot Burn	26 23	Waipahi-Heriot ..	20 3	2 3	22 6	..	..	..	..	..	..	..	..	..	
			Heriot-Edievale ..	6 20	0 45	6 65	..	..	..	15 Feb., 1905	..	..	..	..	..	26 23
	Extension to Roxburgh, via Rae's Junction and Ettrick	28 10	Surveyed ..	28 10	..	28 10	28 10	Prelim.	..	..	..	..	..	..	..	..
	Via Spylaw ..	25 70	Surveyed ..	25 70	..	25 70	25 70	Prelim.	..	..	..	..	..	..	..	

TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, AND SURVEYED UP TO 31ST MARCH, 1926—*continued.*

SOUTH ISLAND—*continued.*

Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	State of Line.									
							Surveyed.	Under Formation.	Under Platelaying.	Opened.						
										Date.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.		M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.
Waitaki-Bluff and Branches —*contd.*	*Branches*—contd.															
	Waimea Plains District Ry.	36 39	Gore-Lumsden ..	36 39	1 34	37 73	..	..	..	..	..	..	..	..	..	36 39
	Kelso-Gore ..	24 0	Surveyed ..	9 58	..	9 58	9 58	..	..	..	..	..	..	..	..	..
			Preliminary survey ..	14 22	..	14 22	14 22	Prelim.	..	..	..	..	..	..	..	..
	Gore-Waikaka ..	12 65	Waikaka Section ..	12 65	1 51	14 36	..	..	..	26 Nov., 1908	..	..	..	..	..	12 65
	Riversdale-Switzers	13 70	Riversdale-Waikaia	13 70	1 40	15 30	..	..	..	1 Oct., 1909	..	..	..	..	..	13 70
	Edendale-Toitois ..	19 30	Edendale-Glenham	9 36	0 72	10 28	..	..	..	..	..	..	..	..	..	9 36
			Surveyed ..	9 74	..	9 74	9 74	..	..	..	..	..	..	..	..	..
Otago Central	Waitaki Bluff Main Line to Lake Hawea	182 45	Wingatui-Ida Valley	98 18	5 62	104 0	..	..	..	..	..	..	..	..	..	
			Ida Valley-Omakau	13 20	1 16	14 36	..	..	..	1 Sept., 1904	..	..	..	..	..	
			Omakau-Chatto Creek	7 36	0 34	7 70	..	..	..	14 July, 1906	..	..	..	..	..	
			Chatto Ck.-Alexandra	10 39	1 6	11 45	..	..	..	15 Dec., 1906	..	..	..	..	..	147 27
			Alexandra-Clyde ..	5 45	0 77	6 42	..	..	..	27 Mar., 1907	..	..	..	..	..	
			Clyde-Cromwell ..	12 29	0 69	13 18	..	..	..	10 July, 1921	12 29	..	..	..	..	
			Surveyed ..	35 18	..	35 18	..	..	..	..	..	..	..	..	..	..
Invercargill-Kingston and Branch, Lumsden-Mararoa	Invercargill-Kingston	87 4	Invercargill-Kingston Wharf	87 4	5 15	92 19	..	..	..	..	..	..	..	..	..	87 4
	Lumsden-Mararoa ..	30 0	Lumsden-Mossburn	10 40	1 0	11 40	..	..	..	..	..	..	..	..	..	10 40
			Surveyed	8 20	..	8 20	8 20	..	..	..	..	..	..	..	..	..
			Reconnaissance ..	11 20	..	11 20	11 20	Prelim.	..	..	..	..	..	..	..	..
	Winton-Heddon Bush	11 0	Surveyed	11 0	..	11 0	11 0	..	..	..	..	..	..	..	..	..
Forest Hill Railway	Winton to Hedgehope	12 40	Winton-Hedgehope	12 40	0 65	13 25	..	..	..	..	..	..	..	..	..	12 40
Western Railways, Orepuki-Waiau River	Orepuki-Waiau ..	60 64	Makarewa-Orepuki ..	35 41	6 37	41 78	..	..	..	..	..	..	..	..	..	
			Orepuki-Waihoaka ..	4 48	0 58	5 26	..	..	..	..	..	..	..	..	..	
			Waihoaka-Tuatapere	8 7	1 10	9 17	..	..	..	1 Oct., 1909	..	..	..	..	..	56 34
			Tuatapere-Orawia ..	8 18	..	8 18	..	..	8 18	20 Oct., 1925	..	..	..	..	8 18	
			Orawia-Clifden ..	4 40	..	4 40	4 40	..	..	..	..	..	..	..	..	
	Otautau Branch ..	22 15	Thornbury-Wairio ..	22 15	..	22 15	..	..	..	..	..	..	..	..	..	22 15
	Orawia Branch ..	11 0	Surveyed	11 0	..	11 0	11 0	..	..	..	..	..	..	..	..	..
	Totals ..	2050 64	..	2050 64	272 12	2615 36	478 05	24 0	22 73	..	12 29	..	2 44	8 14	23 8	1773 72

APPENDIX C.

ANNUAL REPORT ON BUILDINGS BY THE GOVERNMENT ARCHITECT.

The Government Architect to the Hon. Minister of Public Works.

Sir,—

I have the honour to submit the following report on the activities of the Architectural Branch of the Department for the year ended 30th June, 1926.

During the period plans were prepared for new works of a total estimated value of £688,745, and tenders were accepted for buildings of a total value of £232,752. Of the latter amount £139,842 represents work designed and estimated for prior to the 30th June, 1925, and £92,910 the value of work completed or under construction in the period under review.

The above totals include twenty-one secondary-school buildings, of an estimated value of £126,992, out of which works completed or under construction total £58,299, and also twenty hospital buildings, designed for Hospital Boards, of an estimated value of £159,210, out of which contracts were let on their behalf of a total value of £52,662.

In addition to the above totals for new buildings a large amount of minor alterations, repairs, and general maintenance of public buildings has been carried out by district officers, and a considerable quantity of furniture and fittings has been manufactured in the Public Works workshops for other Government Departments.

Every effort has been made to effect economy in the construction of buildings, compatible with their importance and with due regard to the factor of maintenance. Building prices have been more stable, and competition for Government work has been very satisfactory, with few exceptions, and the standard of workmanship required has been generally maintained. Contractors still experience difficulty in obtaining thoroughly seasoned New Zealand timber of the quality required, but otherwise the supply of building-materials has been satisfactory. New Zealand timber has been used in preference to imported material, except in a few cases where suitable local timber was not procurable, and New-Zealand-manufactured roofing-tiles and other materials specified when available of satisfactory quality.

The following is a schedule of the works carried out during the year :—

Government Houses.

Auckland and Wellington.—General repairs and maintenance as required.

Parliament Buildings.

A new system of fire-alarms has been installed in the basement, and general repairs, alterations, and renovations carried out.

Ministerial Residences.

Alterations and renovations to three residences have been carried out.

Departmental Buildings.

Maintenance and general upkeep of buildings, including renovations, repairs, fittings, &c., to Departmental buildings.

The extension of the Departmental Buildings, Wellington, has been completed and occupied, and the staff dining-room on the top floor is exceedingly popular.

Post-offices.

(1.) *Whangarei District.*—Repairs and renovations have been carried out to twenty-three post-offices, and the erection of motor-garages and benzine-stores at Kaeo and Kaitaia is in hand.

(2.) *Auckland District.*—General repairs, renovations, and alterations have been carried out to sixty-eight post-offices, &c., including general renovations to the Chief Post-office, Auckland. A new two story post-office of brick and concrete, and roofed with New-Zealand-manufactured Marseilles tiles, has been erected at Paeroa, and private letter-boxes and furniture manufactured and supplied; whilst a new wooden post-office and residence, with concrete foundations, and roofed with New-Zealand-manufactured Marseilles tiles, has been erected at Te Kauwhata, and the usual private letter-boxes, furniture, and fittings provided. A bulk store was also completed by day labour in Stanley Street, Auckland.

(3.) *Taumarunui District.*—Renovations have been carried out to eleven post-offices.

(4.) *Tauranga District.*—Repairs and renovations have been carried out to ten post-offices, and the following additional buildings have been erected at Tauranga Post-office: Garage, bicycle-shed, petrol-store, and linesman's office, also ladder-rack and destructor. A new garage has been erected at Taupo Post-office.

(5.) *Gisborne District.*—Extensive additions in brick and concrete, and alterations to the Gisborne Post-office are nearing completion, whilst the manufacture and supply of private letter-boxes, fittings,

floor-covering, &c., is practically completed. Alterations and renovations were also carried out to seven post-offices.

(6.) *Stratford District.*—A contract for the erection at Marton of a new two-storied building, and large single-story building as motor-garage and store, both in brick and reinforced concrete, has been accepted, and the erection of the building is in progress, nearly one-half of the work having been completed. Structural alterations have been carried out to the Taihape Post-office, and general maintenance work done to nine post-offices in the district.

(7.) *Napier District.*—Renovations and repairs have been carried out to nineteen post-offices.

(8.) *Wellington District.*—A new two-story building in brick and concrete, and roofed with New-Zealand-manufactured Marseilles tiles, has been erected at Eastbourne, whilst a new office has also been erected at Castlepoint. General repairs, alterations, and renovations have been carried out to forty-five post-offices and telephone exchanges. A contract for the erection of extensive additions in brick and concrete, and alterations to the Palmerston North Post-office has been accepted, and work on same commenced.

(9.) *Nelson District.*—Renovations and repairs have been carried out to seventeen post-offices.

(10.) *Christchurch District.*—Extensive alterations and remodelling of the interior of the Christchurch Chief Post-office have been practically completed, and repairs and renovations were carried out to five other buildings. A new building in brick and concrete, and roofed with New-Zealand-manufactured Marseilles tiles, was erected at New Brighton.

(11.) *Greymouth District.*—Repairs and renovations have been carried out to thirteen post-offices, and electric lighting has been installed in the Westport Post-office.

(12.) *Dunedin District.*—A new building in wood on concrete foundations has been erected at Tuatapere, and private letter-boxes, fittings, &c., supplied. Repairs and renovations have been carried out to twenty-two post-offices.

Courthouses.

(1.) *Tauranga District.*—New Courthouses have been erected at Whakatane and Te Puke, and alterations and repairs have been carried out to three other Courthouses.

(2.) *Stratford District.*—Additions and repairs have been carried out to the Courthouses at Wanganui and Manaia.

(3.) *Gisborne District.*—Additions and renovations were carried out to the Gisborne Courthouse.

(4.) *Napier District.*—Minor repairs have been carried out to the three Courthouses.

(5.) *Wellington District.*—Repairs and alterations have been carried out to nine Courthouses.

(6.) *Nelson District.*—General renovations were carried out to the Collingwood Courthouse.

(7.) *Greymouth District.*—Repairs and renovations were carried out to four Courthouses.

(8.) *Dunedin District.*—Extensive alterations and renovations have been carried out to the Invercargill Courthouse, and minor renovations carried out to the Supreme Court building, Dunedin, and to Courthouses at Bluff, Otautau, and Riverton. A new building in brick and concrete, roofed with New-Zealand-manufactured Marseilles tiles, was erected at Balclutha, and fittings, &c., supplied.

Police-stations and Gaols.

(1.) *Whangarei District.*—Repairs and renovations have been carried out to ten police-stations.

(2.) *Auckland District.*—New police-stations in wood on concrete foundations have been erected at both Kawhia and Morrinsville, and renovations and repairs have been carried out to thirty-one stations. A new bathroom and hot-water service has been installed at Mount Eden Gaol. Alterations and renovations have been carried out to the administration block, Superintendent's residence, cottages, laundry, and milk-store at Waikeria Reformatory.

(3.) *Taumarunui District.*—Repairs and renovations have been carried out to three stations.

(4.) *Tauranga District.*—Repairs and renovations have been carried out to eight stations.

(5.) *Gisborne District.*—Repairs and renovations were carried out to four police-stations.

(6.) *Stratford District.*—New offices in wood have been built at both Raetihi and Ohakune, and repairs and renovations have been carried out to four other stations.

(7.) *Napier District.*—Repairs and renovations have been carried out to nine stations.

(8.) *Wellington District.*—A new police-station in wood on concrete foundations, and roofed with New-Zealand-manufactured Marseilles-pattern tiles, has been erected at Island Bay. Repairs and renovations have been carried out to twenty-two police-stations and residences. A new laundry is under erection at Point Halswell Reformatory, and extensive works in reinforced concrete and concrete blocks are being carried out at Watts Peninsula for the new Wellington Prison. The west cell-range has been completed, and kitchen and walls under erection. The whole of this work is being erected by prison labour.

(9.) *Nelson District.*—Repairs and renovations have been carried out to nine stations.

(10.) *Christchurch District.*—Repairs and renovations were carried out to three police-stations, whilst a contract for the heating of the administration block, Paparua Prison, has been let.

(11.) *Greymouth District.*—Repairs and renovations have been carried out to fourteen police-stations. New police-stations in timber on concrete foundations have been erected at Kanieri and Otira, and furniture and fittings supplied.

(12.) *Dunedin District.*—A bathhouse, 97 ft. by 45 ft., has been erected with prison labour, in concrete blocks, over the swimming-pool, and completed with dressing-cubicles and shower-baths, at the Invercargill Borstal Institution. Repairs and renovations have also been carried out to thirteen stations.

MENTAL HOSPITALS.

(1.) *Avondale.*—Alterations and renovations were carried out, and a new bakehouse provided. Work of installing laundry machinery, &c., in hand.

(2.) *Tokanui.*—The new female admission block, a two-storied building in brick and concrete, and roofed with tiles, has been completed and furnished, and is now occupied. The whole of the buildings on the estate with the exception of unit No. 1 have been renovated and painted. An additional implement-shed and a two-stall loose-box stable have been erected on the farm, and all necessary maintenance work has been executed as required.

(3.) *Porirua.*—A new residence for the Superintendent has been erected. Five new villas, each to accommodate thirty-four patients, have been completed, and are now occupied. A new kitchen, stores, &c., and dining-room for attendants have been added to auxiliary buildings, and contracts for the erection of a neuropathic block and admission cottage have been let. General repairs and renovations have also been carried out.

(4.) *Nelson.*—Additional lavatory accommodation has been installed in El Nido Ward, and repairs and renovations carried out.

(5.) *Stoke.*—A new two-storied building in brick and concrete, and roofed with tiles, has been completed and occupied. Repairs to dam have been completed, and dam enlarged; construction outfall sewer completed; motor-garage extended, and concrete pit repaired. Two reservoirs were relined with concrete walls; also renovations to attendants' cottages, Medical Officers' room, and Farm-manager's room.

(6.) *Hokitika.*—A new villa for thirty-eight patients has been erected, and furniture and fittings supplied. Repairs and renovations have been carried out, and some of the old buildings demolished.

(7.) *Sunnyside.*—General maintenance work has been carried out. Additions and alterations have been made to laundry and entrance lodge.

(8.) *Hornby.*—A contract has been let for the erection of a new unit for nervous affections.

(9.) *Seacliff.*—The old single rooms and dining-room in B Ward have been replaced by new structure. All externals at Waitati have been painted, and general maintenance carried out.

EDUCATION.

(1.) *Whangarei District.*—Whangarei High School Block A (contract No. 1) was completed in all details on the 21st December, 1925. Block B (No. 2 contract) was commenced on the 1st October, 1925, and completed on the 6th June, 1926. On the 12th January, 1926, the contract for laboratory fittings was commenced, and completed on the 12th April, 1926. Alterations and renovations were carried out to ten Native schools. New schools and residences for teachers were erected at Karakanui and Waikeri.

(2.) *Auckland District.*—A Native school and schoolmaster's residence, with all necessary outbuildings, has been erected at Makomako; four other Native schools have been renovated and painted. Shelter-shed has been erected at Epsom Grammar School. A new Probation Home for boys is being erected at Mount Albert; the building, which is in timber on concrete foundations, is well in hand, and the contract will be completed in a few days. Extensive repairs have been carried out to the Hamilton Receiving-home. The contractor has made a start on the erection of additions to the Seddon Memorial Technical College. This is an extensive addition of an extra floor in reinforced concrete, and will complete the first portion erected. Mount Eden Grammar School, repairs carried out to miniature rifle range.

(3.) *Tauranga District.*—Two new Native schools and teachers' residences have been erected at Ranana and Toheke. These are of wood on concrete foundations. Repairs and renovations have been carried out to five Native schools and residences.

(4.) *Gisborne District.*—At Gisborne High School a two-story addition of six class-rooms to the existing building, in brick and concrete, was completed. This addition was roofed with locally manufactured concrete tiles. General repairs and renovations were also carried out. Repairs and renovations were carried out to five Native schools, and a new school was erected, in wood on concrete foundations, at Hiruharama.

(5.) *Napier District.*—The first portion of the new buildings for Hastings Technical High School, built in brick and concrete and roofed with tiles, has been completed. The portion erected consists of central administration block, class-room block, and laboratory block, together with the installation of laboratory fittings. Laboratory fittings were also installed in the new Napier Boys' High School. Repairs and renovations have been carried out to two Native schools, and maintenance work has been carried out to Greenmeadows Receiving-home.

(6.) *Stratford District.*—A contract has been let for erection of four new class-rooms in brick and concrete, for New Plymouth Boys' High School, and work on the erection of same is now in hand.

(7.) *Wellington District.*—A portion, consisting of eight class-rooms and laboratory, of a new high school, in brick and concrete roofed with slate, has been erected in the Hutt Valley, and was handed over to the authorities on the 31st May, 1926. The Wellington Technical School new workshops, a single-story building in reinforced concrete, has been completed. A new caretaker's cottage has been erected at the Wellington East Girls' High School, and general repairs and renovations have been carried out to seven schools.

(8.) *Christchurch District.*—Alterations and additions in brick and concrete of two-storied structure for the Timaru Girls' High School is completed.

(9.) *Greymouth District.*—Repairs have been carried out to the School of Mines and Technical School, Westport; Child Welfare Branch, Greymouth, removed to a new office, and fittings, &c., supplied.

(10.) *Dunedin District.*—The new brick building for the Southland Boys' High School was completed during the year, and the High School authorities are now in possession.

PUBLIC HEALTH DEPARTMENT.

(1.) *Auckland District.*—Repairs and renovations have been carried out to St. Helens Hospital, Health Department's Offices, and Quarantine Station, Motuihi Island.

(2.) *Gisborne District.*—Additions and alterations to St. Helens Hospital have been completed.

(3.) *Stratford District.*—New offices and dental clinic fitted up and furnished at Wanganui.

(4.) *Napier District.*—At the Pukeora Sanatorium a kitchen has been built, also new staff dining-room, and general repairs and renovations have been carried out.

(5.) *Wellington District.*—General repairs and renovations have been carried out to St. Helens Hospital and Nurses' Home, Otaki Sanatorium, and at Somes Island. Additional accommodation and alterations made at Otaki Sanatorium.

(6.) *Christchurch District.*—Hanmer, a substantial hospital in reinforced concrete, was carried to completion under contract. A contract was let for fencing, &c., and also for additional painting. Power-house, milking-shed, and fodder-store are all in course of erection.

(7.) *Dunedin District.*—General maintenance to St. Helens Hospital, Invercargill; also galvanized-iron fence and wood-shed erected.

HOSPITAL BOARDS.

(1.) *Whangarei Hospital Board.*—Plans and specifications for an Old People's Home, in brick and concrete, to accommodate thirty-five patients, were completed, and tenders called.

(2.) *Taumarunui Hospital Board.*—Plans and specifications were prepared for, and a temporary Maternity Home was completed.

(3.) *Hawke's Bay Hospital Board.*—A contract has been let and the building is now under construction for the addition of a new ward, in brick and concrete, for the Napier Hospital. This ward is known as the Midgley Ward, and accommodates twenty-three patients, and has been designed to take a further story. Plans and specifications have been prepared for a disinfector station for the same hospital.

Hawke's Bay Fallen Soldiers' Memorial Hospital: Plans and specifications have been completed, and tenders will be called at an early date. The building will be in brick and concrete, roofed with tiles, and will accommodate twenty patients, including maternity cases. Separate accommodation for twelve nurses is also provided.

(4.) *Waipawa Hospital Board.*—A two-storied Nurses' Home at the Waipukurau Hospital, to accommodate thirty nurses, and built of brick and concrete, is nearing completion.

(5.) *Dannevirke Hospital Board.*—A new ward in brick and concrete, to accommodate eighteen children, is nearing completion at the Dannevirke Hospital, whilst an addition of twelve rooms to the Nurses' Home has been completed.

(6.) *Palmerston North Hospital Board.*—Sketch-plans for additions to Nurses' Home, and new wards, have been prepared, and submitted to the Hospital Board.

(7.) *Wellington Hospital Board.*—Plans and specifications for a new power-house, kitchen, and laundry block, &c., are practically completed.

(8.) *Westland Hospital Board.*—A brick and concrete addition to existing men's ward has been completed.

(9.) *Grey River Hospital Board.*—Extensions to laundry and boiler-house, in brick and concrete, have been completed. New Nurses' Home, two stories, in brick and concrete, accommodating thirty nurses, is in course of erection.

(10.) *Balclutha Hospital.*—Plans and specifications for a new residence for the Medical Superintendent have been prepared.

(11.) *Maniatoto Hospital Board.*—Plans and specifications have been prepared for additions and alterations to the Naseby Hospital.

DEFENCE DEPARTMENT.

(1.) *Auckland District.*—Repairs and renovations were carried out to eight drill-halls, and to buildings at three forts. Repairs and renovations were carried out to Narrow Neck Camp, Waikato Camp, Ngaruawahia and Penrose and Waihi rifle ranges.

(2.) *Tauranga District.*—Repairs and alterations have been carried out to drill-halls at Rotorua and Opotiki. Repairs have also been completed at the Tauranga rifle butts.

(3.) *Stratford District.*—Additions and alterations to the Coronation Hall, New Plymouth, have been completed. Alterations have also been carried out to the Hawera rifle range.

(4.) *Wellington District.*—A new caretaker's cottage has been erected at Fort Ballance, and general renovations, additions, and repairs have been carried out to twenty drill-halls, military camps, &c.

(5.) *Nelson District.*—Repairs and renovations were carried out to Nelson Drill-hall and Artillery Barracks. A flagpole was erected at the Defence Offices, and general repairs carried out to the rifle ranges at Stoke and Vernon, and also to the Tapawera Camp.

(6.) *Greymouth District.*—Repairs and renovations have been carried out to four drill-halls and three rifle ranges. The work of installing electric lights in the Greymouth Drill-hall and office is in hand.

(7.) *Christchurch District.*—Various alterations, repairs, &c., were carried out to the several drill-halls, &c., also to Redcliffe rifle range and Burnham Military Camp.

(8.) *Dunedin District.*—General repairs and renovations were carried out to the drill-halls at Invercargill, Bluff, and Central Battery, also to the Invercargill rifle range.

The armoury at the Southland Boys' High School was removed from site at old school and re-erected in grounds of new school. Renovations were carried out where required.

TOURIST DEPARTMENT.

(1.) *Helenville Hot Springs.*—A new kiosk has been erected.

(2.) *Te Aroha.*—A new bowling-pavilion has been erected.

(3.) *Waitomo Caves.*—A new wooden building on concrete foundations has been provided as accommodation for attendants, and excavation for the new addition to the hostel taken out, whilst the stone wall and parapet has been completed. Duckwalks, steps, and general improvements to the caves have also been carried out.

(4.) *Waikaremoana Hostel.*—Additions to this building have been completed. The hostel can now lodge forty-eight guests, and accommodate eighty-four in the dining-room. The building has been wired for electricity, and a complete electrical kitchen installed.

(5.) *Morere Baths.*—Bathhouses 1, 2, and 3 have been renovated, a new bath and set of steps built, and a kitchen to the caretaker's cottage erected. Tarawera Bathhouse: A new bath has been built.

(6.) *A.C. Baths, Taupo.*—Repairs, alterations, and renovations have been carried out.

(7.) *Te Anau Hotel.*—A new building in reinforced concrete, being the first portion of a complete scheme, has been erected, an electric-lighting plant installed, and a complete drainage system carried out.

(8.) *Glade House.*—Renovations and repairs have been attended to.

(9.) *Te Anau, Milford Track.*—Improvements have been made to huts on Milford Track, and an additional hut provided at Sandfly Point.

GENERAL.

Various alterations, repairs, &c., were carried out for other Departments, including Agriculture, Customs, Defence, Electoral, Government Life, Internal Affairs, Marine, Mines, Public Trust, State Fire, Tourist, and Valuation, and also Ministerial residences.

A large quantity of furniture and fittings was made and supplied to various offices.

In concluding, I desire to place on record my appreciation of the co-operation of the district offices, and the efficient and loyal manner in which the members of the architectural staff carried out their duties.

JOHN T. MAIR, A.R.I.B.A.,
Government Architect.

APPENDIX D.

ANNUAL REPORT OF THE CHIEF ELECTRICAL ENGINEER.

The Chief Electrical Engineer to the Hon. the Minister of Public Works.

Sir,—

I beg to report on the position of the development of electric power in the Dominion for the past year as follows:—

GOVERNMENT SCHEMES IN OPERATION.

LAKE COLERIDGE ELECTRIC SUPPLY.

For the year ending 31st March, 1926, the results of operation have been very satisfactory, and a substantial credit balance is shown on the year's working. This year completes the eleventh year of operation, and shows the best financial returns since the plant has been running. The attached tables (D, E, and F) give the analysis of results obtained for the year's working, and details of connected load are shown in Table G.

Financial Results.

The capital outlay at the close of the year was £1,366,951, as against £1,008,491 for the previous year, an increase of £358,460. The total revenue for the year was £123,355; and, after payment of operating charges, interest, and depreciation, a profit of £26,646 was shown. This has enabled the accumulated deficiency on Profit and Loss Account to be wiped out, and an amount of £8,907 has been placed to the credit of Sinking Fund Account, representing the first occasion on which the scheme has been enabled to set aside any amount for this purpose. Table D shows particulars of financial results and load records.

The total costs per unit generated were 0·337d., being a reduction of 0·012d. in consequence of the plant's running up to its full capacity for a lengthy period. Operating-costs have increased by £3,765, mainly due to increased staff and transmission-line maintenance. Particulars of operating-costs will be found under Table F.

Connected Load.

The total connected load at the end of the year was 90,926 kw., being an increase of approximately 22·5 per cent. on that of the previous year. Details of connected load are given under Table G.

Power-house Load and Operation.

The maximum output from the power-house to the 31st March was 14,430 kw., representing an increase of 9·5 per cent. over the previous year's maximum, and an overload of approximately 20 per cent. on the normal capacity of the station. Units-output from the power-house totalled 68,860,614, as against 59,528,216 for the year preceding, being an increase of 15·6 per cent. The annual load-factor was 54·5 per cent., or 2·7 per cent. higher than that for the previous year.

As shown above, there was a heavy overload on the plant during the year, but the plant has proved equal to the demand, and has operated with every satisfaction. It was anticipated that the plant could not cope with the demand during the autumn and winter months of 1926, and arrangements were therefore made with the Christchurch Tramway Board to supply their own load when required, with the 1,500 kw. steam standby plant. Up to the 31st March it was, however, found unnecessary to utilize the available standby.

During the period 31st March to 30th June, 1926, the plant was severely taxed to meet the demands made on it, and relief was provided as required by the Tramway Board's plant. In addition, the courtesy of the freezing companies in reducing demands to a minimum during peak-load hours greatly assisted the Department in meeting the demands for power during this period.

I cannot but express my appreciation of the work of the Power-house Superintendent and his staff in maintaining supply under the overload conditions, and at the same time carrying on expeditiously the work of installing the new generating-unit and switchgear.

Transmission-lines.

A contract was let on 4th August, 1925, for the erection of poles for the new transmission-line from Hororata to Timaru. The contract was completed in March, and wiring commenced in February. Contracts were let for the piled foundations for steel-tower crossings of the Rakaia, Ashburton, Temuka, and Opihi Rivers. It is anticipated that the new line, which will be fitted with suspension insulators and aluminium cable, steel reinforced, will be completed and put into service before the end of August.

A pole-erection gang has commenced work on the pole-line from Timaru to Oamaru, and work will be completed by the end of June. The wiring of this section will be carried out by co-operative contract and day labour. It is anticipated that this line will be completed by October. Both this

line and that from Hororata to Timaru will be suitable for 110,000 volts, though operated for the present at 66,000 volts. The total length will be 141 miles, which will form part of a general trunk system interconnecting Coleridge with other power-stations farther south.

Work was commenced at the end of June, 1926, on the erection of a short length of transmission-line from Glentunnel to Hororata. The completion of this line will result in all three lines from Lake Coleridge passing through Hororata and thence to Christchurch, thus giving considerably better service to that city. All lines to Christchurch from Hororata will be protected by automatic oil circuit-breakers, and full provision made for cutting out faulty sections.

Interruptions.

Christchurch Lines.

The total number of interruptions during the year exceeding one minute was eight, total time of interruption being 8 hours 23½ minutes. Of this time the longest period was 6 hours 58 minutes. This particular interruption was the result of a very heavy snowstorm on the 7th and 8th August. Indications of trouble first occurred at 12.10 p.m., culminating in complete interruption on all three lines at 2.36 p.m. Every endeavour was made to restore supply, but owing to failure of all communication, and the impassable nature of the roads for motor transport, power was not restored until 9.34 p.m. All telephone-lines, including those of the Post and Telegraph Department, were out of action for a considerable time during this period. It was satisfactory to note that though the loading on the copper wires increased the diameter four times, none of the wires was broken, though the wires on the North line, which at the part affected by snow were of aluminium, suffered badly. This section has since been replaced by copper. The Tramway Board standby plant was called into operation and a restricted service provided Christchurch until power was restored.

The only other serious line trouble occurred in July, and was caused by exceptional floods in the Hawkins and Selwyn Rivers, which washed out poles in the Middle and North lines. All poles in these two rivers, and also on the Wainiwaniwa, have since been piled, so that trouble from floods in future should be eliminated. There was no interruption to supply, however, as the South line maintained service during the work of repairing the Middle and North lines.

Timaru Line.

Apart from arranged shut-downs for necessary work there has again been a very considerable number of interruptions to this line, though, except for two serious interruptions, mentioned later, there has been a considerable improvement on last year. The most serious interruption occurred on the 14th September, due to heavy flooding in the Opihi River resulting in the washing-out of a pole, which it was difficult to replace owing to the condition of the river. The second occasion was during the heavy snowstorm of the 7th and 8th August, the line from Rakaia Gorge to Methven being affected. Of the other outages five only could be traced directly to defective insulators, the others being due to bark, magpies, and causes unknown. Steps have been taken to deal with the river-crossings on this line, and it has been arranged that both the new and the existing lines will be erected on towers with piled foundations at the Ashburton, Temuka, and Opihi Rivers. The completion of the second line to Timaru in August will reduce interruptions to a minimum as, in addition to being of different type of construction, it will be clear of the heavy snow country between the Gorge and Methven.

Lake Coleridge Duplication.

The late delivery of machinery from British contractors has resulted in serious delay in completion of the duplication works. Progress to the 30th June, 1926, is as follows: Turbine of first generating-set arrived in Lyttelton on the 17th November, 1925. Erection was commenced in December, and completed on the 13th February. The generator did not arrive at the power-house until April, and was erected by the 29th May. The Larner-Johnson valve for the turbine end of the pipe-line was considerably delayed in shipment, and did not arrive at Lyttelton until May. The delay in installation of this valve held up the contractors for the pipe-line, and it was not until the 15th June, 1926, that the valve was installed and the pipe-line completed. The erection of the pipe-line valve and generating-set was practically completed on the 30th June, 1926, and it is anticipated that the set will be run on load about the 10th July. Practically all machinery for the second generating-unit had arrived by the end of June, and it is anticipated that this set will be put into operation before the end of December, 1926.

The new ironclad switchgear manufactured by Messrs. Metropolitan Vickers was erected complete and connected up with the existing station system ready for operation at the end of June. The transfer of generators and transformers to the new switch-gear will be carried out as opportunity offers, and this work should be completed by the end of October.

General.

Addington Substation.

The ironclad switch-gear and additional switch-panels arrived during the year, and to the 30th June one-third of the switches had been erected. The additional switch-panels have been erected, and the alterations to existing panels are proceeding. A 5,000 kv.a. bank of transformers was installed and put into service on the 9th June, 1926, thus bringing the transformer capacity of Addington Substation to 15,000 kv.a. A contract was let in February for the supply of a 12,000 kv.a. bank to replace one of the 5,000 kv.a. banks, this bank being transferred to Ashburton Substation. As the load con-

ditions demand it, each of the other two 5,000 kv.a. banks will be replaced by 12,000 kv.a., thus bringing the ultimate transformer capacity of the substation to 36,000 kv.a. Provision is being made for automatic isolation of any of the three incoming lines from Lake Coleridge, and this work should be completed by the end of September, 1926.

The 6,000 kv.a. synchronous condenser was completed and put into commission in April, 1926. This machine will enable better voltage regulation to be carried out at Addington.

Extensions to Hororata, Ashburton, and Timaru Substations are being carried out to enable full use to be made of the new transmission-line from Hororata to Oamaru. This line will be sectionalized by means of automatic oil circuit-breakers, so that in the event of faults occurring the faulty section will be cut out.

Extensions to the reticulation of the South Canterbury Power Board during the year included Geraldine County and Waimate Borough, and the maximum demand of the Board has increased considerably.

Supply was given to Malvern Power Board on the 7th June, 1925, from Hororata Substation.

Negotiations are in progress for the formation of an Electric-power Board to include the Counties of Eyre, Rangiora, Kowai, Ashley, and Oxford. It is proposed to supply the new Board by a 33 kv. line to be erected from Addington to Southbrook.

Rainfall.

The rainfall at the power-house for the year was 44·17 in., a record for the eleven years during which readings have been taken. The highest monthly rainfall occurred in July, when a fall of 8·67 in. was recorded.

The water-level in the lake has been well maintained, practically at overflow level throughout the year. Some damage was caused from time to time at the intake of the Harper race, but not of sufficient extent to in any way make any appreciable difference in lake-level.

WAIKATO ELECTRIC SUPPLY.

Capital Outlay.

The capital outlay at the end of the year was £561,065, as compared with £522,973 at the end of last year, an increase of £38,072. This is analysed in Table **K** herewith, which shows that the increase is principally in the following items: Headworks, £16,406; and transmission-lines, £11,083. Of the above, £33,734 is expended on assets not yet in operation.

In addition to the capital outlay provided under the Horahora scheme, the following works, of total capital value of £174,026, provided under the Arapuni scheme, are in operation, and supplied with power from Horahora: Transmission-lines—Claudelands (Hamilton)–Penrose, Horahora–Arapuni–Ngongotaha, Waikino–Katikati, Te Awamutu–Hangatiki; also substations at Arapuni, Penrose, Bombay, and Ngongotaha.

The combined capital outlay on assets in operation, on which amount interest is paid out of revenue is thus as follows: Horahora, £527,331; Arapuni, £174,026: total, £701,357.

Financial Results of Operation, and Future Prospects.

The year ended with a profit, after paying all operating expenses, interest, and depreciation, of £21,348. This amount has been utilized in paying £11,342 to sinking fund account, and £10,006 to reserve account. The annual revenue increased from £65,184 last year to £85,830 this year, an increase of £20,646, or 32 per cent. The table given below shows the sources of this revenue:—

Revenue from—	1924. £	1925. £	1926. £
Large mining companies	24,635	18,086	16,476
Power Boards (other than Auckland)	26,007	35,302	42,730
Auckland Power Board	..	..	10,850
Hamilton Borough	4,621	5,461	6,205
Tourist Department, Rotorua	..	..	276
Other wholesale consumers	3,281	4,264	7,432
Miscellaneous	1,380	2,071	1,861
	59,924	65,184	85,830

The increase in revenue is principally due to the sale of power to Auckland and the increased sales to the four original Power Boards. The revenue from these four equals £42,226, and the sum of their maximum loads equals 5,521 kw., as compared with £35,302 and 4,532 kw. for the previous year.

Working-costs during the year are shown in Table **L**. These show—

(1.) A considerable decrease in generating-costs per unit, owing to the greater number of units generated:

(2.) An increase in the items of transmission, main substations, and management, which is due mainly to the fact that the extensions to the transmission system are not fully loaded, and as the system becomes more complex, management becomes rather more difficult:

(3.) An increase in power purchased, owing to the greater amount purchased:

(4.) A decrease in the total cost per unit.

Extensions during the Year, and Future Extensions.

General: Additional Consumers and Connected Load.

During the year supply has been given to the following new wholesale consumers:—

	Point of Supply.	Date.
Auckland Power Board	Penrose	17th July.
Franklin Power Board	Bombay	20th November.
Waitomo Power Board	Hangatiki	6th January.
Tourist Department, Rotorua	Ngongotaha	7th February.
Armstrong-Whitworth (from 50 kv. substation)	Arapuni	20th September.

Arrangements have been made to supply the Waitemata Power Board during the coming year at two points—Henderson and Takapuna.

The completion of the 110,000-volt pole line from Claudelands to Penrose, which is supplying power from Horahora at 50,000 volts, and of the 50,000-volt lines from Waikino to Katikati, and to Ngongotaha (Rotorua) and Hangatiki (Waitomo), have largely increased the total mileage of lines, and the system supplied from Horahora now consists of 70 miles 110,000-volt line operated at 50,000 volts, 162 miles 50,000-volt line, including 20 miles at present operated at 11,000 volts, and 44 miles 11,000-volt line, belonging to the Department; also 16 miles of 50,000-volt line belonging to Tauranga Borough Council; and 593 miles 11,000-volt line, 487 miles 3,300-volt line, and 507 miles 400-volt line belonging to other local authorities, and not including the Auckland Power Board or Rotorua lines. (The above are "route miles" of lines.)

The connected load (not including the Auckland connected load) has increased from 31,757 kw. to 41,502 kw.

The increase in maximum load has been from 7,600 to 11,400 on Horahora, and including power purchased from McLaren's Falls the peak load has been 11,860 kw., an increase in the system load of 3,560 kw.

The demand factor (exclusive of power supplied to Auckland, and connected load in Auckland) is 24·1 as compared with 26·3 last year.

The connection from Waikino Substation to the McLaren's Falls plant of the Tauranga Borough Council was completed on the 11th December, under an agreement which provides for our obtaining 1,800 kw. maximum and 16,000 units per day of power, measured at Waikino.

Owing to some minor difficulties in connection with voltage-regulation, only about 1,200 kw. maximum load has been taken to date, in normal circumstances. The provision of a synchronous condenser, now on order, at Waikino will enable more power to be taken normally. At periods of interruption of the Horahora–Waikino line all power available from McLaren's can be used, and this arrangement has proved of great value at such times.

Extensions to Horahora.

These were completed and placed in service during the year, with the exception of the new weir, which is now approaching completion. The extensions include two 2,500 kv.a. generators and water-wheels, two 220 kw. motor-driver exciters, one bank of 5,000/50,000-volt transformers, 3,930 kv.a., and the necessary 5,000-volt and 50,000-volt switch-gear, as well as extensions to the power-house and transformer-house buildings, and alterations to the head-race and tail-race.

Additional Transmission-lines.

The following lines were completed during the year: Claudelands–Penrose, 110,000-volt wood-pole line; Waikino–Aongatete, 50,000-volt wood-pole line; Arapuni–Ngongotaha, 50,000-volt; Te Awamutu–Hangatiki, 50,000-volt; Bombay–Pukekohe, 11,000-volt; Ngongotaha–Rotorua, 6,600-volt.

In addition, the 110,000-volt wood-pole line from Arapuni to Claudelands, which, with the existing line from Claudelands to Penrose, will complete a separate line from Arapuni to Penrose, is under construction, and will be completed from Horahora to Claudelands, and supplied with power from Horahora about the end of June.

Survey has been practically completed, and material ordered, for the following lines: Penrose–Henderson–Takapuna, 50,000-volt double circuit; Bombay–Waikino, 50,000-volt; Arapuni–Penrose, 110,000-volt double circuit, steel tower.

Substations (110,000 Volts).

Penrose (in operation at 50,000 volts).—The transformers (four 5,000 kv.a., single-phase, 110,000–11,000 volts) were dried out and installed, and the necessary switch-gear and connections installed temporarily to transform from 50,000 volts to 6,600 volts for the Auckland Power Board. A bore-hole, 4 in. diameter, was sunk 90 ft. through the rock to provide a main earth for the substation. Three additional cottages, making four in all, were built on the substation-site for the operating staff. Work has been in progress for several months on excavation of rock to the level necessary for the main-building floor, for cable-trenches and synchronous-condenser foundations.

Substations (50,000 Volts).

Claudelands (Hamilton).—A new bank of transformers, 1,500 kv.a., was installed at Claudelands Substation, replacing six 250 kv.a. single-phase transformers which had been temporarily paralleled; and provision has been made for the installation of a second bank of 1,500 kv.a. in the coming year.

Bombay.—Three 250 kv.a. single-phase transformers were removed from Hamilton to Bombay and installed there, to give supply to the Franklin Board. The switch-gear for this substation is on order, and at present supply is being given through temporarily installed switch-gear.

Ngongotaha (50,000/6,600 volts).—Three 250 kv.a. single-phase transformers were removed from Hamilton to Ngongotaha and installed there, also 6,600-volt switch-gear. A house was erected for the operator-lineman.

Arapuni.—On changing over the Horahora–Arapuni line to 50,000 volts, to give supply at this voltage on the continuation to Ngongotaha, a 750 kv.a. bank of transformers, 50,000 to 11,000 volts, was installed at Arapuni, to give supply at 11,000 volts to the contractors and to the Thames Valley Power Board.

Waikino.—Temporary connections were made at Waikino, pending arrival of switch-gear, to enable power to be taken from McLaren's Falls. A 1,500 kv.a. synchronous condenser is to be provided at Waikino in the near future.

Te Awamutu.—Temporary connections were made at Te Awamutu, pending the arrival of 50,000-volt transformers for Hangatiki, to supply the latter point at 11,000 volts over the 50,000-volt line from Te Awamutu.

Future Substations.

Material is on order, or will shortly be ordered, for the completion of the initial installation of Penrose Substation for supply from Arapuni, comprising two 15,000 kv.a. transformer banks, 110,000 volts to 22,000 volts, for supply to Auckland, and one bank of 5,000 kv.a., 22,000 to 50,000 volts to supply the Penrose–Takapuna line, with the necessary 110,000-volt, 22,000-volt, and 50,000-volt switch-gear.

Material is on order also for 110,000-volt to 50,000-volt substations at Bombay and Claudelands, portions of which will be completed this year and used at 50,000 volts for supply of Horahora power.

Operation and Maintenance.

Headworks and Power-house.

At the beginning of the year the capacity available at Horahora was 6,300 kw., and assistance in carrying the load was being obtained from the Grand Junction Company. The installation of two new 2,000 kw. units relieved the position considerably, and allowed a much-needed overhaul to be given to each of the old units in turn. With the addition of the Auckland and other load the plant again became fully loaded.

There have been no troubles of importance with the plant, excepting the breakdown of three 50 kv. oil-switch condenser bushings. Apart from this, loose laminations, &c., on two of the generators, partial blockage of transformer cooling-coils, overheating of some of the connections under heavy load, and wear on the turbine governor-shafts and other parts, have been the chief matters requiring attention. Constant cleaning of screens has been necessary throughout the year.

There have been five accidental interruptions due to power-house causes, two of these being due to failure of the excitation and two to breakdown of oil-switch bushings.

Transmission-lines (110,000 Volts.)

Claudelands–Penrose (operated at 50,000 volts).—There were ten accidental interruptions on this line, the most serious being due to a pole being blown down in waterlogged ground during a gale. All the others were cases of line troubles between Horahora and Claudelands, or momentary interruptions due to unknown causes. A good deal of work has been done on this line during the year, guying and blocking poles in soft and swampy ground.

Transmission-lines (50,000 Volts).

Horahora–Waikino.—There were twelve accidental interruptions on this line. Seven pin insulators were replaced on breakdown, and ten on overhaul.

Horahora–Claudelands–Te Awamutu.—There have been ten accidental interruptions on this line, the most serious being due to broken wires, two caused by branches of trees, and one being burnt through by a flashover, due apparently to hay being carried up on a pole by a whirlwind. Steps have been taken to cut down or trim all trees likely to cause similar trouble in future. Four pin insulators were replaced on breakdown, and ninety-six on overhaul.

Other 50,000-volt Lines.—There has been no trouble on other 50,00-volt lines, and only a few interruptions, of short duration, due in all cases apparently to troubles on other lines.

The interruptions above are on lines only, not necessarily to substations, as in most cases a duplicate supply is available.

50,000-volt Substations.

Claudelands.—The capacity of this substation was increased from 750 kv.a. to 1,500 kv.a. during the year.

Waihou.—This substation (750 kv.a.) has also been overloaded during the year, and a duplicate bank of transformers has been ordered to increase its capacity to 1,500 kv.a.

There have been several failures of 11,000-volt compression-chamber arresters. Neutral earthing-reactors are on order to earth the neutral points at Waikino and Waihou substations.

11,000-volt Lines and Substations.

Little trouble has been experienced on these during the year. One 11,000-volt trifurcating-box at the Frankton railway-crossing broke down and was repaired. A tree fell across and broke all six wires on the Leamington–Claudelands line, and one or two insulators have been replaced, damaged apparently by external causes.

Power purchased.

Power purchased during the year amounted to 1,590,511 units. Of this, 1,425,660 units was from McLaren's Falls (a little over three months' operation), 143,400 units from the Grand Junction Company, 9,400 units from the Auckland Power Board, and the remainder from the different dairy factories in the district.

General.

For the first time, the stations at Horahora, McLaren's Falls, and King's Wharf steam plant have been operated in parallel, and in general the operation has been quite satisfactory. "Hunting" has at times been reported, but it has not continued long enough to enable any conclusions to be reached as to its cause.

The operation of paralleling is rather complicated, as it has usually to be done at Waikino or at Penrose—*i.e.*, not at one of the power-stations—and the operators at these points have to give the necessary information regarding voltage and frequency to the power-house operators over the phone. However, no great difficulty has arisen in practice due to this.

Construction Work.

Power-station, Horahora.

The main extensions to the power-station were completed in July by the placing in service of the second new unit. These two new units are of 2,000 kw. capacity each, and their installation increases the capacity of the station from 6,300 kw. to 10,300 kw. Work has been in progress during the year, by the General Branch, on construction of the new weir across the river.

Transmission-lines.

The following lines were placed in service during the year:—

Claudelands (Hamilton)–Penrose line (70 miles): This line is part of the main Arapuni 110,000-volt lines, but is supplying power from Horahora at 50,000 volts to the Auckland and Franklin Power Boards.

Waikino–Aongatete 50,000-volt line (17 miles): This line connects at Aongatete with a line built by the Tauranga Borough Council to McLaren's Falls, and enables 2,000 kw. to be supplied from that plant to the Department's system.

Arapuni–Ngongotaha 50,000-volt line (32 miles): This is an extension from Arapuni of the line from Horahora, and it supplies power to the Tourist Department for supply to Rotorua.

Te Awamutu – Hangatiki 50,000-volt line (19·5 miles): This is an extension to supply the Waitomo Power Board. At present it is supplying at 11,000 volts pending arrival of transformers for Hangatiki Substation.

Bombay–Pukekohe 11,000-volt line (5 miles): This line supplies the Franklin Power Board.

Lines under construction:—

Arapuni–Penrose steel-tower line (110,000 volts): Practically all material is on order for this line. A considerable amount of work has been done in pile-driving and concreting for special foundations in the swamps, and towers have been erected.

Penrose–Takapuna line (50,000 volts): Approximately 100 poles have been erected.

Substations.

50,000-volt substations have been installed at Bombay and Ngongotaha, and work is in progress on substations at Hangatiki, Henderson, and Takapuna.

Waitomo Caves.

The work of wiring the three caves was carried out during the year. The caves are supplied with power from Hangatiki Substation, over an 11,000-volt line built by the Waitomo Power Board.

MANGAHAO ELECTRIC SUPPLY.

The year ending 31st March, 1926, is the first year of operation of the system, and whilst there has been a considerable number of interruptions, particularly on the eastern side of the range, yet on the whole the system has operated satisfactorily.

Financial Results.

The capital outlay at the close of the year was £2,022,357 12s. 3d. of which sum £519,524 12s. 3d. represents works which are not yet in operation. The capital expenditure is analysed in Table Q herewith.

The total revenue for the year was £76,858 15s. 1d., and working-expenses were £21,865 6s. 7d. (see Table R). The balance—viz., £54,993 8s. 6d.—represents 3·65 per cent. on the operating capital at the end of the year. By statute each system is required to pay interest (5·4 per cent.) and depreciation (2 per cent.) on the operating capital. These amount to £122,281 18s., so that for the year the system shows a loss of £67,288 9s. 6d. This loss was only to be expected, and any system with a capital expenditure of £1,502,833 which can earn 3·65 per cent. in the first year can be regarded

as reasonably successful. It must also be borne in mind that the lines in the Wairarapa and Hawke's Bay districts have been erected in anticipation of the Waikaremoana power plant being built, and have been erected to build up the load for this larger plant. Table P gives an analysis of the financial and load figures, and Table T gives the gross financial results of the whole system. It is anticipated that next year's figures will be considerably better.

Operation.

Headworks and Power-house.

The machinery has operated satisfactorily throughout the year, except for a few minor troubles which were practically inevitable in the first year's operation of a plant of this magnitude. The automatic crest dam is leaking slightly, but new sealing-strips have been ordered, and will be put in when opportunity offers. The tripping mechanism on the surge-chamber gates had to be altered slightly. In the power-house the seating-ring on No. 5 turbine valve came loose, and the valve had to be dismantled and a new ring fitted. No. 2 generating-unit vibrated slightly on load, but this has been improved. The cast-steel nozzles of the turbines wore and had to be replaced by stainless steel ones. By-pass valves and new operating mechanism were fitted to all main valves in the power-house, and the valves are now operating quite satisfactorily.

Transmission-lines (110,000 Volts).

Mangaore–Khandallah Section.—The total interruptions on this line were eighteen. Of these seven were prearranged; and of the remaining eleven interruptions, of an average duration of ten minutes, nine were due to either faulty relay operation, trouble on other lines, or trouble in the power-house. Only two interruptions, therefore, were due to the line itself, one being due to the line being shot through by a rifle-bullet and the other occurred during a lightning storm, and was probably a flashover, although no traces could be found on the line itself. The reliability has been generally improved throughout the year.

On the steel towers on Paekakariki–Khandallah section some minor members have fractured and have been repaired.

Mangaore–Bunnythorpe Section.—This section of line has given very little trouble during the year but there were a considerable number of interruptions on it due to trouble on sections of line beyond Bunnythorpe. The total number of interruptions involving Bunnythorpe Substation were forty-two, Of these, eleven were prearranged, and during most of these prearranged interruptions the Palmerston North Borough Council's plant carried the Manawatu–Oroua Power Board's load. Troubles in the powerhouse were responsible for four interruptions, an arc-over in the switch-cubicle at Bunnythorpe was the cause of one interruption, and a transmission-line wire blowing in contact with a tree on the Mangamaire–Masterton section was responsible for one. The remaining twenty-five interruptions were caused by transient troubles. The cause of these was not found for a considerable time, but ultimately two causes were found on lines beyond Bunnythorpe. The jumpers on strain-poles, where the steel core in the alumimium-steel cable had been removed, were found to be blowing too close to the cross-arm. These have all been lengthened, and another string of insulators put in to keep the jumpers from swinging. On the long spans on the steel towers across the Ruahines the earth-wire in heavy gales was found to be swinging in contact with the conductor. On all long spans the earth-wire has now been removed.

Mangaore–Woodville Section.—On this section of line there were ninety-six interruptions. Of these, thirty-five were prearranged, six were due to trouble in the power-house, one due to an arc-over in the switch-cubicle at Bunnythorpe, and two were due to the conductor swinging in contact with a tree. The remaining fifty-two were apparently due to the causes mentioned in the previous paragraph—*i.e.*, jumpers or earth-wire.

Woodville–Mangamaire Section.—This section being in series with the preceding one, the interruptions are generally the same as the above, except in so far as modified by switching at Woodville. The total interruptions were ninety: of these, twenty-nine were prearranged. There were fifty-two interruptions apparently due to jumpers and earth-wire; the remaining nine interruptions were the same as the Mangaore–Woodville section.

Mangamaire–Masterton Section.—This section is in series with the preceding one. The total interruptions were eighty-three, and of these twenty-three were prearranged. Fifty-one were apparently due to jumpers or earth-wire, and two were due to the conductor coming in contact with a tree. The remaining interruptions were the same as for the preceding section. During most of the interruptions on this section the Wairarapa Power Board were able to carry their own load on their Kourarau plant.

Woodville–Dannevirke Section.—There were ninety interruptions during the year, of which thirty were prearranged. There were fifty-one interruptions due to jumpers or earth-wire; the remaining nine interruptions are the same as for the Mangaore–Woodville Section.

Transmission-lines (11,000 Volts).

Dannevirke–Waipukurau.—This line, which is really a 110,000-volt line, has been operated at 11,000 volts during the six months it has been in operation. There were ninety-two interruptions during this period. Of these, twenty-four were prearranged, three were due to power-house troubles, one was due to the failure of the trifurcating-box at Waipukurau Substation, and three to trouble on the Central Hawke's Bay Power Board's lines. The remaining twenty-four interruptions were caused by a faulty clamp and the intermittent breaking-down of a trifurcating-box at Dannevirke Substation.

Mangaore–Shannon.—There were fifty-nine interruptions of which four were due to power-house troubles, seven to trouble on the Horowhenua Power Board's lines, and forty-four to the overload relay operating in the power-house. This relay was finally found to be defective, and since adjusting there have been no further interruptions other than those where a fault existed.

Hutt Valley Line.—This line is a double one, the Hutt Valley Power Board taking supply from both lines. There were three interruptions on both lines, and of these, two were prearranged for work on the lines. In addition there were three short interruptions, of a total duration of three minutes, on No. 1 line, and six interruptions on No. 2 line. These were due to the following causes: A broken conductor on adjacent line; a piece of wire on a conductor; lines swinging together in a gale; and three transient troubles. During the interruptions the load was carried on the other line, except for a few minutes whilst changing switches.

On all lines the usual maintenance work, such as track, repairs, tree-cutting, pole-blocking, and river-protection work, has been carried out.

On the aluminium-steel lines all jumpers without steel core have had an extra insulator put in, and the earth-wire has been removed from the line across the Ruahines and Mount Bruce, and where there are other long spans.

The prearranged shut-downs were, as far as possible, made at times least inconvenient to the Power Boards—generally between midnight and 3 a.m.

With the installation of the oil-switches, the re-erection of the air-break switches, the removal of two known causes of interruptions—viz., loose jumpers and earth-wire on long spans—and with the live-line testing of insulators, it is certain that much better service will be given on the northern lines during the next year than has been given in the past year.

Telephone-lines.—A very great improvement has been made in the condition of these by following out the recommendations of the Post and Telegraph Department.

Substations.

The apparatus at Khandallah Substation functioned satisfactorily, except for three failures of sealing-bells on 11,000-volt side of main transformers. These and the others were all refilled, and have been satisfactory since. The local service transformers also broke down, but have since been repaired.

At Bunnythorpe Substation the isolating-links to the service transformers flashed over when opening and caused a shut-down: this has since been repaired. The 110,000-volt air-break switch insulators which broke down have been filled with bitumen and all the switches reassembled.

In addition to the interruptions for the Mangaore–Bunnythorpe Section there was one prearranged interruption of 1 hour 29 minutes.

At Woodville switching-station the apparatus has been satisfactory.

The apparatus at Mangamaire has been satisfactory. In addition to the interruptions on the Woodville–Mangamaire section there were four interruptions for the purpose of testing instruments, &c.

At Masterton Substation the low-tension oil-switch broke down when opening a short circuit, but has been repaired. During the period of interruption the Power Board carried their own load.

The apparatus at Dannevirke has been satisfactory. In addition to the interruptions on the Woodville–Dannevirke section there were three prearranged interruptions for testing purposes, and one interruption due to high voltage.

At Waipukurau Substation the 11,000-volt pot-head broke down, and temporary connections were made whilst it was refilled. Supply to Waipukurau Substation was first given at 110,000 volts, but the main transformer broke down during a lightning storm and supply was then given at 11,000 volts, from Dannevirke. On account of having to dismantle the air-break switches at all substations, supply has been continued at 11,000 volts to this substation.

CONSTRUCTION.

On the headworks the work done during the year has been the concreting of the spillway on the lower Mangahao dam, and the finishing of the earth embankment. On the Upper Mangahao dam practically all excavation work was completed, the by-pass tunnel driven and partly concreted. Bridges have been built across the Mangaore Stream below the power-house, and groins put in to protect the banks.

During the year the work done at the power-house has been the drying-out of the spare 110,000/11,000-volt transformer, and sundry works, such as erecting handrails, screens, diaphragms in generator-pits, testing and adjusting relays and meters, erection of telephone-box, and excavation and levelling of approaches.

Of the transmission-lines, the line to Wanganui has been completed and put into service, and the line to Napier has been completed except for six miles of wiring. Work is held up on this at present, as the gang has been required for other work on lines in operation.

The line from Dannevirke to Waipukurau was livened up on the 14th September, 1925, at 110,000 volts, but, as mentioned before, supply is now being given to Waipukurau at 11,000 volts from Dannevirke.

The 11,000-volt line from Khandallah Substation to the Wellington Meat Export Company's works at Ngahauranga was completed and put into service on the 26th August, 1925, and supply given on that date.

At Khandallah Substation the spare transformer was dried out and has been in service. A stable was built, additional fencing put up, leaky windows attended to, floors painted, and tests and adjustments carried out on instruments and meters. The 250 kv. testing transformer was dried out and the oscillator erected. Further work is being done on these at present.

At Bunnythorpe Substation, the spare transformer was dried out, oil-store extended and additional tank installed, and work is well on with the erection of the oil-switches, which have been placed in position. A battery-room has been built and the motor generator set erected and wired, and the switchboard panels erected and a fence built around the steelwork and transformers.

At Woodville Substation a well has been sunk, an oil-store has been built, and oil-tanks installed. The oil-switches have been placed in position, and will be ready for operation in about a month.

At Masterton Substation the concrete pad for the 110,000-volt oil-switch has been built, steel structure fenced, and a well sunk. A start has been made on erecting the oil-switch.

At Dannevirke Substation a well has been sunk, the steel structure fenced, the oil-switch pad built, and a start made on erecting the oil-switch.

Waipukurau Substation was completed during the year and the spare transformer dried out. The pad for the oil-switch has been erected, and the oil-switch is on site.

At all the above substations the access has been improved by metalling, and a certain amount of tree-planting done, and the sites generally cleaned up.

At Wanganui Substation the whole of the buildings were erected, switch-gear erected, and transformers dried out, and the substation completed and brought into operation at 110,000 volts on the 23rd April, 1926.

At Napier Substation good progress has been made on the building erection contract.

Load.

During the year supply under contract commenced to Wellington City Corporation, Wairarapa, Tararua, Dannevirke, and Central Hawke's Bay Power Boards, and Wellington Meat Export Company. Since the 31st March supply has been given to Wanganui-Rangitikei Power Board, and to the Railway Department at Petone.

In the case of the Power Boards, all Boards have exceeded their guarantees very considerably, and as the third dam was not completed this might have led to a shortage of water. Arrangements were therefore made with the Wellington City Corporation for an interchange of power if required. During the financial year ending 31st March it was not necessary to call on the city plant on account of shortage of water, but since then, on account of the winter load, and frosts in the high country, it has been necessary to call on the city plant on two occasions, for a few days on each occasion.

Arrangements were also made with the Palmerston North Borough Council for their plant to supplement the Mangahao plant if required. This plant has been called on quite frequently for the purpose of supplying the Manawatu-Oroua Power Board when required, to enable work to be carried out at Bunnythorpe Substation, and also on one occasion, in June, 1926, to supply power into the system when a shortage of water appeared likely.

The maximum load to date is 18,100 kw., and the maximum number of units generated per week 1,507,900. The plant was designed for a load of 19,200 kw. at ·8 power-factor, and 1,600,000 units per week, so that the plant is already nearly fully loaded.

On account of the rapid growth of the load, arrangements have been made to expedite the installation of the Waikaremoana plant, and the majority of the Power Boards have increased their guarantees in consideration of this.

The connected load on the system is analysed in Table S herewith.

Extensions.

The line to Napier Substation and the substation itself will be completed during the year. A synchronous condenser is to be installed at Napier Substation, and this is due for delivery in December. Synchronous condensers are also being ordered for Khandallah, Mangamaire, and Dannevirke Substations.

New induction regulators for supply to Horowhenua Power Board are ordered, delivery being due in September.

Spare 110,000-volt transformers are being ordered for Mangamaire and Dannevirke Substations.

In connection with the Waikaremoana installation a survey of the transmission-line from Napier to Waikaremoana has been completed, and the survey for the line from Waikaremoana to Gisborne is well under way.

General.

The operation of the system generally has been very much handicapped on account of having to dismantle the air-break switches at all northern substations, and interruptions on the eastern side of the range which should have been of only two or three minutes' duration were in many cases extended to over an hour on account of having to do all switching with the lines dead.

Arrangements were made with the Government Meteorological Officer for special weather reports to be forwarded daily in connection with the water-supply, and these have proved exceedingly valuable and accurate. At three points on the lines inclinometers have been erected to enable the wind-pressure to be measured. The information which it is hoped to obtain from these will be very valuable for design purposes.

Waikaremoana Power Development.

The plant originally erected in 1922, partly to provide construction power for the major development and partly to supply power to the Wairoa Power Board, has been operated under lease by the above Board. The total connected load is 2,295 kw., and the maximum load has reached 744 kw.

A transmission-line has been erected by the Department from the power-station to the Lake House Hostel, which has been wired for a complete electrical installation.

The financial results of operation for the year are as follows :—

	£
Capital (including initial losses)	92,386
Annual capital charges (interest and depreciation)	5,949
Revenue	1,901

leaving a loss of £4,048 on the year's operation.

The load in the Wairoa Power Board district has developed to such an extent that the present plant is fully loaded, and provision has been made for an extension to the plant to enable sufficient power to be supplied for construction work on the major scheme. A contract has been made with the Wairoa Power Board for increased guarantees of revenue to meet the additional charges on this plant.

Major Scheme.—Consequent on the rapid growth of load on Mangahao power plant it has been decided to make an active start on the construction of the major scheme at Waikaremoana. The initial development will consist in diverting the Waikaretaheke River through a short canal into Kaitawa Lake, and from there through a short tunnel conveying the water by pipe-line to a power plant consisting of two units each of 20,000 kv.a. capacity. Specifications have been prepared and tenders invited for the main items of plant, and a commencement has been made to carry out the construction work under the direction of the Department's own staff.

A second-hand generating unit (turbine, generator, pipe-line, &c.) of 1,000 kw. capacity has been purchased, and it is hoped to have this in operation before the end of this year. A local sawmill has been purchased and is now being operated by the Department. Accommodation for staff and workmen is being erected, and preliminary work on foundations for power-house is in hand. In addition, arrangements are being made for strengthening the Waikokopu Wharf and for the installation of a heavy-duty crane at that port. Preliminary work is also in hand for storage accommodation and handling facilities at the rail terminal at Wairoa. A programme has been set to endeavour to have the first unit of this scheme in operation for the winter of 1929.

Live-line Testing, etc.

Arrangements were made during the year to institute a systematic scheme of live-line testing and repair on the Department's 50,000-, 66,000-, and 110,000-volt transmission-lines. The special tools required were procured from America, and we were enabled to secure the services of Mr. D. H. Harvey, of the Tasmanian Government's transmission staff, to give a selected number of our linemen a special course of instruction in live-line work. Mr. Harvey had himself previously had a special course of instruction in this work in America, and had successfully trained a staff and developed a system in Tasmania. He proved an excellent instructor, and carried on successful courses of instruction in the Mangahao, Waikato, and Canterbury districts. Our thanks are due to the Tasmanian Government Hydro-electric Department for his services.

We now have in each district a trained staff capable of detecting faulty insulators and of removing them from a line whilst still in operation. It is felt that this will considerably improve the reliability and security from interruption of our main lines, particularly where only a single circuit exists.

Electric-power Boards.

The original scheme for the formation of Electric-power Boards outlined in the annual Statement of 1920 provided for the formation of fifty-four Boards. It is therefore of interest to review the present position, and to compare the result of eight years' working since the Electric-power Boards Act came into operation. Up to the present forty-two Boards have been constituted, following very generally the lines set out in the proposals of the 1920 report. In a few cases the Boards' areas are somewhat smaller than in the original proposals, and amalgamation, with inclusion of adjacent boroughs, would be advantageous. In a further few cases, limited areas have been allowed to form Boards to meet present expediency, pending completion of the general system of bulk supply.

Two new Electric-power Boards—viz., Golden Bay and Bay of Plenty—have been formed during the past twelve months.

The areas in which Electric-power Boards have not yet been formed are on the whole comparatively sparsely populated, but there are several localities where it would appear that Electric-power Boards could with advantage be formed. Of these the suggested Waimarino Electric-power Board, including Ohakune, Raetihi, and surrounding districts; the suggested Nelson Electric-power Board, including Nelson, Richmond, Motueka, Brightwater, Wakefield, the present small Golden Bay Power Board, and surrounding districts; and the suggested North Canterbury Electric-power Board, including Amberley, Rangiora, Cust, Oxford, Kaiapoi, and surrounding districts, are most favourably situated.

The attached coloured map shows the various Electric-power Boards constituted, and the proposed Boards.

With the completion of the Department's hydro-electric generating-station at Mangahao, power has been made available for nine Boards, and of these eight are in active operation, while the other Board is engaged on construction work, and should be ready to distribute power within a comparatively short period.

The extensions of the Department's stations at Lake Coleridge and Horahora have been completed, and the extra amount of bulk power thus made available will greatly stimulate the Board's activities.

The demand for power has greatly exceeded expectations, and the majority of the Boards supplied from Mangahao are well ahead of their guarantees. The large additional power which will be available from Arapuni and Waikaremoana will soon be required to cope with the increasing demand.

The total area covered by the Boards already formed is 65,446 square miles, or 64 per cent. of the total area of the Dominion. The total population concerned is 863,041, or 61 per cent. of the

total population of the Dominion; and the unimproved value of the land included in the Board's districts and outer areas is £258,252,354, or 78 per cent. of the total unimproved value of the Dominion. The area covered by Electric-power Boards is nearly three-quarters of the total area of the Dominion.

Seventeen Boards—viz., Cambridge, Central, Central Hawke's Bay, Dannevirke, Franklin, Horowhenua, Hutt Valley, Malvern, Manawatu-Oroua, South Canterbury, Springs-Ellesmere, Tararua, Te Awamutu, Thames Valley, Wairarapa, Waitomo, and Wanganui-Rangitikei—are distributing power taken in bulk from the Department's hydro-electric plants at Horahora, Mangahao, and Lake Coleridge. The Auckland Board is using power from Horahora to the extent to which it is available, and has entered into a contract to take the whole of its power, with a minimum of 15,000 k.w. from the Department's Arapuni plant when completed.

Taranaki has completed a large portion of its reticulation, and is giving a partial supply from smaller stations until its own hydro-electric plant is running. Wairoa is taking power in bulk from the Department's station at Lake Waikaremoana, and supplies the borough and a few consumers in the neighbourhood.

Southland has been in active operation from its own water-power station for twelve months. It has about 2,300 miles of lines and supplies 5,040 consumers.

Opunake and Teviot have local water-power stations in operation.

Wairere and Marlborough are each erecting local water-power stations.

Grey has recently completed a steam station and the necessary reticulation. Otago Central receives power in bulk from Teviot, Otago from the Dunedin Corporation's Waipori plant, and Tauranga from the Tauranga Borough's plant at McLaren's Falls.

Table U herewith gives details of the dates of construction, the area, population, and rateable value included in each of the 42 power districts already formed, also the amounts of the loans already authorized, and the voting on each poll taken. The total amount of the loans authorized by the thirty-five districts which have already taken their polls is £10,121,788. The population of the districts concerned is 811,830, so that the loans authorized amount to £12·5 per head of population as compared with £13·2 last year. The unimproved valuation of the districts is £245,153,266, so that the loans authorized amount to 4·1 per cent. of the unimproved rateable value of the lands pledged as security for the loans. The voting at the polls amounted to 42,471 to 5,532—*i.e.*, a ma ority of 88 per cent.

Table V herewith shows the capital expenditure incurred by each Board up to the end of the financial year, the revenue and expenditure, and the amount of rates struck and collected.

Local Electric-supply Systems.

Including the Government plants, there are now fifty-one public electric-power stations in the Dominion, as detailed in Tables W and X herewith.

The total installed capacity has increased during the year by 45,141 kw., or 55 per cent. (from 81,876 kw. to 127,017 kw), while the sum of the maximum loads has increased by 19,693 kw., or 29 per cent. (from 68,088 kw. to 87,861 kw.).

The proportion of installed plant is now as follows:—

	Stations.	Kilowatts.	Proportion per Cent.
Water-power	34	89,068	70·1
Steam-power	6	34,412	27·1
Gas-power	8	2,401	1·9
Oil-power	3	1,136	0·9
	51	127,017	100·0

The number of consumers supplied has increased from 148,699 to 192,392, an increase of 43,693, or 29 per cent. for the year.

The total population included in the various areas of electric-power supply is 1,113,850, or over 79 per cent. of the total population of the Dominion; so that the ideal of a supply being available to every home in the Dominion is well on the way to realization.

The maximum power-demand per head of population in the areas supplied is 0·079 kw., slightly over one-half of the allocation of 0·15 kw. or 0·2 h.p. per head of population, which is the basis of the design of the Government schemes. The units sold per head of population supplied were 241, as compared with 214 last year.

The total length of distributing-line is 12,454 route-miles, as compared with 6,011 last year, an increase of 6,443 miles, or 107 per cent. The number of consumers per route-mile is 15·4, as compared with 24·8 last year, the reduction being due to the large mileage of new lines erected during the year to which the full number of services are not yet connected, and to the increased proportion of country lines.

The maximum power-demand per route-mile of line is now 7·1 kw., the sales 21,600 units, and the revenue £184. These are substantially smaller than last year, for the same reasons, but are still remunerative returns over the whole business.

The revenue per kilowatt of maximum load of all stations was £26·1, as compared with £24·4 last year. The water-power stations show a revenue of £26·1 per kilowatt, steam stations of £24·9 per kilowatt, and gas stations of £35·6 per kilowatt. These are valuable figures for use in forecasting the revenue from systems of various descriptions. The water-power systems include the largest proportion of large consumers, and the gas-engine stations the largest proportion of small consumerss.

Out of the 101 distributing authorities, seventy-one showed a profit for the year amounting to £276,426, and twenty-eight showed a loss amounting to £91,667. The general result is a net profit for the whole Dominion of £184,759 after paying working-costs (£1,016,860) and capital charges

(£1,037,196) at the rate of 5·4 per cent. on the total capital outlay of £19,127,108. This shows a net profit of 1·0 per cent., as compared with 1·3 per cent. last year. The business on the whole is thus a thoroughly sound and remunerative one, as well as supplying a public necessity to 79 per cent. of the population of the Dominion.

Table A.—Electric-power Supply of New Zealand for the Year ended 31st March, 1926.

——	Water.	Steam.	Gas.	Oil.	Total.
Number of stations	34	6	8	3	51
Average capacity (kilowatts)	2,620	5,735	300	379	3,772
Number of consumers	137,527	44,101	7,123	3,641	192,392
Installed capacity (kilowatts), (main plant only)	89,068	34,412	2,401	1,136	127,017
Maximum load (kilowatts)	63,328	21,857	1,768	908	87,861
Units generated	264,994,867	74,684,143	4,261,689	2,379,143	346,319,842
Annual load-factor (per cent.)	47·8	39·0	27·5	29·9	45·0
Units sold	201,626,002	61,314,202	3,418,524	1,880,310	268,239,038
Total capital outlay*	16,516,684	2,191,962	305,599	112,863	19,127,108
Total capital per kilowatt installed	£185	£64	£127	£99	£150
Total annual working-costs*	£696,165	£260,985	£40,357	£19,353	£1,016,860
Total annual working-costs per unit sold	0·83d.	1·02d.	2·83d.	2·47d.	0·91d.
Total annual working-cost per kilowatt, maximum	£11·0	£11·9	£22·8	£21·3	£11·6
Total annual capital charges*	£787,822	£225,103	£16,278	£7,993	£1,037,196
Total annual capital charges per unit sold	0·94d.	0·88d.	1·14d.	1·02d.	0·93d.
Total annual capital charges per kilowatt, maximum	£12·4	£10·3	£9·2	£8·8	£11.8
Total annual capital charges, percentage of capital outlay	4·77	10·27	5·33	7·08	5·42
Total annual costs*	£1,536,408†	£486,088	£56,635	£27,346	£2,106,477†
Total annual costs per unit sold	1·83d.	1·90d.	3·98d.	3·49d.	1·88d.
Total annual cost per kilowatt, maximum	£24·2	£22·2	£32·0	£30·1	£24·0
Total annual revenue (not including rates)	£1,655,411	£543,510	£62,981	£29,334	£2,291,236
Total annual revenue per unit sold	1·97d.	2·13d.	4·42d.	3·74d.	2·05d.
Total annual revenue per kilowatt, maximum	£26·1	£24·9	£35·6	£32·3	£26·1
Net profit	£119,003	£57,422	£6,346	£1,988	£184,759

* Includes distribution. † Includes special expenditure for Wellington.

Daily Load Curves.

The daily load curves of fourteen of the larger stations in the Dominion have, by the kind co-operation of the Engineers in charge of the stations, again been obtained for two days of the current year—viz., Friday, 19th March (representing equinoctial conditions), and Friday, 18th June, (representing midwinter conditions). Friday has been selected as representing the most extreme conditions of loading, due to its being the late-shopping night in most places. The composite curves shown in Fig. 1 are a general guide in assessing the electrical tariff of a system, because the ratio of the average load to the maximum load or the load-factor and the general shape of the daily load curve is important in determining the selling-price of electric power. Each supply authority must ascertain its own load-factor and determine its selling policy accordingly. The composite curves have been included in the report during the past four years, and Table B gives a comparison of the figures for each year.

It will be observed on referring to the table that although the installed capacity in the case of water-power has nearly trebled in the four years the load-factor has been fairly consistent. In the case of fuel power the figures for three years are fairly consistent, but those for 1925 show a marked decrease.

The installed capacity for water and fuel in 1923 were practically equal, but in 1926 the water-power was nearly 100 per cent. greater than the fuel-power. This is due to the number of systems supplied from fuel stations which have changed over to water-power, and to the large increase in the installed capacity of water-power stations.

Table B.—Summer and Winter Typical Loads, 1923–26.

WATER-POWER.

——	1923.	1924.	1925.	1926.
March.				
Kilowatts installed	24,950	29,225	32,925	63,700
Maximum load (kilowatts)	23,156	26,809	29,072	48,413
Units generated	433,147	506,024	497,794	881,769
Daily load-factor	77·9	78·6	71·3	75·9
June.				
Kilowatts installed	24,950	29,225	32,925	63,700
Maximum load (kilowatts)	25,840	26,651	32,890	57,072
Units generated	466,205	475,144	537,720	937,030
Daily load-factor	75·2	74·3	68·2	68·4

FUEL-POWER.

—	1923.	1924.	1925.	1926.
March.				
Kilowatts installed	26,733	34,046	40,988	31,472
Maximum load (kilowatts)	18,068	16,535	24,315	15,704
Units generated	217,682	231,769	219,380	193,498
Daily load-factor	50·2	58·4	37·6	51·3
June.				
Kilowatts installed	26,733	34,046	41,388	31,495
Maximum load (kilowatts)	21,180	22,718	32,120	21,436
Units generated	258,185	301,351	266,305	252,888
Daily load-factor	50·8	55·3	34·6	49·1

ALL STATIONS.

—	1923.	1924.	1925.	1926.
March.				
Kilowatts installed	51,683	63,271	73,913	95,172
Maximum load (kilowatts)	39,982	42,537	48,001	63,697
Units generated	650,829	737,793	717,174	1,075,267
Daily load-factor	67·8	72·3	62·3	70·3
June.				
Kilowatts installed	51,683	63,271	74,313	95,195
Maximum load (kilowatts)	47,020	49,124	56,325	77,468
Units generated	724,390	776,495	804,025	1,189,918
Daily load-factor	64·2	65·9	59·5	64·0

Table C shows the figures for 1926, and the fourteen stations included have an installed capacity of 95,195 kw., or 75 per cent. of the total installed capacity of the Dominion, so that the resultant curves may be taken to represent quite accurately the shape of the load curve of the combined output of the whole Dominion. The summation curves are plotted in Fig. 1, and include not only the total output, but the water-power and fuel-power outputs separately.

Table C.—Summer and Winter Typical Loads, 1926.

(Fourteen Power-stations.)

—	Installed Capacity.	Maximum Load.	Units.	Daily Load-factor.
March 19th, 1926—	Kilowatts.	Kilowatts.		Per Cent.
Water-power	63,700	48,413	881,769	75·9
Fuel-power	31,472	15,704	193,498	51·3
All stations	95,172	63,697	1,075,267	70·3
June 18th, 1926—				
Water-power	63,700	57,072	937,030	68·4
Fuel-power	31,495	21,436	252,888	49·1
All stations	95,195	77,468	1,189,918	64·0

These are daily load-factors. The annual load-factors are, of course, substantially lower, being 47·8 per cent. for water-power, 39·0 per cent. for steam-power, and 45·0 per cent. for the whole output of the Dominion.

Regulations.

An honorary advisory committee was set up during the year to advise you in respect to a revision of the Electrical Supply Regulations issued under section 2, Public Works Amendment Act, 1911, and the Electrical Wiring Regulations embodied in the above regulations but which were previously issued separately by the Council of the Fire Underwriters' Association. The chairman of the committee is the Chief Electrical Engineer, and the committee is composed of two representatives from the Public Works Department, two from the electrical supply authorities, and one each from the Post

and Telegraph and Railways Departments, Electrical Federation, Fire Underwriter's Association, and the Electrical Workers' Union. The committee has held thirty meetings since its inception, representing some ninety hours devoted to this important subject. The revision is now practically completed, and it is anticipated that the new regulations will be issued before the end of the year. It is hoped that this revision will bring the rules up to a high modern standard, and tend to gradually improve the construction and increase the safety of workmen and consumers without in any way imposing any restrictions likely to prejudice the use of electrical apparatus of any kind.

The setting-up of an Approval Board, and the establishment of a central testing laboratory to deal with all types of apparatus imported into the country, is a matter somewhat allied with the regulations. A certain amount of work of this nature has been carried out by the electrical-supply authorities and the Fire Underwriters, but the enormous increase that has taken place during recent years and the further large increase to be looked for in the future makes the time opportune for the serious consideration of this subject.

Registration of Electrical Wiremen.

An Act for the registration of electrical wiremen and Inspectors of electrical wiring was passed by Parliament in 1925, and came into operation on the 1st April, 1926. It provides for a Registration Board of five members—viz., the Chief Electrical Engineer of the Public Works Department, and a representative of each of the following: Electrical-supply authorities, fire and accident underwriters, electrical traders and contractors, and electrical wiremen. The members, with the exception of the Chief Electrical Engineer, are appointed for a period of three years.

The first meeting of the Board was held on the 16th March, 1926, and considerable progress has been made to date. Applications for registration as electrical wiremen total 1,850, and as Inspectors of electrical wiring 166. The applications are being dealt with as expeditiously as possible, but it will be some time before registration is completed. The Act allows a period of nine months for wiremen qualified before the 1st April, 1926, to become registered without passing an examination, but to provide for the registration of other applicants who have not qualified, the Board will hold the first examination under the Act in October.

The Act limits the age for registration to not less than nineteen years. Provision is made for the endorsement or cancellation of a certificate of registration, and power is given to electrical-supply authorities to suspend a wireman for a period not exceeding one month.

The Board may cancel the registration of an Inspector, or suspend him for such period as it thinks fit.

The Act provides that no person other than a registered electrical wireman, or the holder of a provisional license, with or without the assistance of apprentices in any case, shall be engaged in the work of wiring any premises for electric lighting, heating, or power purposes. It further provides that no electrical-supply authority shall cause any inspection of wiring of any premises to be made for the purposes of the Act by any person other than a person appointed by it for the purpose and registered or licensed as an Inspector.

A copy of the register will be published in the *New Zealand Gazette* after the 31st March in each year, and a copy shall be kept at the office of every electrical-supply authority, and shall be open for inspection by any person during office hours.

The operation of the Act should result in a uniformly high standard of workmanship throughout the Dominion and be the means of providing additional safety to consumers.

Growth of Load.

In the early days of electric supply electricity was used almost exclusively for lighting purposes. With the advent of electric motors and the application of electricity for heating purposes the power and heating load increased, until at the present time the energy used for lighting is small compared with that used for other purposes. The benefits of electric drive in factories and workshops has to a large extent been taken advantage of, and the use of electricity for commercial heating and domestic heating and cooking is rapidly increasing. The use of electric ranges and water-heaters during the past few years tends to confirm the opinion that the use of electricity for domestic purposes will soon exceed the demand for industrial and commercial uses.

Returns have been obtained of electric ranges and water-heaters in use throughout the Dominion, and the figures obtained show a large increase over the corresponding period for the previous twelve months. The total number of electric ranges connected is 4,671 compared with 1,526 for 1925, an increase of 3,145, or 206 per cent. The total number of electric supply authorities is 101, and of these 66 have electric ranges connected to their systems. One supply authority has 553 electric ranges connected to its system, corresponding to approximately one range to every nine consumers.

The total number of electric water-heaters connected is 6,654, and 65 per cent. of the electrical supply authorities have electric water-heaters connected to their systems. The system having the largest number connected is the Auckland Electric-power Board, which has 1,878 connected.

When it is realized that some of the largest percentages are being obtained in districts in which power has only been available for a few months, it is evident that a large increase in demand can be looked for in this direction once the authorities embark on an active canvass for this type of load. It is also particularly gratifying to see that the advent of electric power is bringing conveniences to the rural districts which should greatly improve the conditions of living therein.

A return of the number of electrified milking-machines in different districts gives an indication of the extent to which electric power is being utilized in this most important New Zealand industry. The total number of electrically driven milking-machines at the 31st March, 1926, was 4,856, compared

with 3,581 at the 31st March, 1925, an increase of 1,275, or 35 per cent. In 1923 there were 1,310 electrically driven milking-machines, so that the increase for three years is 3,546, or 270 per cent. In point of numbers the Thames Valley Electric-power Board still heads the list, with 1,442 machines connected, an increase of 359, or 33 per cent., for the twelve months.

Electrical Accidents.

Electrical-supply authorities are required by regulation to furnish the Department with particulars of all electrical accidents occurring in their districts. The reports thus obtained form a valuable guide in determining whether the regulations made for the safety of consumers, the general public, and the employees of the electrical-supply authorities are adequate for the purpose. In some cases it has been found that the regulations are unnecessarily severe, and it has been possible to relax certain requirements without in any way reducing the factor of safety. The reports are therefore very useful in providing information whereby the cost of unnecessary restrictions can be eliminated and additional safety measures provided where the circumstances fully warrant such action.

It is inevitable that the number of accidents from electric shock will increase with the rapid increase in the length of lines and uses of electric power, but much can be done to prevent accidents and reduce the danger. The length of electric lines has increased from 2,620 miles in 1921 to 12,454 miles in 1926, an increase of 107 per cent.; and the number of consumers has increased during the same period from 73,151 to 192,392, an increase of 29 per cent. Compared with accidents from other causes, the accidents from electric shock are negligible. They are, however, sufficient to indicate that more care can be exercised by those whose duties require them to handle electric lines and apparatus.

During the year ended 31st March, 1926, there were eight fatal accidents from electric shock, and three in which an accidental electric shock was a contributing factor. Of the eight fatal accidents from electric shock, two were to workmen employed by electrical-supply authorities on overhead electric lines, one to a workman who made contact with a low-tension wire in a tunnel, one to a workman measuring the height of a live high-tension line with a metallic tape, one to a person making contact with a fallen line, two to persons making contact with a fence which had become charged through contact with a fallen high-tension line, and one to a person who in cutting a tree allowed the falling limb to make contact with an extra-high-tension line. Of the three accidents in which an accidental electric shock was a contributing factor, one was to a workman employed by an electrical-supply authority on overhead lines, one to a workman employed by an electrical-supply authority who climbed a pole without instructions, and one to a person who climbed a pole without authority. In these three latter cases a shock was received causing the victim to release his grasp and fall to the ground.

The Department have records extending over twenty-four years, and in no case has a fatal accident been reported through the use of domestic appliances or apparatus. Several fatal accidents have occurred from the use of home-made portable lamps which did not comply with the regulations.

Staff.

During the year Mr. H. M. Millar, one of the Department's Assistant Electrical Engineers, returned from an extensive tour through Java, Japan, Canada, and United States, in all of which countries he studied modern developments in the electrical industry. In particular Mr. Millar gave special attention to the questions affecting rules and regulations for electrical supply, the approval of electrical apparatus, and the relations existing between the various authorities controlling differant sections of electrical work. He also made investigations into the question of the testing and repair of extra-high-tension transmission-systems whilst still alive. Mr. Millar's observations will be of great assistance to the Department in its future operations.

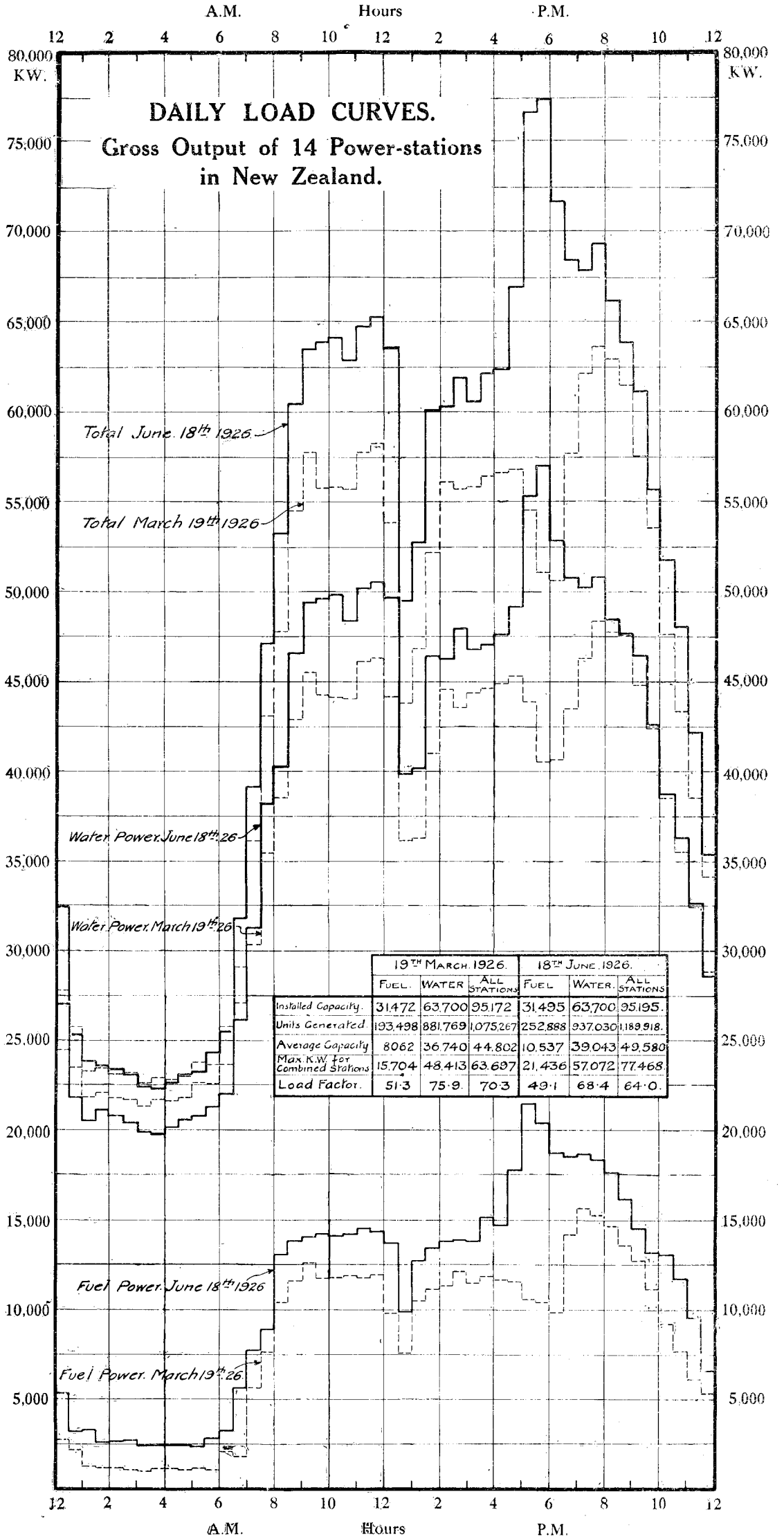
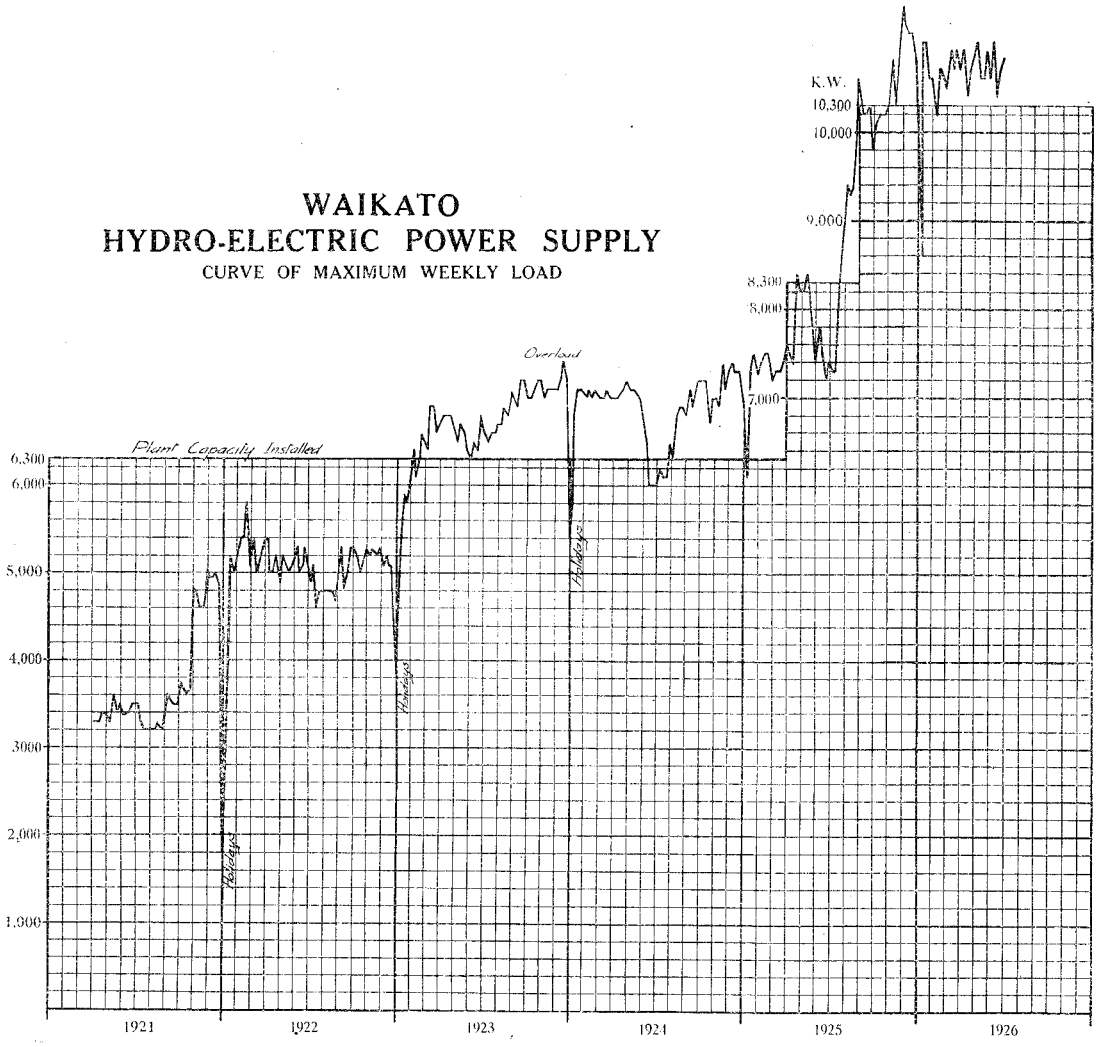

A.M.
Hours
P.M.
12 2 4 6 8 10 12 2 4 6 8 10 12
80,000 KW.
75,000
70,000
65,000
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
DAILY LOAD CURVES.
Gross Output of 14 Power-stations in New Zealand.
Total June 18th 1926
Total March 19th 1926
Water Power June 18th 26
Water Power March 19th 26
Fuel Power June 18th 1926
Fuel Power March 19th 26
19TH MARCH 1926. 18TH JUNE 1926.
Fuel. Water. All Stations. Fuel. Water. All Stations.
Installed Capacity. 31,472 63,700 95,172 31,495 63,700 95,195.
Units Generated. 193,498 881,769 1,075,267 252,888 937,030 1,189,918.
Average Capacity 8062 36,740 44,802 10,537 39,043 49,580
Max. K.W. for Combined Stations 15,704 48,413 63,697 21,436 57,072 77,468.
Load Factor. 51·3 75·9. 70·3 49·1 68·4 64·0.

Figure 1.

WAIKATO
HYDRO-ELECTRIC POWER SUPPLY
CURVE OF MAXIMUM WEEKLY LOAD



MANGAHAO
HYDRO-ELECTRIC POWER SUPPLY
CURVE OF MAXIMUM WEEKLY LOAD

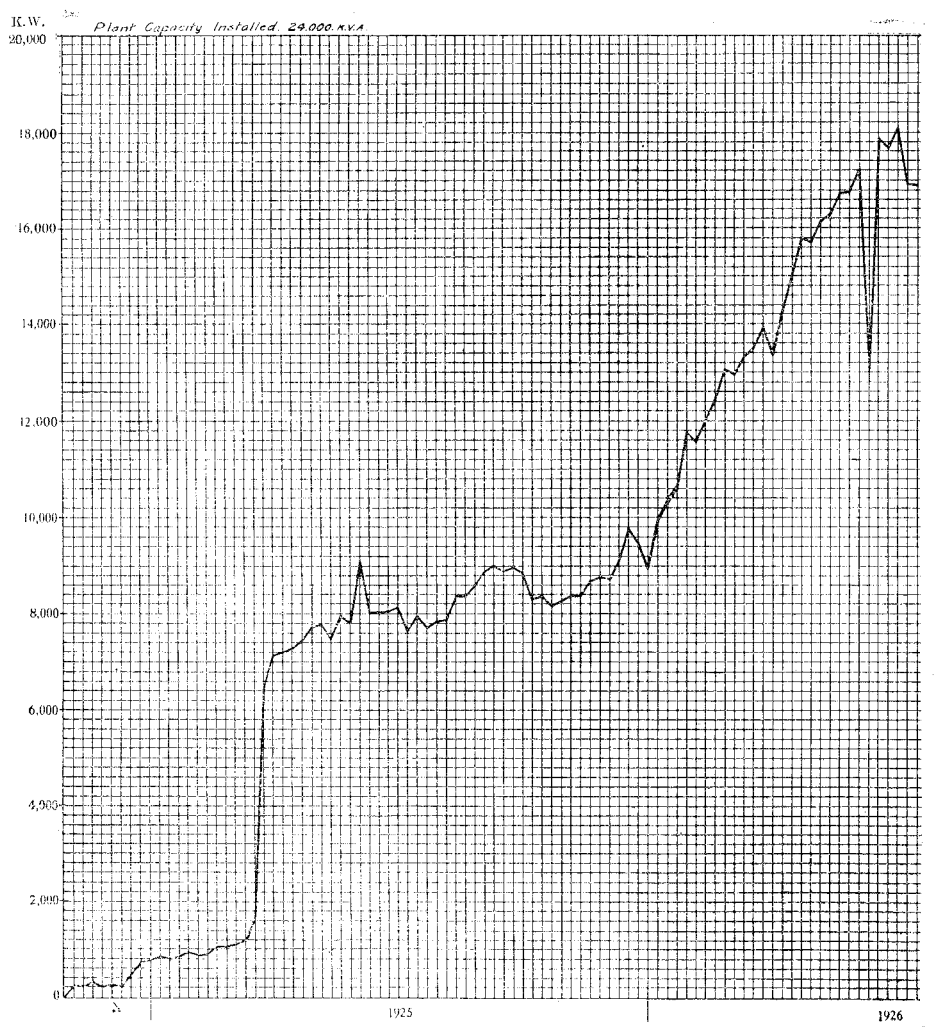


TABLE D.—LAKE COLERIDGE ELECTRIC-POWER SUPPLY.—RESULTS OF OPERATION.

	Eighth Year, 1923.	Ninth Year, 1924.	Tenth Year, 1925.	Eleventh Year, 1926.
	£	£	£	£
Capital outlay	848,033	892,801	1,008,491	1,366,951
Costs—				
Working-costs	19,271	20,777	23,270	27,035
Interest, 5·4 per cent.	35,275	44,444	47,780	50,324
Depreciation, 2 per cent.	9,307	12,584	15,679	19,350
Total costs	63,853	77,805	86,729	96,709
Accumulated Depreciation Fund	61,275	72,594	88,631	111,526
Accumulated deficiency	23,876	23,172	17,738	..
Sinking Fund Account	..	..	..	8,907
Revenue—				
Wholesale consumers	64,894	74,524	88,224	120,749
Retail consumers	2,118	2,289	1,880	264
Miscellaneous	2,141	1,695	2,059	2,342
Total revenue	69,153	78,508	92,163	123,355
Maximum load (kilowatts)—				
Power-house	9,390	10,800	13,180	14,430
Substations	8,420	9,490	11,190	13,583
Average load (kilowatts)—				
Power-house	5,024	5,722	6,820	7,916
Substations	4,528	5,158	5,680	6,303
Units output—				
Power-house	44,008,106	50,614,955	59,528,216	68,860,614
Fed to village, tunnel, and intake	556,446	1,837,069	1,865,344	1,664,917
Fed to transmission-lines	43,451,660	48,777,886	56,935,840	65,491,130
Substations (various)	39,665,420	45,778,007	53,261,142	61,167,881
Units distributed—				
Wholesale consumers	37,384,884	43,486,764	50,887,643	60,626,672
Retail consumers	76,743	305,608	399,390	41,453
Substation local consumption	..	..	..	284,764
Total units distributed	37,561,627	43,792,372	51,287,033	60,952,889
Losses—				
Transmission-line	3,786,240	2,999,879	3,676,518	4,323,249
Percentage	8·7	6·2	6·4	6·3
Distribution	1,977,256	1,985,635	1,973,199	1,342,454
Percentage	5·2	4·3	3·7	2·2
Average load-factor per cent.—				
Power-house	53·5	53·0	51·8	54·8
Substation	53·6	54·3	50·8	54·0
Working-costs—				
Per kilowatt (power-house maximum)	£2·05	£1·92	£1·76	£1·87
Per kilowatt (substation maximum)	£2·29	£2·19	£2·08	£1·99
Per unit generated	0·106d.	0·102d.	0·094d.	0·094d.
Per unit sold	0·123d.	0·113d.	0·109d.	0·106d.
Capital charges—				
Per kilowatt (power-house maximum)	£4·74	£5·28	£4·82	£4·83
Per kilowatt (substation maximum)	£5·29	£6·00	£5·67	£5·13
Per unit generated	0·246d.	0·280d.	0·255d.	0·243d.
Per unit sold	0·284d.	0·313d.	0·297d.	0·274d.
Total cost—				
Per kilowatt (power-house maximum)	£6·80	£7·20	£6·58	£6·70
Per kilowatt (substation maximum)	£7·58	£8·20	£7·75	£7·12
Per unit generated	0·352d.	0·382d.	0·349d.	0·337d.
Per unit sold	0·408d.	0·426d.	0·406d.	0·381d.
Revenue (total revenue)—				
Per kilowatt (power-house maximum)	£7·36	£7·27	£6·99	£8·55
Per kilowatt (substation maximum)	£8·21	£8·27	£8·23	£9·08
Per unit generated	0·382d.	0·386d.	0·372d.	0·430d.
Per unit sold	0·441d.	0·430d.	0·431d.	0·486d.
Per unit sold to wholesale consumers	0·417d.	0·411d.	0·416d.	0·478d.
Per unit sold to retail consumers	2·88d.	1·80d.	1·13d.	1·53d.

Substations maximum k.w.: Addington, 11,670; Timaru, 1,043; Ashburton, 806·4; Malvern, 63·6; total, 13,583.

TABLE E.—LAKE COLERIDGE ELECTRIC-POWER SUPPLY.—ANALYSIS OF CAPITAL OUTLAY.

Item.	At 31st March, 1925.	At 31st March, 1926.	Expenditure during Year.
	£	£	£
Land, roading, and fencing	20,704	22,543	1,839
Harper diversion	22,996	23,007	11
Headworks No. 1	171,884	209,830	37,946
Headworks No. 2	71,112	202,988	131,876
Power-house machinery	128,695	182,363	53,668
Staff village	23,463	24,401	938
Transmission-lines	262,022	317,462	55,440
Addington Substation	49,920	79,404	29,484
Primary distribution	55,946	59,444	3,498
Secondary distribution	67,777	76,168	8,391
Service transformers and motors	8,910	7,003	1,907
Vehicles and loose tools	22,149	27,415	5,266
Telephone-lines	1,903	1,903	..
Office furniture	253	255	2
Surveys, preliminary expenses, &c.	64,242	82,183	17,941
Interest during construction	36,515	50,581	14,066
	1,008,491	1,366,950	358,459

TABLE F.—LAKE COLERIDGE ELECTRIC-POWER SUPPLY.—OPERATING OR WORKING COSTS.

Expenditure.	1925.		1926.	
	Cost.	Cost per Unit.	Cost.	Cost per Unit.
	£	d.	£	d.
Harper diversion	991	0·004	1,354	0·005
Generating	6,390	0·030	5,958	0·024
Transmission-line	3,162	0·015	4,108	0·016
Main distribution	2,249	0·011	2,305	0·009
H.T. distribution	1,952	0·009	2,986	0·018
L.T. distribution	2,607	0·012	2,890	0·011
Standby	1,377	0·007	1,577	0·006
Management	4,542	0·022	5,857	0·023
	23,270	0·109	27,035	0·106

TABLE G.—LAKE COLERIDGE ELECTRIC-POWER SUPPLY.—CONNECTED LOAD IN KILOWATTS AT 31ST MARCH, 1926.

——	Light.	Heat.	Power.	Total.
Local Bodies, &c.				
Ashburton Power Board	1,162	2,994	1,295	5,451
Banks Peninsula Power Board ..	332	752	301	1,385
Eyre County Council	38	64	84	186
Halswell County Council	64	119	42	225
Heathcote County Council	365	1,101	98	1,564
Kowai County Council	93	175	35	303
Kaiapoi Borough Council	124	184	61	369
Lyttelton Borough Council	280	308	511	1,099
Lyttelton Pumping-station	1	..	116	117
Malvern Power Board	101	305	70	476
Rangiora County Council	329	387	439	1,155
Riccarton Borough Council	512	1,321	315	2,148
Sumner Borough Council	261	381	181	823
South Canterbury Power Board ..	1,822	1,529	1,748	5,099
Springs-Ellesmere Power Board ..	677	1,033	561	2,271
Tai Tapu Dairy Company	77	130	130	337
Waimairi County (Hillmorton) ..	18	29	7	54
Substations	17	78	106	201
Direct Wholesale Consumers.				
Christchurch Tramway Board ..	85	..	7,075	7,160
Freezing-works (4) ..	164	43	2,282	2,489
Flour-mills (3) ..	10	9	314	333
Dairy factory (1) ..	3	1	57	61
Quarry (1) ..	1	1	123	125
Tanneries and wool-scourers (6) ..	30	11	746	787
Seed-cleaning (4) ..	7	3	173	183
Brickyard (1) ..	2	1	111	114
Railway workshops (1) ..	34	..	601	635
Harbour Board (1) ..	59	1	1,232	1,292
Institutions (4) ..	142	365	138	645
Soapworks (1) ..	1	..	15	16
Steelworks (1) ..	3	1,200	26	1,229
Glue-works (1) ..	4	1	99	104
Woollen-mills (2) ..	10	..	82	92
Chemical-works (1) ..	15	11	323	349
Railway-stations (3) ..	68	10	58	136
Railway signalling (1) ..	13	..	36	49
Twine-mill (1) ..	2	1	119	122
Retail	12	62	4	78
	6,936	12,610	19,714	39,262
Christchurch City Council	..	..	..	51,214
				90,476
Lake Coleridge	..	..	..	450
				90,926

TABLE H.—LAKE COLERIDGE ELECTRIC-POWER SUPPLY: GROSS FINANCIAL RESULTS OF DISTRIBUTION OF ENERGY FOR YEAR ENDED 31ST MARCH, 1926.

Distributing Authority.	Number of Consumers.	Capital Outlay.	Revenue.					Expenditure.							Balance.	
			From Sale of Electrical Energy.	Rates.	Trading Account.	Other Sources.	Total.	Paid for Electrical Energy.	Maintenance.	Interest.	Depreciation.	Sinking Fund, Reserve Fund, &c.	Other Expenditure.	Total.	Profit.	Loss.
		£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Public Works Department	93	1,366,951	40,605*	..	..	2,342	123,355	..	27,035	50,324	19,350	..	..	96,709	26,646	..
Ashburton Power Board	2,507	244,519	23,761	..	41	92	23,894	5,347	5,021	5,676	..	2,923	40	19,007	4,887	..
Banks Peninsula Power Board	863	93,010	9,549	4,428	332	85	14,394	1,489	4,052	5,825	..	882	293	12,541	1,853	..
Christchurch City Council†																
Eyre County Council	132	6,248	1,418	..	..	..	1,418	649	105	273	..	50	..	1,077	341	..
Halswell County Council	195	6,632	1,439	..	..	18	1,457	596	622	263	..	50	..	1,531	..	74
Heathcote County Council	940	20,953	5,827	..	..	327	6,154	2,424	1,515	616	..	436	..	4,991	1,163	..
Kaiapoi Borough Council†																
Kowai County Council	260	19,724	2,026	..	15	27	2,068	405	419	1,180	..	160	..	2,164	..	96
Lyttelton Borough Council	464	5,000	4,256	..	51	..	4,307	1,545	1,549	235	..	1,563	..	4,892	..	585
Malvern Power Board	261	28,854	849	..	..	..	849	313	75	..	..	100	..	488	361	..
Rangiora Borough Council	430	9,133	3,151	..	..	..	3,151	918	503	349	352	75	..	2,197	954	..
Rangiora County Council†																
Riccarton Borough Council	1,041	13,500	6,473	..	706	..	7,179	2,414	2,717	604	560	168	..	6,463	716	..
South Canterbury Power Board†																
Springs-Ellesmere Power Board	1,554	92,103	12,702	..	213	177	13,092	3,522	3,537	3,909	..	690	..	11,658	1,434	..
Sumner Borough Council	785	10,707	4,261	..	..	..	4,261	1,071	1,198	449	231	81	..	3,030	1,231	..
Tai Tapu Dairy Company	200	8,489	3,237	..	237	..	3,474	1,393	1,155	385	438	..	..	3,371	103	..
Timaru Borough Council	2,269	95,613	23,025	..	..	1,118	24,143	4,895	7,320	4,933	..	2,983	..	20,131	4,012	..
Waimairi County Council	2,483	52,786	14,394	..	..	..	14,394	2,840	3,835	2,421	..	426	..	9,522	4,872	..
Totals																

* After deducting sales to other distributing bodies, totalling—Public Works Department, £ ; Christchurch City Council, £ ; South Canterbury Power Board, £ .

	£
Gross profit	†
Raised by rates	†
Net profit	£ †

† Figures not available.

TABLE J.—WAIKATO ELECTRIC-POWER SUPPLY.—RESULTS OF OPERATION.

—	Fourth Year, 1924.	Fifth Year, 1925.	Sixth Year, 1926.
	£	£	£
Capital outlay	474,817	522,973	735,091
Costs—			
Working-costs	12,474	14,106	19,612
Interest	21,231	20,129	31,269
Depreciation	10,393	9,757	13,601
Sinking Fund	..	4,139	11,342
Total costs	44,098	48,131	75,824
Total revenue	59,924	65,184	85,830
Profit	15,826	17,053*	10,006*
Accumulated surplus	3,494	20,547	30,554
Accumulated Depreciation Fund	24,832	31,681	46,444
Accumulated Sinking Fund	12,718	16,983	28,939
Maximum load (kilowatts)—			
System for year (including Grand Junction and McLaren's Falls)	..	8,300	11,860
Power-house, for year	7,400	7,600	11,400
Power-house, average weekly	6,852	6,963	9,665
Units output—			
System total (generated and purchased)	..	45,643,664	67,026,141
Power-house (total generated)	45,077,150	45,070,650	65,435,630
Substations, &c., total	40,614,013	41,461,299	60,286,867
Units sold	39,914,854	41,281,159	60,261,326
Losses—			
Transmission	4,463,137	4,182,365	6,739,274
Percentage	9·9	9·2	10·0
Distribution	5,162,296	4,362,505	6,764,815
Percentage	11·3	9·6	10·1
Load-factor—			
System, annual (per cent.)	..	62·7	64·5
Power-house, annual (per cent.)	69·6	67·6	65·5
Power-house, average weekly (per cent.)	75·3	71·9	77·5
Working-costs—			
Per kilowatt (power-house annual maximum)	£1·69	£1·69	£1·49
Per kilowatt (power-house average weekly maximum)	£1·82	£1·85	£1·76
Per unit generated at Horahora	0·067d.	0·068d.	0·063d.
Per unit sold (less power purchased)	0·075d.	0·076d.	0·070d.
Capital costs—			
Per kilowatt (power-house annual maximum)	£4·28	£4·47	£4·93
Per kilowatt (power-house average weekly maximum)	£4·62	£4·88	£5·81
Per unit generated at Horahora	0·168d.	0·181d.	0·206d.
Per unit sold (less power purchased)	0 194d.	0·200d.	0·230d.
Total costs—			
Per kilowatt (power-house annual maximum)	£5·96	£6·17	£6·42
Per kilowatt (power-house average weekly maximum)	£6·40	£6·73	£7·58
Per unit generated at Horahora	0·235d.	0·250d.	0·269d.
Per unit sold (less power purchased)	0·277d.	0·277d.	0·299d.
Total costs on system—			
Per kilowatt (system annual maximum)	..	£5·80	£6·39
Per unit generated and purchased	..	0·253d.	0·271d.
Per unit sold	..	0·279d.	0·302d.
Revenue—			
Per kilowatt (system annual maximum)	..	£7·85	£7·24
Per kilowatt (power-house annual maximum)	£8·10	£8·58	£7·52
Per kilowatt (power-house average weekly maximum)	£8·73	£9·34	£8·88
Per unit generated and purchased	0·319d.	0·343d.	0·307d.
Per unit sold	0·360d.	0·379d.	0·342d.

*After deducting Sinking Fund.

TABLE K.—WAIKATO ELECTRIC-POWER SUPPLY (HORAHORA SCHEME).—ANALYSIS OF CAPITAL OUTLAY.

——	At 31st March, 1925.	At 31st March, 1926.	Expenditure during Year.
	£	£	£
Land, roading, and fencing at Horahora	3,208	3,208	..
Headworks	158,113	174,519	16,406
Generating-station transformers and machinery ..	113,559	115,906	2,347
Staff village, Horahora	11,354	11,461	107
Transmission-lines	114,817	125,900	11,083
Distribution-lines	705	705	..
Main substations	41,266	43,923	2,656
Distribution substations	7,406	7,353	53
Vehicles and loose construction equipment ..	7,291	7,652	361
Land, stores, and railway-siding, Claudelands ..	11,342	11,625	283
Staff residences	3,521	4,270	758
Office furniture, Hamilton	867	967	100
Supervision, preliminary expenses on survey and on construction	19,667	21,562	1,895
Interest during construction	29,866	32,014	2,148
Totals	522,973	561,065	38,092
Work constructed out of Arapuni moneys brought into operation in conjunction with the Horahora scheme—			
Electric lines at Arapuni	..	675	675
Transmission-lines	..	137,035	137,035
Main substations	..	36,316	36,316
Totals	..	174,026	174,026
Grand totals	522,973	735,091	212,118

TABLE L.—WAIKATO ELECTRIC-POWER SUPPLY.—OPERATING OR WORKING COSTS.

Expenditure.	1925.		1926.	
	Cost.	Cost per Unit.	Cost.	Cost per Unit.
	£	d.	£	d.
Generating	5,239	0·031	5,511	0·022
Transmission	2,068	0·012	3,403	0·013
Main substations	2,339	0·014	3,621	0·014
H.T. distribution	346	0·002	21	0·001
Management and general	2,858	0·017	4,494	0·017
Purchase of power	1,256	0·007	2,562	0·010
Totals	14,106	0·083	19,612	0·077

TABLE M.—WAIKATO ELECTRIC-POWER SUPPLY.—CONNECTED LOAD IN KILOWATTS AT 31ST MARCH, 1926.

(Does not include Auckland Power Board.)

—	Light.	Heat.	Power.	Total.
Waihi Gold-mining Company ..	100	103	5,717	5,920
Waihi Grand Junction Gold Company	38	38	2,452	2,528
Cambridge Co-operative Dairy Company	2	1	184	187
New Zealand Co-operative Dairy Company, Frankton	15	18	586	619
State Farm, Ruakura	10	1	5	16
New Zealand Railways, Frankton ..	68	36	751	855
Hamilton Borough Council	1,852	1,299	1,187	4,338
Armstrong-Whitworth Company, Arapuni	93	290	770	1,153
Tourist Department, Rotorua ..	1,442		270	1,712
Cambridge Electric-power Board ..	290	1,139	560	1,989
Central Electric-power Board ..	958	1,797	1,400	4,155
Te Awamutu Electric-power Board ..	400	1,206	1,065	2,671
Thames Valley Electric-power Board..	1,898	4,262	6,712	12,872
Waitomo Electric-power Board ..	275	214	224	713
Franklin Electric-power Board ..	344	469	121	934
Waitemata Electric-power Board ..	78	139	144	361
Public Works Department, Horahora	12	138	83	233
Public Works Department, Arapuni ..	5	102	..	107
Public Works Department, Hamilton	5	47	4	56
Public Works Department, Penrose ..	6	45	32	83
Totals	6,449	11,344	22,267	41,502
	1,442			

TABLE N.—WAIKATO ELECTRIC-POWER SUPPLY.—MILKING-MACHINES CONNECTED AT 31ST MARCH, 1926.

—	½ Horse-power.		1 Horse-power.		1½ Horse-power.		2 Horse-power.		3 Horse-power.		5 Horse-power.		Total Number.	Total Horse-power.
	No.	H.P.	No.	H.P.	No.	H.P.	No.	H.P.	No.	H.P.	No.	H.P.		
Cambridge Power Board ..	..	..	4	4	101	151·5	123	246	8	24	..	..	236	425·5
Central Power Board ..	..	..	28	28	..	..	600	1,200	4	12	..	..	632	1,240·0
Te Awamutu Power Board ..	11	5·5	27	27	92	138·0	243	486	..	..	..	..	373	656·5
Thames Valley Power Board ..	..	..	3	3	..	..	1,368	2,736	50	150	1	5	1,422	2,894·0
Waitomo Power Board ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Franklin Power Board ..	..	..	3	3	23	34·5	42	84	..	..	..	..	68	121·5
Waitemata Power Board ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals ..	11	5·5	65	65	216	324·0	2,376	4,752	62	186	1	5	2,731	5,337·5

TABLE O.—WAIKATO ELECTRIC-POWER SUPPLY.—GROSS FINANCIAL RESULTS OF DISTRIBUTION OF ENERGY FOR THE YEAR ENDING 31ST MARCH, 1926.

Distributing Authority.	Number of Consumers.	Capital Outlay.	Revenue.					Expenditure.							Balance.	
			From Sale of Electrical Energy.	Rates.	Trading Account.	Other Sources.	Total.	Paid for Electrical Energy.	Maintenance.	Interest.	Depreciation.	Sinking Fund Reserve Fund, &c.	Other Expenditure.	Total.	Profit.	Loss.
		£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Public Works Department ..	17	735,091	35,423*	..	..	1,861	85,830	2,562	16,602	31,269	13,601	..	448	75,824	21,348	..
Cambridge Power Board ..	999	100,327	14,055	..	227	935	15,217	3,802	3,522	6,268	..	1,398	..	14,990	227	..
Central Power Board ..	2,428	212,415	29,015	..	73	2,725	31,813	7,929	7,392	11,785	..	3,077	1,049	31,232	581	..
Hamilton Borough Council ..	2,910	52,977	26,919	..	..	378	27,297	6,205	5,655	3,311	..	1,644	2,715	19,530	7,767	..
Te Aroha Borough Council ..	602	17,438	5,244	..	..	248	5,492	1,290	1,177	1,749	..	55	161	4,432	1,060	..
Te Awamutu Power Board ..	1,180	140,175	16,993	2,156	..	1,112	20,261	4,981	4,685	9,429	..	1,440	1,007	21,542	..	1,281
Thames Borough Council ..	1,001	30,403	9,823	..	..	24	9,847	2,257	2,179	1,059	..	559	89	6,143	3,704	..
Thames Valley Power Board ..	5,735	598,260	72,755*	..	5,251	3,474	81,480	22,082*	14,384	31,898	..	7,291	4,557	80,212	1,268	..
Totals	14,872	1,887,086	210,227	2,156	5,551	10,757	277,237	51,108	55,596	96,768	13,601	15,464	10,026	253,905	35,955	1,281

* After deducting the amount of sales to other distributing authorities, totalling—Public Works Department, £48,546; Thames Valley, £3, 547.

	£
Gross profit	.. 34,674
Raised by rates	.. 2,156
Net profit	..£32,518

TABLE P.—MANGAHAO ELECTRIC-POWER SUPPLY.—RESULTS OF OPERATIONS.

	£	£
Capital outlay		2,022,358
Costs—		
Working-costs	21,865	
Interest	92,226	
Depreciation	30,056	
		144,147
Revenue		76,859
Loss		67,288
Depreciation Fund		30,056
Maximum load—		Kilowatts
Power-house		13,960
Khandallah Substation		9,820
Wellington City		8,416
Hutt Valley Power Board		1,280
Wellington Meat Export Company		346
Horowhenua Power Board		1,384
Manawatu-Oroua Power Board		1,305
Dannevirke Power Board		294
Tararua Power Board		260
Wairarapa Power Board		300
Central Hawke's Bay Power Board		180
Units output—		
Power-house total		49,482,425
Khandallah Substation		34,897,960
Units sold—		
Wellington City		28,897,960
Wellington Meat Export Company		816,095
Horowhenua Power Board		3,864,275
Hutt Valley Power Board		4,305,630
Wairarapa Power Board		234,335
Tararua Power Board		719,765
Dannevirke Power Board		687,359
Central Hawke's Bay Power Board		353,315
Manawatu-Oroua Power Board		4,560,631
Other consumers and testing		691,552
		45,131,120
Losses—		
Total losses (units)		4,349,305
Percentage		8·8
Load factor (per cent.)—		
Power-house (annual)		40
Power-house (average weekly)		60
Working-cost (less power purchased)—		
Per kilowatt (power-house annual maximum)		£1·56
Per unit generated		0·106d.
Per unit sold		0.115d.
Capital charges—		
Per kilowatt (power-house annual maximum)		£8·76
Per unit generated		0·595d.
Per unit sold		0·659d.
Total costs—		
Per kilowatt (power-house annual maximum)		£10·32
Per unit generated		0·701d.
Per unit sold		0·774d.
Revenue—		
Per kilowatt (power-house annual maximum)		£5·50
Per unit generated		0·372d.
Per unit sold		0·412d.

TABLE Q.—MANGAHAO ELECTRIC-POWER SUPPLY.—ANALYSIS OF CAPITAL OUTLAY.

Expenditure to 31st March, 1926.

	£
Land, roading, tram-lines and fencing	79,039
Headworks	559,877
Generating station and machinery	279,757
Transmission-lines	446,405
Main substations	193,071
Service buildings and workmen's accommodation	70,802
Staff village	15,913
Vehicles and loose construction tools	7,326
Office furniture	811
Surveys, expenses and salaries	100,611
Construction plant and equipment	72,325
Interest during construction	196,421
	£2,022,358

TABLE R.—MANGAHAO ELECTRIC-POWER SUPPLY.—OPERATING OR WORKING COSTS.

	Cost. £	Per Unit sold. d.
Generating	5,771	0·031
Transmission	7,999	0·043
Substations	4,868	0·026
Management and General	3,227	0·017
	£21,865	0·117

TABLE S.—MANGAHAO ELECTRIC-POWER SUPPLY.—CONNECTED LOAD, IN KILOWATTS, AT 31ST MARCH, 1926.

——	Street-lighting.	General Lighting, Heating, and Cooking.	Power.	Total.
Public Works Department	4	460	356	820
Wellington City Council	166	*	20,186	20,352
Wellington Meat-works	..	64	959	1,023
Horowhenua Power Board	25	3,230	1,804	5,059
Hutt Valley Power Board	79	7,629	2,303	10,011
Wairarapa Power Board	*	*	1,004	1,004
Tararua Power Board	11	1,267	506	1,784
Dannevirke Power Board	16	1,835	548	2,399
Central Hawke's Bay Power Board	2	912	191	1,105
Manawatu-Oroua Power Board	18	3,335	2,110	5,463
Totals†	321	18,732	29,967	49,020

* Information not available. † Includes incomplete returns for Wellington City and Wairarapa Power Board.

TABLE T.—MANGAHAO ELECTRIC-POWER SUPPLY—GROSS FINANCIAL RESULTS OF DISTRIBUTION OF ENERGY FOR THE YEAR ENDED 31ST MARCH, 1926.

Distributing Authority.	Number of Consumers.	Capital Outlay.	Revenue.					Expenditure.							Balance.	
			From Sale of Electrical Energy.	Rates.	Trading Account.	Other Sources.	Total.	Paid for Electrical Energy.	Maintenance.	Interest.	Depreciation.	Sinking Fund, Reserve Fund, &c.	Other Expenditure.	Total.	Profit.	Loss.
		£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Public Works Department ..	10	2,022,358	2,734*	..	..	937	76,859	..	21,865	92,226	30,056	..	..	144,147	..	67,288
Central Hawke's Bay Power Board	588	90,826	2,714*	..	..	491	3,869	303*	90	..	..	..	..	1,057	2,812	..
Dannevirke Power Board ..	1,295	130,693	8,221	..	..	931	9,152	1,978	1,548	1,474	..	771	..	5,771	3,381	..
Horowhenua Power Board ..	2,172	160,115	24,277	..	1,477	2,075	27,829	9,300	4,561	2,520	..	800	..	17,181	10,648	..
Hutt Valley Power Board ..	3,892	187,280	24,473	..	..	266	24,739	7,955	3,337	13,221	..	1,400	190	26,103	..	1,364
Manawatu-Oroua Power Board	3,118	324,355	26,829*	..	787	463	31,142	4,685*	4,086	13,927	..	4,387	190	30,338	804	..
Palmerston North Borough Council	2,919	185,777	26,717	..	1,098	1,086	28,901	3,063	9,588	12,102	..	1,829	..	26,582	2,319	..
Tararua Power Board ..	1,119	122,737	9,423	..	8	324	9,755	2,079	1,576	4,785	..	631	323	9,394	361	..
Waipukurau Borough Council	436	13,710	4,022	..	..	423	4,445	664	3,254	810	500	135	..	5,363	..	918
Wairarapa Power Board ..	2,538	285,950	25,628	..	1,331	229	27,188	1,651	6,555	15,918	..	1,699	495	26,318	870	..
Wellington City Council ..	19,500	859,085	257,736	..	15	2,551	260,302	41,510	81,192	29,537	..	37,202	52,421	241,862	18,440	..
Totals	37,587	4,382,886	412,774	..	4,716	9,776	504,181	73,188	137,652	186,520	30,556	48,854	53,619	534,116	39,635	69,570

* After deducting amount of sales to other distributing bodies totalling—Public Works Department, £73,188; Central Hawke's Bay Power Board, £664; Manawatu-Oroua Power Board, £3,063.

Net loss, £29,935.

Table U.—Electric-power Boards of New Zealand as constituted on 31st March, 1926.

Name of Electric-power Board.	Proclamation constituting Power Board Area gazetted.	Number of Members on Board.	Approximate Area (Square Miles).		Population.		Value of Rateable Property.			Valuation Basis.	Amount of Loan authorized.	Voting for Loan Poll.	
							Used as Rating Basis.	Unimproved.					
			District.	Outer Area.	District.	Outer Area.	District.	District.	Outer Area.			For.	Against.
							£	£	£		£		
1. Ashburton	17/11/21	12	1,193	1,349	17,468	533	9,346,863	9,346,863	700,181	Unimproved	296,500	1,590	96
2. Auckland	1/4/22	12	300	..	175,000	..	50,491,865*	43,469,650†	..	Capital	1,722,500	7,069	476
3. Banks Peninsula	8/1/20	7	387	..	4,000	..	5,089,798	4,218,326	..	Capital	109,000	331	23
4. Bay of Plenty	20/8/25	8	460	2,615	8,400	2,500	2,096,042	2,096,042	466,000	Unimproved	Poll not yet taken.		
5. Buller*	11/5/22	5	1,987	..	9,197	..	696,374	696,374	..	Unimproved	Poll not yet taken.		
6. Cambridge	8/1/20	8	137	..	6,000	..	2,650,705	1,841,209	..	Capital	113,238	474	71
7. Central	8/7/20	8	752	..	17,512	..	4,630,943	4,630,943	..	Unimproved	217,000	580	23
8. Central Hawke's Bay	19/10/22	9	1,300	..	10,056	..	6,839,951	6,839,951	..	Unimproved	150,000	543	41
9. Dannevirke	11/8/21	10	568	105	11,648	433	4,177,743	4,177,743	488,970	Unimproved	175,000	651	93
10. Franklin	25/9/24	8	628	194	13,610	834	6,763,874	4,387,352	2,412,648	Capital	200,000	1,030	145
11. Golden Bay	18/6/25	5	51	..	1,200	..	240,717	240,717	..	Unimproved	Poll not yet taken.		
12. Grey	26/10/22	9	640	810	10,000	2,000	614,694	514,694	100,000	Capital	80,000	630	134
13. Hawke's Bay	19/6/24	8	1,038	2	28,539	11,565	15,037,110	9,953,834	1,657,188	Capital	304,000	681	68
14. Hobson	29/3/23	8	778	..	7,180	..	1,424,942	1,424,942	..	Unimproved	Poll not yet taken.		
15. Horowhenua	1/12/21	9	630	..	12,095	..	3,403,255	3,403,255	..	Unimproved	260,000	973	26
16. Hutt Valley	6/7/22 11/12/24	11	530	..	27,275	..	3,119,920	3,119,920	..	Unimproved	240,000	1,748	146
17. Malvern	28/6/23	6	308	1,833	3,550	1,500	3,037,533	2,433,080	1,458,588	Capital	40,000	326	22
18. Manawatu-Oroua	1/12/21	12	1,301	..	40,000	..	13,955,493	13,955,493	..	Unimproved	500,000	1,144	96
19. Marlborough	25/10/23	8	3,218	..	20,780	..	9,442,042	6,728,793	..	Capital	300,000	1,334	300
20. Opunake	9/8/21 11/3/22	7	197	..	7,000	..	1,728,168	916,111	..	Capital	99,000	231	26
21. Otago	18/10/23	6	676	1,605	10,604	13,478	3,136,178	1,882,990	2,813,458	Capital	200,000	961	162
22. Otago Central	26/10/22 4/12/24	9	232	2,452	3,085	2,085	528,839	160,008	927,510	Capital	50,000	252	11
23. Poverty Bay	20/12/23	11	1,900*	..	23,986*	..	16,502,852*	9,591,676	..	Capital	280,000	1,203	244
24. Reefton*	30/6/21	5	24	..	1,850	..	220,042	64,476	..	Capital	Poll not yet taken.		
25. South Canterbury*	16/10/22	12	1,673	3,429	35,618	6,000	12,946,839	12,946,839	2,536,815	Unimproved	145,000	978	299

* Last year's figures. † 1924 figure.

TABLE U.—ELECTRIC-POWER BOARDS OF NEW ZEALAND AS CONSTITUTED ON 31ST MARCH, 1926—*continued.*

Name of Electric-power Board.	Proclamation constituting Power Board Area gazetted.	Number of Members on Board.	Approximate Area (Square Miles).		Population.		Value of Rateable Property.			Valuation Basis.	Amount of Loan authorized.	Voting for Loan Poll.	
							Used as Rating Basis.	Unimproved.					
			District.	Outer Area.	District.	Outer Area.	District.	District.	Outer Area.			For.	Against.
							£	£	£		£		
26. Southland	19/11/19	12	7,798	3,059	66,000	9	15,356,035	15,356,035	137,513	Unimproved ..	1,650,000	6,516	415
27. South Taranaki	30/4/25	8	162	706	12,000	5,612	..	4,457,639	3,456,630	..	Poll not yet	taken.	
28. Springs-Ellesmere	8/7/20	5	412	..	11,270	..	6,480,598	6,480,598	..	Unimproved ..	114,000	795	41
29. Taranaki	18/5/22	7	218	1,419	10,000	12,000	5,238,319	2,865,396†	3,109,336†	Capital	350,000	635	190
30. Tararua	23/3/22	10	701	865	8,485	1,770	2,833,994	2,833,994	1,149,113	Unimproved ..	200,000	714	83
31. Tauranga	14/6/23	7	636	5	4,965	3,460	964,553	964,553	267,547	Unimproved ..	100,000	421	277
32. Te Awamutu	8/1/20	10	270	..	8,500	..	3,663,474	1,668,509†	..	Capital	153,000	584	39
33. Teviot	22/7/20 22/7/22	7	320	..	2,400	..	183,022	183,022	..	Unimproved ..	38,500	191	27
34. Thames Valley	8/1/19	12	2,300	..	30,000	..	13,000,000	7,550,000†	..	Capital	700,000	1,786	114
35. Wairarapa	25/3/20	9	302	1,694*	18,000	1,000	7,282,726	3,913,232†	5,457,271†	Capital	316,550	1,703	225
36. Wairere	18/1/23	7	147	260	1,500	1,000	380,000	380,000	492,434‡	Unimproved ..	38,500	82	8
37. Wairoa	29/7/20	10	1,345	..	7,712	..	4,344,027	2,639,968	..	Capital	100,000	504	31
38. Waitaki	9/8/23	9	520	1,813	17,029	551	6,735,789	4,406,970	239,322	Capital	135,000	1,286	124
39. Waitemata	18/10/23 14/11/24	9	630	2	19,860	1,565	6,933,364*	5,744,338	157,135	Capital	200,000	2,940	1,196
40. Waitomo*	6/3/24	7	160	1,000	5,000	3,500	1,066,152	1,066,152	2,500,000	Unimproved	70,000	270	36
41. Wanganui-Rangitikei ..	1/12/21	12	1,648	972	50,000	10,000	26,808,866	6,568,540	1,408,210	Capital	475,000	1,315	214
42. Westland*	28/10/20	9	750	..	3,272	..	196,268	196,268	..	Unimproved ..	Poll not yet	taken.	
Totals	..	..	39,257	26,189	781,646	81,395	279,689,969	216,316,495	31,935,869	..	10,121,788	42,471	5,532

* Last year's figures. † 1924 figure. ‡ Assessed from incomplete returns.

TABLE V.—ELECTRIC-POWER BOARDS—RETURN FOR YEAR ENDED 31ST MARCH, 1926.

Board.	Main Supply commenced.	Capital Outlay.	Revenue.				Expenditure.				Profit.	Loss.	General Rate.		Availability Rate.		Special Rate.	
			Sale of Electricity (Gross).	Sale of Materials (Profit).	General.	Total (not including Rates).	Capital Charges, &c.	Power.	General.	Total Annual Costs.			Levied.	Collected.	Levied.	Collected.	Levied.	Collected.
		£	£	£	£	£	£	£	£	£	£	£	d.	£	d.	£	d.	£
Ashburton	1923	244,519	23,761	45	88	23,894	8,599	5,681	4,727	19,007	4,887	..	..	..	..	..	..	..
Auckland	1908	1,618,368‡	408,090	..	5,799	413,889	181,289	118,476	71,263	371,028	42,861	..	..	..	..	..	0·026 0·29	Nil
Banks Peninsula	1922	93,010	9,449	332	185	9,966	6,707	1,574	4,260	12,541	..	2,575	0·10	4,714*	..	..	..	..
Bay of Plenty	..	..	..	..	..	..	..	..	125	125	..	..	0·1875	Nil	..	..	..	..
Cambridge	1921	100,327	14,055	227	935	15,217	7,666	4,537	2,787	14,990	227	..	..	..	..	..	..	..
Central	1921	212,415	29,015	73	2,725	31,813	14,862	7,929	8,441	31,232	581	..	..	..	..	..	..	..
Central Hawke's Bay ..	1925	90,826	3,378	..	490	3,868	..	967	90	1,057	..	..	..	..	..	..	..	..
Dannevirke	1925	130,693	8,221	601	330	9,152	2,245	1,978	1,548	5,771	3,381	..	..	..	..	..	1·03	Nil
Franklin	1925	24,083	3,312	617	327	4,256	1,096	1,758	389	3,243	1,013	..	..	..	..	..	..	..
Grey	1926	73,172	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1·10	Nil
Hawke's Bay	..	5,762	301	..	70	371	..	100	76	176	..	..	..	..	..	..	..	..
Hobson	..	..	..	..	..	..	..	..	136	136	..	..	0·10	482*	..	..	..	..
Horowhenua	1924	160,115	24,277	1,477	2,075	27,829	3,320	9,300	4,561	17,181	10,648	..	..	..	..	..	..	..
Hutt Valley	1925	187,280	24,473	..	266	24,739	14,621	7,955	3,527	26,103	..	1,364	..	..	..	..	..	..
Malvern	1925	28,854	849	..	..	849	100	313	75	488	361	..	0·25	Nil	..	..	..	..
Manawatu-Oroua	1924	324,355	29,892	787	463	31,142	18,314	7,748	4,276	30,338	804	..	..	..	..	..	..	..
Marlborough	..	48,521	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Opunake	1923	80,945	7,100	240	40	7,380	5,563	177	1,683	7,423	..	43	..	..	..	..	..	..
Otago	1925	114,052	2,766	..	30	2,796	1,777	2,143	1,099	5,019	..	2,223	..	..	..	..	..	..
Otago Central	1925	41,643	1,899	58	94	2,051	1,696	250	318	2,264	..	213	..	..	..	..	..	..
Poverty Bay	..	34,811	..	..	..	..	..	..	..	..	..	..	0·06	4,217*	..	..	..	..
South Canterbury	1925	34,300‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Southland	1925	1,572,785	37,168	499	3,228	40,895	..	4,830	15,055	19,885	..	..	1·25	79,807*	..	..	..	..
Springs-Ellesmere	1922	92,103	12,702	213	177	13,092	4,599	3,522	3,537	11,658	1,434	..	..	..	..	..	..	..
Taranaki	..	313,783	13,310	3,170	440	16,920	1,015	3,813	7,573	12,401	4,519	..	..	..	..	..	..	..
Tararua	1925	122,737	9,423	8	324	9,755	5,416	3,218	760	9,394	361	..	..	..	..	..	1·25	Nil
Tauranga	1925	45,940	3,308	594	117	4,019	1,808	719	3,663	6,190	..	2,171	..	..	..	..	..	..
Te Awamutu	1922	140,175	16,993	..	1,112	18,105	10,869	4,981	5,692	21,542	..	3,437	0·14	2,202*	..	..	..	..
Teviot	1924	33,172	2,718	263	78	3,059	1,400	141	843	2,384	675	..	1·00	763*	..	..	6·00	119
Thames Valley	1921	598,260	76,302	5,251	3,474	85,027	39,189	25,629	18,941	83,759	1,268	..	..	..	..	768†	..	..
Wairarapa	1924	285,950	25,628	1,331	229	27,188	17,617	2,617	6,094	26,328	870	..	..	..	..	..	..	..
Wairere	1925	23,893	134	..	1	135	..	..	..	..	..	..	..	..	..	..	..	..
Wairoa	1923	60,983	8,278	..	151	8,429	4,796	3,796	2,644	11,236	..	2,807	0·10	Nil	..	..	..	..
Waitaki	1918	70,765	12,441	114	253	12,808	5,330	4,208	2,486	12,024	784	..	..	..	..	..	..	..
Waitemata	1925	61,923	610	..	..	610	..	..	..	..	..	..	..	..	..	..	..	..
Waitomo‖	1926	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wanganui-Rangitikei ..	1924	279,996	45,579	..	3,175	48,754	15,912	16,784	5,351	38,047	10,707	..	..	..	..	..	..	..
Totals	..	7,350,516	855,432	15,900	26,676	898,008	375,806	245,144	182,020	802,970	85,381§	14,833§	..	92,185	..	..	..	119

* Includes arrears. † Arrears. ‡ Last year's figures, this year's not available. § Board's capitalizing whole of interest and sinking funds not included. ‖ Figures not available.

NOTE.—Buller, Golden Bay, Reefton, South Taranaki, Westland are not yet in operation.

Table W.—Electric-supply Stations of New Zealand at 31st March, 1926.

(G = gas; O = oil; S = steam; W = water.)

Title.	Ownership.	Supply commenced.	Population supplied.	Number of Consumers.	Capacity, in Kilowatts.			Connected Load (Kilowatts).	Demand Factor. (a.)	Units.				Annual Load-factor Percentage.	System of Supply.	Supply Voltage.	Route-miles of Lines.	Static Head, in Feet.
					Main Plant.	Standby Plant.	Maximum Load.			Generated or purchased.	Sold.	Non-productive.	Percentage Non-productive.					
Steam Stations.																		
1. Auckland	Power Board	1908	175,000	31,458	29,800	3,750	17,752	..	..	61,968,915	50,528,290	11,440,625*	18·5*	39·8	D.C./A.C.	460/400/230	702	..
2. Gisborne	Borough	1912	13,000	2,713	650	..	660	3,971	16·6	1,485,620	1,199,701	285,919	19·2	25·7	D.C.	440/220	39	..
3. Invercargill	Borough	1913	27,000	3,720	2,000	450	1,460	8,237	17·7	4,937,000	4,205,819	731,181*	14·8*	38·6	A.C.	400/230	108	..
4. Kaitangata	Borough	1917	1,768	220	Bulk	..	..	..	..	29,379	21,847	7,532	25·6	..	A.C.	400/230	9	..
5. Nelson	City	1923	10,156	1,418	312	312	345	2,264	15 2	869,079	604,035	265,044*	30·5*	28·7	A.C.	400/230	44	..
6. Wanganui-Rangitikei	Power Board	1924	50,000	4,572	1,650	..	1,640	10,929	15·0	5,394,150	4,754,510	639,640*	11·8*	37·5	A.C.	400/230	441	..
Totals	..	..	276,924	44,101	34,412	4,512	21,857	..	..	74,684,143	61,314,202	13,369,941	17·9	39·0	..	..	1,343	..
Gas Stations.																		
1. Devonport	Borough	1915	9,831	1,699	440	..	387	2,300	16·8	1,024,980	684,844	340,136*	33·2*	30·2	D.C.	460/230	20	..
2. Franklin Electric-supply Co. (Waiuku)	Company	1918	3,000	204	150	30 (G)	75	382	19·7	77,803	62,243	15,560	20·0	18·1	A.C.	400/230	7	..
3. Kaikoura	County	1922	600	130	47	..	28	87	32·2	40,570	25,454	15,116	37·3	16·5	A.C.	400/230	6	..
4. Letts Bros. (Opotiki)	Private	1914	1,200	330	99	..	65	152	42·8	112,500	88,834	23,666	21·0	19·8	D.C.	460/230	11	..
5. Motueka	Borough	1922	1,490	251	50	12 (O)	47	129	36·4	57,994	41,100	16,894*	29·1*	14·1	A.C.	400/230	14	..
6. Napier	Borough	1913	15,604	3,371	1,230	..	988	5,438	18·2	2,659,031	2,262,070	396,961*	14·9*	30·7	A.C./D.C.	460/400/230	32	..
Taradale	Town Board	1924	1,084	240	Bulk	..	..	207	..	56,942	52,330	4,612	8·8	..	A.C.	400/230	14	..
Hawke's Bay	Power Board	1925	23,416	78	Bulk	..	..	70	..	8,700	8,278	422	5·0	..	A.C.	400/230	8	..
7. Picton	Borough	1917	1,300	320	130	..	58	397	14·5	107,680	99,261	8,419	7·8	21·4	D.C.	460/230	10	279
8. Pukekohe†	Borough	1917	2,300	500	255	..	120	423	28·4	115,489	94,110	21,379	18·4	33·0	A.C.	400/230	17	..
Totals	..	..	59,825	7,123	2,401	42	1,768	9,585	18·4	4,261,689	3,418,524	843,165	19·8	27·5	..	..	139	..
Oil Stations.																		
1. Hastings	Borough	1912	10,000	2,654	826	..	664	3,789	17·5	1,683,970	1,465,063	218,907	13·0	29·0	D.C./A.C.	460/400/230	33	..
2. Stratford	Borough	1898	9,000	900	280	..	232	1,682	13·8	682,316	406,676	275,640	40·4	33·6	A.C.	250/110‡	25	27
3. Uawa (Tolaga Bay)	County	1925	400	87	30	..	12	53	23·4	12,857	8,571	4,286	33·3	15·6	D.C.	230	3	..
Totals	..	..	19,400	3,641	1,136	..	908	5,524	16·4	2,379,143	1,880,310	498,833	19·8	29·9	..	..	61	..

* Some auxiliaries electrically driven. † For four months only; then taken over by Franklin Power Board. ‡ Changing over to 400/230.

(a) Demand Factor = $\frac{\text{Maximum load}}{\text{Connected load}} \times \frac{100}{1}$

Note.—Figures in parenthesis not included in totals.

TABLE W.—ELECTRIC-SUPPLY STATIONS OF NEW ZEALAND AT 31ST MARCH, 1926—*continued.*

(G = gas; O = oil; S = steam; W = water.)

Title.	Ownership.	Supply commenced.	Population supplied.	Number of Consumers.	Capacity, in Kilowatts.			Connected Load (Kilowatts).	Demand Factor. (*a*.)	Units.				Annual Load-factor Percentage.	System of Supply.	Supply Voltage.	Route-miles of Lines.	Static Head, in Feet.
					Main Plant.	Standby Plant.	Maximum Load.			Generated or purchased.	Sold.	Non-productive.	Percentage Non-productive.					
Hydro Stations.																		
1. Coleridge	Public Works Dept.	1915	220,000	93	12,000	1,500 (S)	14,430	90,926	15·9	68,860,614	60,952,889	7,907,725	11·5	54·5	A.C.	11,000	476†	480
Ashburton ..	Power Board ..	1908	(17,468)	2,507	Bulk	200 (O)	(806)	(5,451)	14·8	(2,524,344)	2,075,922	448,422	17·8	35·8	A.C.	400/230	695	..
Banks Peninsula ..	Power Board ..	1920	(4,000)	863	Bulk	90 (W)	(207)	(1,453)	14·2	(680,760)	371,771	308,989	45·4	37·5	A.C.	400/230	191	310
Christchurch* ..	City	1904	(95,000)	22,491	Bulk	750 (S)	(6,460)	(43,068)	14·9	(25,660,130)	22,511,181	3,148,949	12·3	45·3	A.C.	400/230	251	..
Eyre	County ..	1920	(1,030)	132	Bulk	..	(109)	(186)	58·9	(243,896)†	195,117	48,779†	20·0†	25·5	A.C.	400/230	21	..
Halswell	County ..	1919	(1,850)†	195	Bulk	..	(89)	(225)	39·6	(230,666)	184,533†	46,133†	20·0†	29·4	A.C.	400/230	22	..
Heathcote ..	County ..	1914	(5,000)	940	Bulk	..	(241)	(1,564)	15·4	(744,737)	707,023	37,714	5·1	35·2	A.C.	400/230	28	..
Kaiapoi*	Borough ..	1917	(1,800)	465	Bulk	..	(134)	(360)	37·0	(405,400)	324,320	81,080	20·0	34·6	A.C.	400/230	20	..
Kowai	County ..	1922	(1,950)	260	Bulk	..	(45)	(303)	14·8	(134,320)	89,688	44,632	33·2	34·1	A.C.	400/230	55	..
Lyttelton ..	Borough ..	1918	(3,785)	464	Bulk	..	(175)	(1,099)	15·9	(530,200)	510,307	19,893	3·8	34·6	A.C.	400/230	9	..
Malvern‡	Power Board ..	1925	(5,050)	261	Bulk	..	(64)	(476)	13·4	(80,510)	41,126	39,384	48·9	14·5	A.C.	400/230	83	..
Rangiora	Borough ..	1919	(2,100)	430	Bulk	..	(97)	(558)	17·4	(256,670)	205,336	51,334	20·0	30·2	A.C.	400/230	12	..
Rangiora	County ..	1918	(3,135)	384	Bulk	..	(201)	(516)	38·5	(382,461)	305,969	76,492	20·0	21·7	A.C.	400/230	51	..
Riccarton ..	Borough ..	1916	(4,574)	1,041	Bulk	..	(206)	(2,148)	9·6	(813,560)	747,015	66,545	8·2	45·1	A.C.	400/230	18	..
South Canterbury ..	Power Board ..			Figures not available.														
Timaru	Borough ..	1908	(15,170)	2,269	Bulk	475(S&G)	(510)	(4,256)	12·0	(2,144,256)	1,645,666	498,592	23·3	48·0	A.C.	400/230	53	..
Springs-Ellesmere ..	Power Board ..	1921	(11,270)	1,554	Bulk	..	(289)	(2,226)	12·7	(977,972)	674,784	303,188	31·0	38·6	A.C.	400/230	219	..
Sumner	Borough ..	1915	(3,100)	785	Bulk	..	(116)	(823)	14·1	(509,000)†	407,200†	101,800†	20·0†	50·1†	A.C.	400/230	18	..
Tai Tapu Dairy Co.	Company ..	1915	(5,700)	200	Bulk	..	(216)	(337)	64·5	(510,559)	408,447†	102,112†	20·0†	27·0	A.C.	400/230	37†	..
Waimairi ..	County ..	1916	(12,000)	2,483	Bulk	..	(421)	(4,492)	9·4	(1,625,000)	1,300,000	325,000	20·0	44·1	A.C.	400/230	137	..
2. Dunedin (Waipori) ..	City	1907	114,082	17,949	11,000	860 (O)	9,400	40,072	23·4	37,177,755	28,619,365	8,558,390	23·0	45·1	A.C.	400/230	446	700
Otago§	Power Board ..	1925	(24,082)	854	Bulk	..	(740)	(1,994)	37·1	(688,386)	473,605	214,781	31·2	21·2	A.C.	400/230	123	..
3. Havelock North ..	Town Board ..	1915	1,500	278	176	..	120	..	..	387,000	224,437	162,563	42·0	37·0	A.C.	400/230	17	50
4. Havelock South ..	Town Board ..	1918	300	50	15	..	13	20	65·0	30,000	24,560	5,440	18·1	26·3	D.C.	460/230	2	270
5. Hawera County Electric Co. (Limited)	Company ..	1902	6,504	2,194	615	135 (O)	522	3,549	14·7	1,191,930	916,859	275,071	23·1	26·1	A.C.	400/230	77	57
6. Kanieri Electric Limited (Hokitika)	Company ..	1908	2,500	411	700	150 (O)	630	838	75·2	2,959,880	2,316,140	643,740‖	21·8‖	53·6	A.C.	400/230	18	250
7. Kaponga*	Town Board ..	1916	800	280	136	..	90	376	23·9	176,146	167,691	9,455	4·8	22·3	A.C.	400/230	36	58 & 31
8. Mackenzie County (Fairlie)	County ..	1922	1,942	173	40	..	25	135	18·5	57,385	51,293	6,092	10·6	26·6	A.C.	400/230	6	66
9. Mangahao	Public Works Dept.	1925	240,000	10	24,000	..	13,960	44,846¶	31·1	49,482,425	45,131,120	4,351,305	8·8	40·5	A.C.	11,000	353	850
Central Hawke's Bay	Power Board ..	1925	(11,806)	588	Bulk	..	(180)	(1,105)	16·3	(353,518)	223,317	130,201	36·8	22·3	A.C.	400/230	90	..

* Last year's figures; this year's not available. † Assessed from incomplete returns. ‡ For ten months only. § For six months only. ‖ Some auxiliaries electrically driven. ¶ Includes incomplete returns from Wellington City and Wairarapa Power Board.

(*a*) Demand Factor = $\frac{\text{Maximum load}}{\text{Connected load}} \times \frac{100}{1}$

NOTE.—Figures in parenthesis not included in totals.

TABLE W.—ELECTRIC-SUPPLY STATIONS OF NEW ZEALAND AT 31ST MARCH, 1926—*continued*.

(G = gas; O = oil; S = steam; W = water.)

Title.	Ownership.	Supply commenced.	Population supplied.	Number of Consumers.	Capacity, in Kilowatts.			Connected Load (Kilowatts).	Demand Factor. (*a*.)	Units.				Annual Load-factor Percentage.	System of Supply.	Supply Voltage.	Route-miles of Lines.	Static Head, in Feet.
					Main Plant.	Standby Plant.	Maximum Load.			Generated or purchased.	Sold.	Non-productive.	Percentage Non-productive.					
Hydro Stations—continued.																		
Dannevirke ..	Power Board ..	1925	(12,081)	1,295	Bulk	..	(288)	(2,400)	12·0	(687,359)	480,631	206,728	30·8	27·3	A.C.	400/230	228	..
Horowhenua ..	Power Board ..	1924	(12,095)	2,172	Bulk	..	(1,384)	(5,058)	27·3	(3,863,272)	3,023,101	840,171	21·7	31·9	A.C.	400/230	192	..
Hutt Valley ..	Power Board ..	1925	(27,275)	3,892	Bulk	500 (S&O)	(1,255)	(10,011)	12·5	(4,305,630)	3,681,720	623,910	14·5	39·2	A.C.	400/230	196	..
Manawatu-Oroua ..	Power Board ..	1924	(40,000)	3,118	Bulk	..	(1,306)	(5,463)*	23·9†	(4,652,424)	3,715,555	936,869	20·0	40·7	A.C.	400/230	360	..
Palmerston North ..	Borough ..	1924	(19,000)	2,919	Bulk	1,020 (G)	810	(5,345)	15·2	(2,599,950)	1,923,797	676,153	26·0‡	36·6	A.C.	400/230	64	..
Taraura	Power Board ..	1909	(10,255)	1,119	Bulk	..	260	(1,785)	14·6	(793,772)	523,550	270,222	34·2	34·9	A.C.	400/230	154	..
Wairarapa ..	Power Board ..	1924	(18,000)	2,538	Bulk	837	683	..	..	..	..	..	..	..	A.C.	400/230	294	120& 290
Waipukurau ..	Borough ..	1923	(1,750)	436	Bulk & 100(O)	..	(95)	(603)	15·8	(223,913)	193,403	30,510	13·6	26·9	A.C.	400/230	12	..
Wellington ..	City	1888	(110,000)	19,500	Bulk & 8,000(S)	1,500 (S)	(10,500)	..	..	(33,170,205)	24,486,022	8,684,183	26·0‡	36·0	A.C.	400/230/100	250§	..
10. Mangaweka ..	Town Board ..	1913	370	112	40	..	36	192	18·8	374,600	49,179	325,421	86·9	..	A.C.	400/230	7	37
11. Mataura	Borough ..	1913	1,300	266	75	..	55	..	..	76,108	63,849	12,259	16·1	15·8	A.C./S.P.	440/220	25	22
12. Murchison	County ..	1922	480	120	100	..	93	164	56·6	205,200	140,900	64,300	31·3	25·2	A.C.	400/230	19	105
13. New Plymouth ..	Borough ..	1905	39,015	4,027	3,500	..	1,600	8,540	18·7	7,366,570	5,509,626	1,856,944	25·2	52·5	A.C.	400/230	295	240& 120
Inglewood ..	Borough ..	1905	(1,300)	416	Bulk	120 (W)	(97)	(966)	10·4	(298,641)	234,326	64,315	21·5	35·2	A.C.	400/230	10	38
Taranaki	Power Board ..	1925	(10,000)	954	Bulk**	..	..	..	..	..	..	..	..	..	A.C.	400/230	300§	43&27
Waitara	Borough ..	1907	(1,715)	363	Bulk	..	(65)	(362)	18·0	(121,570)	78,640	42,930	35·3	21·4	A.C.	400/230	11	..
14. Ohakune	Borough ..	1914	2,400	420	120	141 (O)	91	305	29·8	151,901	132,027	19,874	13·1	19·0	A.C.	400/230	18	42
15. Opunake	Power Board ..	1920	7,000	700	320	..	275	505	54·5	736,700	440,000	296,700	40·3	30·6	A.C.	400/230	146	38
16. Patea	Borough ..	1901	1,750	286	142	..	83	201	41·3	179,990	155,240	24,750	13·7	24·9	A.C./S.P.	100	13	78
17. Queenstown.. ..	Borough ..	1924	857	184	60	..	40	129	31·0	101,130	45,141	55,989	55·4	28·9	A.C.	400/230	4	520
18. Raetihi	Borough ..	1917	4,500	468	470	..	137	653	21·0	458,830	367,064	91,766	20·0	38·2	A.C.	400/230	28	350
19. Reefton Electric Light and Power Co. (Ltd.)	Company ..	1887	1,300	258	80	..	65	..	..	..	..	..	..	..	D.C.	220	9	27
20. Southland (Monowai)	Power Board ..	1925	71,497	5,040	4,000	..	2,450	13,703	17·9	7,139,089	3,634,976	3,504,113	49·1	33·0	A.C.	400/230	2,322	154
Bluff	Borough ..	1903	(1,573)	349	Bulk	..	(114)	(577)	19·7	(241,941)	173,844	68,097	28·0	24·2	A.C.	400/230	9	..
Gore	Borough ..	1905	(3,915)	990	Bulk	..	(230)	..	..	(615,829)	485,610	130,219	21·1	30·6	A.C.	400/230	24	..
21. Taihape	Borough ..	1912	2,450	491	150	75 (G)	166	776	21·4	337,430	251,514	85,916¶	25·5¶	23·2	D.C.	460/230	10	30
22. Taumarunui ..	Borough ..	1924	4,000	635	500	..	400	1,136	35·2	1,025,282	560,458	464,824‖	45·0‖	29·0	A.C.	400/230	15	25

* Not including Palmerston North. † Palmerston North peak taken by own plant. ‡ Some auxiliaries electrically driven. § Assessed from incomplete returns. ‖ Includes power for borough purposes. ¶ Includes street-lighting.
** Also temporary water-power development.

(*a*) Demand Factor = $\frac{\text{Maximum load}}{\text{Connected load}} \times \frac{100}{1}$

NOTE.—Figures in parenthesis not included in totals.

TABLE W.—ELECTRIC-SUPPLY STATIONS OF NEW ZEALAND AT 31ST MARCH, 1926—*continued.*

(G = gas; O = oil; S = steam; W = water.)

Title.	Ownership.	Supply commenced.	Population supplied.	Number of Consumers.	Capacity, in Kilowatts.			Connected Load (Kilowatts).	Demand Factor. (*a*.)	Units.				Annual Load-factor Percentage.	System of Supply.	Supply Voltage.	Route-miles of Lines.	Static Head, in Feet.
					Main Plant.	Standby Plant.	Maximum Load.			Generated or purchased.	Sold.	Non-productive.	Percentage Non-productive.					
Hydro Stations—contd.																		
23. Tauranga	Borough ..	1915	10,890	803	4,300	..	2,564	4,140	61·9	5,200,743	4,379,784	820,959	15·8	23·2	A.C.	400/230	70	110 & 86
Tauranga** ..	Power Board ..	1925	(4,965)	469	Bulk	..	(225)	(1,474)	15·3	(270,699)	270,699*	Nil*	Nil*	33·0	A.C.	460/400/230	226	..
Te Puke	Town Board ..	1921	(925)	215	Bulk	..	(76)	(395)	19·2	(171,339)	139,165	32,174	18·8	25·8	A.C.	400/230	9	..
24. Teviot	Power Board ..	1924	5,485	..	314	..	215	572	26·6	285,830	228,664†	57,166†	20.0†	15·2	A.C.	400/230	54	380
Otago Central ..	Power Board ..	1925	(3,085)	278	Bulk	..	(70)	(312)	22·4	..	..	..	..	..	A.C.	400/230	45	..
25. Tourist Dept. (Rotorua)	Government ..	1901	5,000	1,166	400 and bulk	20 (O)	293	1,712	17·1	871,933	620,485	251,448	28·8	34·0	A.C.	200/115	36	14
26. Waikato (Horahora) ..	Public Works Dept.	1913	82,000‡	17	12,875	2,500 (S)	11,860	41,502‡	28·6‡	67,026,141	60,261,326	6,764,815§	10·1§	64·5	A.C.	11,000	278	27
Cambridge ..	Power Board ..	1921	(6,000)	999	Bulk	..	(425)	(1,989)	21·4	(2,085,670)	1,616,395	469,275	22·5	56·0	A.C.	400/230	121	..
Central	Power Board ..	1921	(17,512)	2,428	Bulk	..	(860)	(4,155)	20·7	(4,034,447)	3,233,339	801,108	19·9	53·6	A.C.	400/230	333	..
Franklin	Power Board ..	1925	(13,610)	730	Bulk	220 (G)	(161)	(934)	17·2	(201,000)†	155,370	45,630†	28·8†	21·4†	A.C.	400/230	97	..
Hamilton.. ..	Borough ..	1913	(14,600)	2,910	Bulk	..	(732)	(4,338)	16·9	(2,215,958)	1,733,857	482,101	21·8	34·5	A.C.	400/230	50	..
Te Aroha ..	Borough ..	1906	(2,274)	602	Bulk	150 (W)	(131)	(969)	13·5	(391,504)	342,547	48,957	12·5	34·1	A.C.	400/230	15	560
Te Awamutu ..	Power Board ..	1920	(8,500)	1,180	Bulk	..	(576)	(2,672)	21·6	(2,421,070)	1,911,813	509,257	21·0	48·0	A.C.	400/230	283	..
Thames	Borough ..	1914	(5,000)	1,001	Bulk	205(W&O)	(225)	(1,411)	15·9	(803,669)	717,562	86,107	10·7	40·8	A.C.	400/230	20	130
Thames Valley ..	Power Board ..	1920	(30,000)	5,735	Bulk	..	(3,134)	(12,872)	24·4	(14,228,451)	11,273,640	2,954,811	20·8	51·8	A.C.	400/230	603	..
Waitomo	Power Board ..	1913	..	(Figures	not	available.)	..	..	..	..	..	..	..	..	..	..	..	..
27. Waimea Electric Supply Co. (Brightwater)	Company ..	1911	4,000	533	100	40 (G)	90	375	24·0	114,600	95,600	19,000	16·6	14·5	A.C.	400/230	33	12
28. Wairere	Power Board ..	1925	1,500	101	400	..	30	..	..	71,270	..	..	..	27·1	A.C.	400/230	50†	65
29. Wairoa (Waikaremoana)	Power Board ..	1923	7,712	134	800	..	744	2,295	32·4	2 031,148	1,703,993	317,210	15·6	31·2	A.C.	400/230	67	680
Wairoa	Borough ..	1913	(2,337)	524	Bulk	..	(148)	(1,253)	11·8	(590,555)	501,972	88,583	15·0	45·6	A.C.	400/230	13	..
30. Waitaki (Oamaru) ..	Power Board ..	1918	17,113	1,462	510	..	330	2,250	14·7	796,897	700,019	96,887§	12·2§	27·6	A.C.	400/230	38	250
31. Waverley	Borough ..	1916	650	179	40	..	17	158	10·7	34,350	31,249	3,101	9·0	23·1	A.C.	400/230	6	60
32. Westport††	Borough ..	1925	4,000	265	250	..	79	252	31·3	50,410	29,433	20,977	41.6	12·5	A.C.	400/230	22	430
33. Whakatane	Borough ..	1922	1,350	350	240	..	145	507	28·6	491,000	169,807	321,193‖	65·4‖	38·7	A.C.	400/230	31	276
34. Wilson's (N.Z) Portland Cement Co. (Wairua)	Company ..	1916	7,536	37	2,500	..	2,200	..	..	9,544,580	8,183,153	1,361,427	14·2	49·5	A.C.	400/230	31	130
Kamo	Town Board ..	1923	(480)	71	Bulk	..	(28)	100	28·0	(27,841)†	21,773	5,568†	20·0†	11·4†	A.C.	400/230	5	..
Whangarei ..	Borough ..	1915	(6,856)	1,666	Bulk	..	(340)	2,626	12·9	(1,140,890)	936,738	204,152	17·9	38·3	A.C.	400/230	22	..
Totals	. ..	..	757,701	137,527	89,068	8,948	63,328	263,305¶	24·1	264,994,867	201,626,002	63,368,865	23·9	47·8	..	..	10,911	..

* Line losses chargeable to Power Board. † Assessed from incomplete returns. ‡ Not including Auckland. § Some auxiliaries electrically driven. ‖ Includes power for borough purposes. ** Operating for 5 months.
†† Operating for 7 months. ¶ Includes incomplete return from Wellington City and Wairarapa Power Board.

(*a*) Demand Factor = $\frac{\text{Maximum load}}{\text{Connected load}} \times \frac{100}{1}$

NOTE.—Figures in parenthesis not included in totals.

Table X.—Summary of Returns of Operating Results for the Year ended 31st March, 1926.

Title.	Capital Outlay at 31st March, 1926.	Total Revenue (not including Rates).	Working-expenses.*	Capital Charges, &c.		Total Annual Costs.	Net Results.		Average Revenue from Sale of Energy.		Working-costs.		Capital Charges.		Total Costs.		Retail Selling-rates.		
				Total.	Per Cent. of Capital Outlay.		Profit.	Loss.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Lighting.	Heating.	Power.
Steam Stations.	£	£	£	£		£	£	£	d.	£	d.	£	d.	£	d.	£	s. d.	s. d.	s. d.
1. Auckland	1,618,368§	413,889	189,739	181,289(*a*)	11·20	371,028	42,861	..	1·94	23·0	0·90	10·7	0·86	10·2	1·76	20·9	0 $6\frac{1}{4}$	0 $4\frac{1}{4}$	0 $2\frac{1}{2}$
2. Gisborne	64,619	24,037	17,981	5,675(*a*)	8·78	23,656	381	..	4·72	35·8	3·59	27·2	1·14	8·6	4·73	35·8	0 $6\frac{1}{2}$	0 4	0 3
3. Invercargill	153,165	41,809	21,572	17,327(*b*)	11·31	38,899	2,910	..	2·32	28·6	1·23	14·8	0·99	11·9	2·22	26·6	0 $6\frac{1}{4}$	0 $2\frac{3}{4}$	0 $2\frac{3}{4}$
4. Kaitangata	1,637	637	590	Nil	Nil	590	47	..	7·00	..	6·48	..	..	..	6·48	..	0 7	..	..
5. Nelson	74,177	14,384	8,968	4,900(*c*)	6·61	13,868	516	..	5·60	40·9	3·55	26·0	1·95	14·2	5·50	40·2	0 9	0 4	0 4
6. Wanganui–Rangitikei ..	279,996	48,754	22,135	15,912(*a*)	5·68	38,047	10,707	..	2·30	27·8	1·12	13·5	0·81	9·7	1·93	23·2	0 7	0 $3\frac{1}{2}$	0 $1\frac{1}{2}$
Totals	2,191,962	543,510	260,985	225,103	10·27	486,088	57,422	..	2·13	24·9	1·02	11·9	0·88	10·3	1·90	22·2	..	..	..
Gas Stations.																			
1. Devonport	58,473	15,106	10,608	2,800(*c*)	4·79	13,408	1,698	..	4·91	36·2	3·72	27·4	0·98	7·2	4·70	34·6	0 6	0 4	0 3
2. Franklin Electric Supply Co. (Waiuku)	26,618	1,977	1,802	621(*d*)	2·33	2,423	..	446	6·61	22·9	6·95	24·0	2·39	8·3	9·34	32·3	0 8	0 4	0 4
3. Kaikoura	9,580	1,391	1,565	698(*c*)	7·29	2,263	..	872	12·06	45·7	14·76	55·9	6·58	24·9	21·34	80·8	1 0	1 0	0 6
4. Letts Bros. (Opotiki) ..	9,700	3,161	2,941	220(*d*)	2·27	3,161	..	..	7·95	45·4	7·95	45·3	0·59	3·4	8·54	48·7	0 10	0 5	0 5
5. Motueka	14,316	1,718	1,830	962(*c*)	6·72	2,792	..	1,074	9·80	35·6	10·60	38·9	5·60	20·5	16·20	59·4	0 10	0 4	0 4
6. Napier	117,331	33,312	17,127	9,181(*e*)	7·82	26,308	7,004	..	3·46	33·3	1·81	17·4	0·97	9·2	2·78	26·7	0 $6\frac{1}{2}$	0 $6\frac{1}{2}$	0 $3\frac{1}{2}$
Taradale	11,461	1,239	774	180(*d*)	1·57	954	285	..	5·41	..	3·55	..	0·82	..	4·37	..	0 10	0 4	0 4
Hawke's Bay Power Bd.	5,762	371	176‖	Nil	..	176	195	..	8·74	..	4·85	..	..	..	4·85	..	0 10	0 4	0 4
7. Picton	16,224	2,653	2,092	818(*c*)	5·04	2,910	..	257	6·40	46·1	5·05	36·4	1·98	14·2	7·03	50·6	0 10	0 4	0 4
8. Pukekohe†	36,134	2,053	1,442	798(*c*)	2·21	2,240	..	187	4·90	16·0	3·68	12·0	2·03	6·7	5·71	18·7	0 8	0 4	0 4
Totals	305,599	62,981	40,357	16,278	5·33	56,635	9,182	2,836	4·42	35·6	2·83	22·8	1·14	9·2	3·98	32·0	..	..	..
Oil Stations.																			
1. Hastings	80,707	20,194	12,558	5,141(*e*)	6·36	17,699	2,495	..	3·30	30·4	2·05	18·9	0·84	7·7	2·89	26·6	0 8	0 4	0 3
2. Stratford	26,026	8,516	6,297	2,774(*a*)	10·66	9,071	..	555	5·02	36·7	3·72	27·1	1·64	12·0	5·36	39·1	0 8	0 4	0 4
3. Uawa (Tolaga Bay)‡ ..	6,130	624	498	78(*d*)	1·27	576	48	..	15·52	44·3	13·94	39·8	2·18	6·2	16·12	46·0	1 5	1 0	1 0
Totals	112,863	29,334	19,353	7,993	7·08	27,346	2,543	555	3·74	32·3	2·47	21·3	1·02	8·8	3·49	30·1	..	..	..
Hydro Stations.																			
1. Coleridge	1,366,951	123,355	27,035	69,674(*g*)	5·10	96,709	26,646	..	0·48	8·4	0·11	1·9	0·27	4·8	0·38	6·7	..	..	..
Asburton	244,519	23,894	10,408	8,599(*b*)	3·52	19,007	4,887	..	2·75	29·4	1·20	12·9	0·99	10·7	2·19	23·6	0 8	0 3	0 3
Banks Peninsula ..	93,010	9,966	5,834	6,707(*c*)	7·21	12,541	..	2,575	6·16	46·1	3·77	28·2	4·33	32·4	8·10	60·6	0 10	0 2	0 3
Christchurch§ ..	559,143	151,539	63,160	83,984(*i*)	15·02	147,144	4,395	..	1·56	22·7	0·67	9·8	0·90	13·0	1·57	22·8	0 5	0 3	0 $1\frac{1}{2}$
Eyre	6,248	1,418	754	323(*c*)	5·17	1,077	341	..	1·74	13·0	0·93	6·9	0·39	2·9	1·32	9·8	Flat rates.		
Halswell	6,632	1,457	1,218	313(*c*)	4·72	1,531	..	74	1·89	16·1	1·58	13·6	0·41	3·5	1·99	17·1	0 6	..	0 $1\frac{1}{2}$
Heathcote	20,953	6,154	3,939	1,052(*c*)	5·02	4,991	1,163	..	1·98	24·1	1·34	16·3	0·36	4·4	1·69	20·7	0 5	0 $1\frac{1}{2}$	0 3
Kaiapoi§	4,500	2,457	1,592	342(*a*)	7·60	1,934	523	..	1·81	18·4	1·18	11·9	0·25	2·6	1·43	14·5	Flat rates.		
Kowai	19,724	2,068	823	1,341(*c*)	6·80	2,164	..	96	5·42	45·0	2·20	18·3	3·59	29·8	5·79	48·1	0 4	0 3	0 3
Lyttelton	5,000	4,307	3,094	1,798(*j*)	35·96	4,892	..	585	2·00	24·3	1·46	17·7	0·85	10·3	2·30	28·0	0 5	0 $1\frac{1}{2}$	0 3

* Includes wages, fuel, and maintenance. † Operating for four months only; then taken over by Franklin Power Board. ‡ Operating for nine months. § Last year's figures, this year's not available. ‖ Miscellaneous expenses charged to capital.

(*a*.) Includes interest, sinking fund, depreciation. (*b*.) Includes interest, sinking fund, renewal fund. (*c*.) Includes interest, sinking fund. (*d*.) Includes interest only. (*e*.) Includes interest, sinking fund, renewal fund, reserve. (*g*.) Includes interest and depreciation. (*i*.) Includes interest, sinking fund, depreciation, reserve. (*j*.) Includes interest, sinking fund, special.

TABLE X.—SUMMARY OF RETURNS OF OPERATING RESULTS FOR THE YEAR ENDED 31ST MARCH, 1926—*continued.*

Title.	Capital Outlay at 31st March, 1926.	Total Revenue (not including Rates).	Working-expenses.*	Capital Charges, &c.*		Total Annual Costs.	Net Results.		Average Revenue from Sale of Energy.		Working-costs.		Capital Charges.		Total Costs.		Retail Selling-rates.		
				Total.	Per Cent. of Capital Outlay.		Profit.	Loss.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Lighting.	Heating.	Power.
Hydro Stations—continued.	£	£	£	£		£	£	£	d.	£	d.	£	d.	£	d.	£	s. d.	s. d.	d. s.
Malvern	28,854	849	388	100(*n*)	0·35	488	361	..	4·95	13·4	2·26	6·1	0·58	1·6	2·85	7·7	0 7	0 2	0 2
Rangiora Borough ..	9,133	3,151	1,421	776(*a*)	8·50	2,197	954	..	3·68	32·5	1·67	14·7	0·91	8·0	2·58	22·7	0 6	0 3	0 3
Rangiora County ¶ ..	23,878	4,013	2,188	1,526(*c*)	6·39	3,714	299	..	3·15	20·0	1·72	10·9	1·20	7·6	2·92	18·5	0 8	..	0 2
Riccarton	13,500	7,179	5,131	1,332(*p*)	9·87	6,463	716	..	2·08	31·5	1·64	24·9	0·43	6·5	2·07	31·4	0 5	0 1½	0 1½
South Canterbury ..							(Figures not available.)												
Timaru	95,613	24,143	12,215	7,916(*c*)	8·28	20,131	4,012	..	3·36	45·1	1·78	23·9	1·15	15·5	2·94	39·4	0 8	0 1½	0 3
Springs-Ellesmere ..	92,103	13,092	7,059	4,599(*c*)	4·99	11,658	1,434	..	4·52	43·9	2·51	24·4	1·64	15·9	4·15	40·3	0 7	0 2	0 2
Sumner	10,707	4,261	2,269	761(*a*)	7·11	3,030	1,231	..	2·51	36·8	1·34	19·6	0·45	6·6	1·79	26·2	0 6	0 1	0 1
Tai Tapu	8,489	3,474	2,548	823(*p*)	9·69	3,371	103	..	2·04	15·0	1·50	11·8	0·48	3·8	1·98	15·6	Flat rates.		
Waimairi	52,786	14,394	6,675	2,847(*c*)	5·39	9,522	4,872	..	2·66	34·2	1·23	15·9	0·52	6·8	1·75	22·7	0 6	0 3	0 3
2. Dunedin (Waipori) ..	927,513	156,992	50,492	81,344(*k*)	8·77	131,836	25,156	..	1·30	16·4	0·42	5·4	0·68	8·7	1·10	14·0	0 5	0 2	0 2
Otago Power Board†	114,052	2,796	3,242	1,777(*c*)	1·56	5,019	..	2,223	1·40	3·7	1·64	4·4	0·90	2·4	2·54	6·8	0 3½	0 3	0 1
3. Havelock North ..	23,597	3,389	760	1,734(*c*)	7·35	2,494	895	..	3·60	28·0	0·81	6·3	1·86	14·4	2·67	20·7	0 7	0 4	0 4
4. Havelock South ..	2,200	389	334	126(*n*)	5·73	460	..	71	3·80	29·9	3·26	25·7	1·23	9·7	4·49	35·4	Flat rates.		
5. Hawera County Electric Co. (Limited)	87,990	23,476	7,635	8,295(*i*)	9·43	15,930	7,546	..	5·46	40·1	2·00	14·6	2·17	15·9	4·17	30·5	0 7¼	0 2¾	0 3½
6. Kanieri Electric (Limited) (Kokitika)	38,875	6,031	4,254	1,365(*l*)	3·51	5,619	412	..	0·61	9·4	0·44	6·8	0·14	2·2	0·58	8·9	0 6	0 1½	0 3
7. Kaponga ¶	18,353	2,843	1,518	1,463(*j*)	7·97	2,981	..	138	4·03	31·3	2·17	16·8	2·10	16·1	4·17	32·9	0 9	0 4	0 4
8. Mackenzie County (Fairlie)	10,816	1,370	290	638(*c*)	5·90	928	442	..	6·10	52·7	1·35	11·7	2·98	25·8	4·33	37·5	0 9	0 4½	0 4½
9. Mangahao	2,022,358	76,859	21,865	122,282(*g*)	6·05	144,147	..	67,288	0·41	5·8	0·12	1·6	0·66	8·8	0·77	10·3	..	..	..
Central Hawke's Bay†	90,826	3,868	1,057	‡	..	1,057	2,811	..	3·62	18·8	1·13	5·9	..	..	1·13	5·9	0 10	0 3	0 4
Waipukurau ..	13,710	4,445	3,918	1,445(*a*)	10·54	5,363	..	918	4·99	42·3	4·86	41·2	1·79	15·2	6·65	56·4	0 10	0 4	0 3
Dannevirke	130,693	9,152	3,526	2,245(*c*)	1·72	5,771	3,381	..	4·11	28·6	1·76	12·3	1·12	7·8	2·88	20·1	0 8	0 3	0 3
Horowhenua ..	160,115	27,829	13,861	3,320(*c*)	2·07	17,181	10,648	..	1·93	17·5	1·10	10·0	0·26	2·4	1·36	12·4	0 8	0 4	0 4
Hutt Valley ..	187,280	24,739	11,482	14,621(*c*)	7·81	26,103	..	1,364	1·60	19·5	0·75	9·1	0·95	11·7	1·70	20·8	0 6	0 2½	0 2
Manawatu-Oroua ..	324,355	31,142	12,024	18,314(*c*)	5·65	30,338	804	..	1·94	22·8	0·78	9·2	1·18	14·0	1·96	23·2	0 8	0 3½	0 4½
Palmerston North ..	185,777	28,901	12,651	13,931(*c*)	7·50	26,582	2,319	..	3·32	33·0	1·57	15·6	1·74	17·2	3·31	32·8	0 8	0 2	0 3
Tararua	122,737	9,755	3,978	5,416(*c*)	4·41	9,394	361	..	4·32	36·4	1·82	15·3	2·48	20·7	4·30	36·0	0 8	0 2	0 4
Wairarapa	285,950	27,188	8,701	17,617(*c*)	6·16	26,318	870	..	..	37·5	..	12·7	..	25·8	..	38·5	0 7	0 3½	0 4½
Wellington	859,085	260,303	122,702	66,739(*e*)	7·77	241,862§	18,441	..	2·53	24·5	1·20	11·7	0·65	6·4	1·85	18·1	0 6	0 2	0 3
10. Mangaweka	4,784	625	597	348(*c*)	7·27	945	..	320	2·92	16·8	2·92	16·8	1·70	9·8	4·62	26·6	1 0	0 3½	0 4
11. Mataura	4,348	749	992	120(*c*)	2·76	1,112	..	363	2·32	11·2	3·70	18·0	0·45	2·2	4·15	20·2	0 6	0 2½	0 2½
12. Murchison	15,540	1,750	422	962(*c*)	6·19	1,384	366	..	2·73	17·2	0·72	4·5	1·64	10·3	2·36	14·8	0 3	0 3	0 3
13. New Plymouth ..	357,204	53,544	19,103	34,104(*f*)	9·55	53,207	337	..	2·09	30·0	0·83	11·9	1·50	21·3	2·33	33·2	0 7	0 2	0 2
Inglewood	11,500	3,164	2,261	750(*c*)	6·52	3,011	153	..	3·04	30·6	2·33	23·3	0·77	7·8	3·10	31·1	0 6	0 2	0 2
Taranaki Power Board	313,783	16,920	11,386‖	1,015(*d*)	0·32	12,401	4,519	..	..	..	..	..	..	..	..	..	0 6	0 3	0 3
Waitara	10,364	2,808	2,069	885(*c*)	8·54	2,954	..	146	7·67	38·7	6·31	31·8	2·70	13·6	9·01	45·4	0 9	0 3	0 3
14. Ohakune	16,260	3,831	1,657	1,188(*c*)	7·31	2,845	986	..	5·75	34·8	3·01	18·2	2·15	13·1	5·16	31·3	0 9	0 3	0 4
15. Opunake	80,945	7,380	1,860	5,563(*c*)	6·87	7,423	..	43	3·87	25·8	1·01	6·8	3·03	20·2	4·04	27·0	0 4	0 3	0 3
16. Patea	9,213	2,520	1,135	411(*c*)	4·46	1,546	974	..	3·71	29·1	1·70	13·5	0·63	4·9	2·33	18·4	0 8½	0 4	0 3½

* Includes wages, fuel, and maintenance. † Operating six months. ‡ Charged to capital. § Includes £52,421 special expenditure. ‖ Not including miscellaneous expenditure, which was charged to capital.
¶ Last year's figures; this year's not available.

(*a*.) Includes interest, sinking fund, depreciation, fund, reserve, and special capital charges. (*c*.) Includes interest, sinking fund. (*d*.) Includes interest only. (*e*.) Includes interest, sinking fund, renewal fund, reserve. (*f*.) Includes interest, sinking fund, depreciation, renewal fund. (*g*.) Includes interest, depreciation. (*i*.) Includes interest, sinking fund, depreciation, reserve. (*j*.) Includes interest, sinking fund, special. (*k*.) Includes interest, sinking fund, depreciation, renewal fund. (*l*.) Includes depreciation only. (*n*.) Includes sinking fund only. (*p*.) Includes interest, depreciation, renewal fund.

TABLE X.—SUMMARY OF RETURNS OF OPERATING RESULTS FOR THE YEAR ENDED 31ST MARCH, 1926—*continued.*

Title.	Capital Outlay at 31st March, 1926.	Total Revenue (not including Rates).	Working-expenses.*	Capital Charges, &c.		Total Annual Costs.	Net Results.		Average Revenue from Sale of Energy.		Working-costs.		Capital Charges.		Total Costs.		Retail Selling Rates.		
				Total.	Per Cent. of Capital Outlay.		Profit.	Loss.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Per Unit sold.	Per Kw. of Max.	Lighting.	Heating.	Power.
Hydro Stations—continued.	£	£	£	£		£	£	£	d.	£	d.	£	d.	£	d.	£	s. d.	s. d.	s. d.
17. Queenstown	12,000†	913	189	490(*c*)	4·08	679	234	..	4·71	22·2	1·00	4·7	2·61	12·3	3·61	17·0	0 6	0 6	0 3
18. Raetihi	32,361	3,931	1,610	1,400(*c*)	4·33	3,010	921	..	2·49	27·8	1·05	11·8	0·92	10·2	1·97	22·0	0 8	0 3	0 2½
19. Reefton Electric Light and Power Co. (Limited)	5,528	3,322	5,007	Nil	Nil	5,007	..	1,685	..	47·5	..	77·3	Nil	Nil	..	77·3	0 9	0 4	..
20. Southland (Monowai) ..	1,572,785	40,895	19,885	Nil §	Nil	19,885	21,010	..	2·18	15·2	1·31	8·1	Nil	Nil	1·31	8·1	0 7	0 7	0 7
Bluff	13,223	3,903	3,008	859(*m*)	6·5	3,867	36	..	3·90	24·9	4·12	26·4	1·18	7·5	5·30	33·9	0 7½	0 7½	0 3
Gore	27,470	12,117	5,440	5,646(*c*)	20·55	11,086	1,031	..	3·76	33·1	2·69	23·7	2·79	24·5	5·48	48·2	0 7	0 7	0 3
21. Taihape	17,784	4,750	2,458	916(*c*)	5·15	3,374	1,376	..	4·32	27·3	2·34	14·8	0·88	5·5	3·22	20·3	0 8	0 1½	0 2
22. Taumarunui	65,622	8,025	2,499	4,281(*c*)	6·52	6,780	1,245	..	3·25	19·0	1·07	6·3	1·83	10·7	2·90	17·0	0 9	0 3	0 3
23. Tauranga	161,593	14,822	4,361	9,716(*j*)	6·01	14,077	745	..	0·76	5·4	0·24	1·7	0·53	3·8	0·77	5·5	0 7	0 1½	0 2
Tauranga Power Board‡	45,940	4,019	4,382	1,808(*c*)	3·94	6,190	..	2,171	2·93	14·7	3·89	19·5	1·60	8·0	5·49	27·5	0 5	0 3¾	0 3¾
Te Puke	9,902	2,132	853	984(*k*)	9·94	1,837	295	..	3·60	27·5	1·47	11·3	1·69	13·0	3·16	24·3	0 9	0 3	0 3
24. Teviot	33,172	3,059	984	1,400(*d*)	4·22	2,384	675	..	3·21	12·6	1·04	4·6	1·47	6·5	2·51	11·1	Flat rates.		
Otago Central ..	41,643	2,051	568	1,696(*c*)	4·07	2,264	..	213	..	29·3	..	8·1	..	24·2	..	32·3	Flat rates.		
25. Tourist Dept. (Rotorua)	56,198	11,297	5,106	5,058(*a*)	9·00	10,164	1,133	..	4·22	37·2	1·97	17·4	1·95	17·3	3·92	34·7	0 7	0 3	0 3
26. Waikato (Horahora) ..	735,091	85,830	19,612	44,870(*g*)	6·09	64,482	21,348	..	0·34	7·1	0·08	1·6	0·18	3·8	0·26	5·4	..	..	..
Cambridge	100,327	15,217	7,324	7,666(*b*)	7·64	14,990	227	..	2·08	33·1	1·08	17·2	1·13	18·0	2·21	35·2	0 9	0 3	0 3
Central	212,415	31,813	16,369	14,862(*h*)	7·00	31,231	582	..	2·12	33·7	1·21	19·0	1·10	17·3	2·31	36·3	0 9	0 1½	0 3
Franklin	24,083	4,256	2,147	1,096(*d*)	4·55	3,243	1,013	..	5·12	20·6	3·32	13·4	1·70	6·8	5·02	20 2	0 8	0 1½	0 3
Hamilton	52,977	27,297	14,575	4,955(*c*)	9·35	19,530	7,767	..	3·77	36·7	2·02	19·9	0·68	6·8	2·70	26·7	0 6½	0 2	0 2
Te Aroha	17,438	5,492	2,628	1,804(*c*)	10·35	4,432	1,060	..	3·68	40·0	1·84	20·1	1·26	13·8	3·10	33·8	0 7	0 3	0 3
Te Awamutu ..	140,175	18,105	10,673	10,869(*c*)	7·75	21,542	..	3,437	2·13	29·5	1·34	18·5	1·36	18·9	2·70	37·4	0 8	0 2	0 3
Thames Valley ..	598,260	85,027	44,570	39,189(*c*)	6·55	83,759	1,268	..	1·62	24·3	0·95	14·2	0·83	12·5	1·78	26·7	0 8	0 3	0 3
Thames	30,403	9,847	4,525	1,618(*b*)	5·32	6,143	3,704	..	3·28	43·6	1·51	20·1	0·54	7·2	2·05	27·3	0 8	0 3	0 3
Waitomo	(Figures not available.)																		
27. Waimea Electric-supply Co. (Brightwater)	19,001	3,338	2,019	1,076(*o*)	5·66	3,095	243	..	8·26	36·5	5·10	22·4	2·70	12·0	7·80	34·4	0 11	0 4	0 4
28. Wairere	23,893	135	..	..	..	..	135	..	..	..	..	..	..	..	..	..	0 9	0 4½	0 3
29. Wairoa (Waikaremoana)	60,983	8,429	6,440	4,796(*a*)	7·86	11,236	..	2,807	1·16	11·1	0·90	8·6	0·67	6·5	1·57	15·1	..	..	..
Wairoa	12,855	4,538	2,724	1,415(*c*)	11·00	4,139	399	..	2·12	30·1	1·30	18·5	0·67	9·6	1·97	28·0	0 6	0 3	0 3
30. Waitaki (Oamaru) ..	70,765	12,808	6,557	5,330(*k*)	7·53	11,887	921	..	4·27	37·8	2·25	20·2	1·83	16·2	4·08	36·4	0 9	0 3	0 3
31. Waverley	5,492	1,065	503	291(*c*)	5·30	794	271	..	7·40	56·8	3·86	29·5	2·22	17·1	6·08	46·6	0 10	0 6	..
32. Westport	26,790	779	435	733(*d*)	2·74	1,168	..	389	6·29	9·8	3·54	5·5	5·97	9·3	9·51	14·8	0 9	0 3	0 3
33. Whakatane	48,044	3,648	1,280	3,701(*c*)	7·70	4,981	..	1,333	4·27	20·8	1·81	8·8	5·23	25·5	7·04	34·3	0 9	0 9	0 3
34. Wilson's (N.Z.) Portland Cement Co. (Wairua)	87,802	12,459	5,946	4,395(*l*)	5·01	10,341	2,118	..	0·35	5·5	0·17	2·7	0·13	2·0	0·30	4·7	0 5	0 2¾	0 3
Kamo	2,906	713	519	231(*c*)	7·95	750	..	37	6·15	25·5	4·47	18·5	1·98	8·3	6·45	26·8	0 9	0 4	0 4
Whangarei ..	44,230	13,450	7,446	1,840(*k*)	4·16	9,286	4,164	..	3·00	34·5	1·90	21·9	0·47	5·4	2·37	27·3	0 5½	0 1½	0 3
Totals	16,516,684	1,655,411	696,165	787,822	4·77	1,536,408 (*p*)	207,279	88,276	1·97	26·1	0·83	11·0	0·94	12·4	1·83	24·2	..	..	..

* Includes wages, fuel, and maintenance. † Assessed from incomplete returns. ‡ Operating five months. § Charged to capital.

(*a.*) Includes interest, sinking fund, depreciation. (*b.*) Includes interest, sinking fund, renewal fund. (*c.*) Includes interest, sinking fund. (*d.*) Includes interest only. (*h.*) Includes interest, sinking fund, reserve.
(*i.*) Includes interest, sinking fund, depreciation, reserve. (*j.*) Includes interest, sinking fund, special capital charges. (*k.*) Includes interest, sinking fund, depreciation, renewal fund. (*l.*) Includes depreciation only.
(*m.*) Includes sinking fund, renewal fund. (*o.*) Includes sinking fund only. (*p.*) Including special expenditure for Wellington.

TABLE Y.—AVAILABLE WATER-POWER IN NEW ZEALAND: SCHEMES OF 1,000 HORSE-POWER AND OVER.

Source of Power.	Position of Power-house.	Available Flow: Cubic Feet per Second.	Available Head.	Average Power on 50-per-cent. Load Factor.		Nearest City, Port, or Deep Water.	Distance.
	NORTH ISLAND.						
North Auckland District—			Ft.	H.p.	Kw.		Miles.
Wairua Falls	Wairua Falls	150*	130	3,200	2,400	Whangarei	18
Omapere	Utakura Stream	11*	550	1,000	750	..	..
South Auckland District—							
Kaituna	Kaituna River	500†	784	65,000	50,000	Tauranga	25
						Auckland	125
Wairoa River	Wairoa	420*	80	5,600	4,200	Tauranga	20
Waikato River	Aratiatia Rapids	4,400†	170	136,000	100,000	Auckland	154
Waikato River	Orakeikorako Rapids	4,400†	35	14,000	10,000	Auckland	148
Waikato River	Aniwhaniwha Falls	4,400†	80	32,000	24,000	Auckland	142
Waikato River	Atiamuri Rapids	4,400†	25	10,000	7,500	Auckland	139
Waikato River	Arapuni Gorge	5,300†	165	163,000	120,000	Auckland	105
Waikato River	Horahora Rapids	5,300†	27	13,000	10,000	Auckland	97
Pokaiwhenua River	Horahora Rapids	165*	170	4,600	3,400	Auckland	97
Marakopa Falls	Marakopa	90	420	3,100	2,300	Te Kuiti	27
Wairere Falls	Wairere Falls	160*	60	1,600	1,200	Te Kuiti	22
Hawke's Bay District—							
Waikaremoana	Upper Waikaretaheke	530†	1,100	97,000	75,000	Gisborne	50
Waikaremoana	Lower Waikaretaheke	530†	360	32,000	24,000	Napier	60
Te Reinga Falls	Te Reinga Falls	124	125	1,300	1,000	Gisborne	35
Waikohu River	Waikohu	45†	847	6,000	4,500	Gisborne	28
Wanganui District—							
Mangawhero River	Raukawa Falls	125	90	1,000	750	Wanganui	45
Mangawhero River	Wanganui River	125	680	7,100	6,950	Wanganui	24
Rangitikei River	Makohine	1,500†	300	75,000	56,000	Wanganui	48
Wangaehu River	Wangaehu River	260	70	1,500	1,100	Wanganui	25
Karioi	Karioi	300*	180	8,800	6,600	Wanganui	60
Taranaki District—							
Waitara River	Waitara River	400	140	4,600	3,600	New Plymouth	12
Waiwakaiho	Waiwakaiho	150†	250	6,200	4,800	New Plymouth	4
Manganui River	Waitara River	415†	340	26,000	19,400	New Plymouth	25
Wellington District—							
Mangahao River	Shannon	160†	895	24,000	18,000	Wellington	65
Makuri River	Makuri Gorge	100*	384	6,400	4,800	Pahiatua	20
Waiohine	Woodside	120*	120	2,400	1,800	Masterton	15
Hutt River	Mangaroa	200†	330	11,000	8,300	Wellington	24
Tauherenikau	Featherston	150*	440	11,000	8,300	Wairarapa	..
Kourarau	Kourarau	20	755	2,680	2,000	Masterton	12
Totals—North Island	..	..	..	776,080	582,650		

* Signifies daily storage available to utilize 50-per-cent. load factor. † Signifies seasonal storage made available.

TABLE Y.—AVAILABLE WATER-POWER IN NEW ZEALAND—*continued.*

Source of Power.	Position of Power-house.	Available Flow: Cubic Feet per Second.	Available Head.	Average Power on 50-per-cent. Load Factor.		Nearest City, Port, or Deep Water.	Distance.
				H.p.	Kw.		
SOUTH ISLAND.			Ft.				Miles.
Marlborough District—							
Clarence	Ericaburn ..	640	158	8,300	6,300	Blenheim ..	45
Waihopai River	Waihopai Gorge ..	130*	96	2,000	1,500	Blenheim ..	28
Nelson and Buller District—							
Boulder Lake	Aorere River ..	50*	2,600	22,000	16,000	Golden Bay ..	10
Rotoiti Lake	Buller River ..	200†	600	20,000	15,000	Nelson ..	50
Rotoroa Lake	Gowan River ..	900†	400	60,000	45,000	Nelson ..	60
Inangahua River ..	Blackwater River ..	78	125	8,000	6,000	Westport ..	20
Four-mile Creek	Four-mile Creek ..	24*	450	2,000	1,500	Westport ..	4
Westland District—							
Lake Brunner	Stillwater	1,750	200	29,000	22,000	Greymouth ..	10
Kumara Water-race ..	Kumara	87	330	2,400	1,800	Greymouth ..	12
Otira River	Otira	40	700	2,300	1,700	Greymouth ..	52
Rolleston River	Otira	36	700	2,000	1,500	Greymouth ..	52
Kanieri Lake	Kanieri River ..	100	330	2,800	2,100	Hokitika ..	12
Toaroha River	Toaroha River ..	150	760	10,000	7,500	Hokitika ..	17
Whitcombe River ..	Hokitika River ..	250	800	16,000	12,000	Hokitika ..	20
Kakapotahi River ..	Kakapotahi River ..	100	580	4,800	3,600	Hokitika ..	26
Wanganui River	Hende's Ferry ..	830	580	40,000	30,000	Hokitika ..	36
Wataroa River	Wataroa	1,360	700	80,000	60,000	Hokitika ..	48
Canterbury District—							
Clarence River	Jollie's Pass ..	200	1,160	20,000	15,000	Christchurch ..	90
Clarence River	Conway River ..	1,150	1,050	100,000	75,000	Christchurch ..	90
Waiau-ua River	Culverden ..	1,600	200	27,000	20,000	Christchurch ..	75
Waimakariri River ..	Gorge Bridge ..	1,000*	90	15,000	11,000	Christchurch ..	30
Waimakariri River ..	Otarama	1,000*	150	30,150	22,500	Christchurch ..	42
Lake Coleridge	Rakaia River ..	100†	480	8,000	6,000	Christchurch ..	65
Acheron River	Rakaia River ..	50†	480	4,000	3,000	Christchurch ..	65
Harper River	Rakaia River ..	320†	480	25,000	18,000	Christchurch ..	65
Wilberforce River ..	Rakaia River ..	1,100	480	44,000	33,000	Christchurch ..	65
Rakaia River	Gorge Bridge ..	2,600	30	6,500	4,800	Christchurch ..	50
Lake Heron	Rakaia River ..	300	200	5,000	3,750	Christchurch ..	88
Opihi River	Opihi Gorge ..	200	400	6,700	5,000	Timaru ..	30
Pukaki Lake	Pukaki	5,000†	460	50,000	37,000	Timaru ..	85
Tekapo Lake	Fairlie	5,100†	900	400,000	300,000	Timaru ..	40
Ohau Lake	Waitaki River	5,000†	300	125,000	90,000	Timaru ..	85
Otago and Southland District—							
Ahuriri River	Waitaki River ..	600	200	10,000	7,500	Oamaru ..	62
Waitaki River	Waitaki River ..	15,000	30	37,000	28,000	Oamaru ..	60
Waipori Falls	Waipori River ..	230†	700	26,800	20,000	Dunedin ..	30
Lee Stream	Outram	15*	750	1,800	1,300	Dunedin ..	18
Deep Stream	Taieri River ..	110	900	8,400	6,300	Dunedin ..	20
Taieri River	Deep Stream ..	700	220	12,000	9,000	Dunedin ..	44
Talla Burn	Clutha River ..	30	890	2,200	1,600	Dunedin ..	60
Teviot River	Roxburgh ..	100†	1,900	30,000	21,000	Dunedin ..	90
Manuherikia River ..	Chatto Creek ..	200	350	5,800	4,400	Dunedin ..	127
Hawea Lake	Wanaka Lake ..	2,500†	205	80,000	60,000	Dunedin ..	170
Shotover	Wakatipu Lake ..	500	250	10,000	7,500	Invercargill ..	112
Lake Hall	Doubtful Sound ..	220	2,625	48,000	36,000	On seaboard ..	..
Lake Cecil	Lake Te Anau ..	200	900	15,000	11,200	On seaboard ..	..
Lake Hilda	Lake Te Anau ..	550	1,190	55,000	41,080	On seaboard ..	..
Lake Te Anau	George Sound ..	12,630	694	1,600,000	1,200,000	On seaboard ..	..
Lake Manapouri	Smith Sound ..	8,400†	600	840,000	630,000	On seaboard ..	..
Bowen Falls	Milford Sound ..	700	600	35,000	25,000	On seaboard ..	..
Lake Monowai	Waiau River ..	500†	160	16,000	12,000	Invercargill ..	60
Lake Hauroto	Tewaewae Bay ..	2,300	514	100,000	75,000	Invercargill ..	51
Totals—South Island	..	..	..	4,110,950	3,074,430		

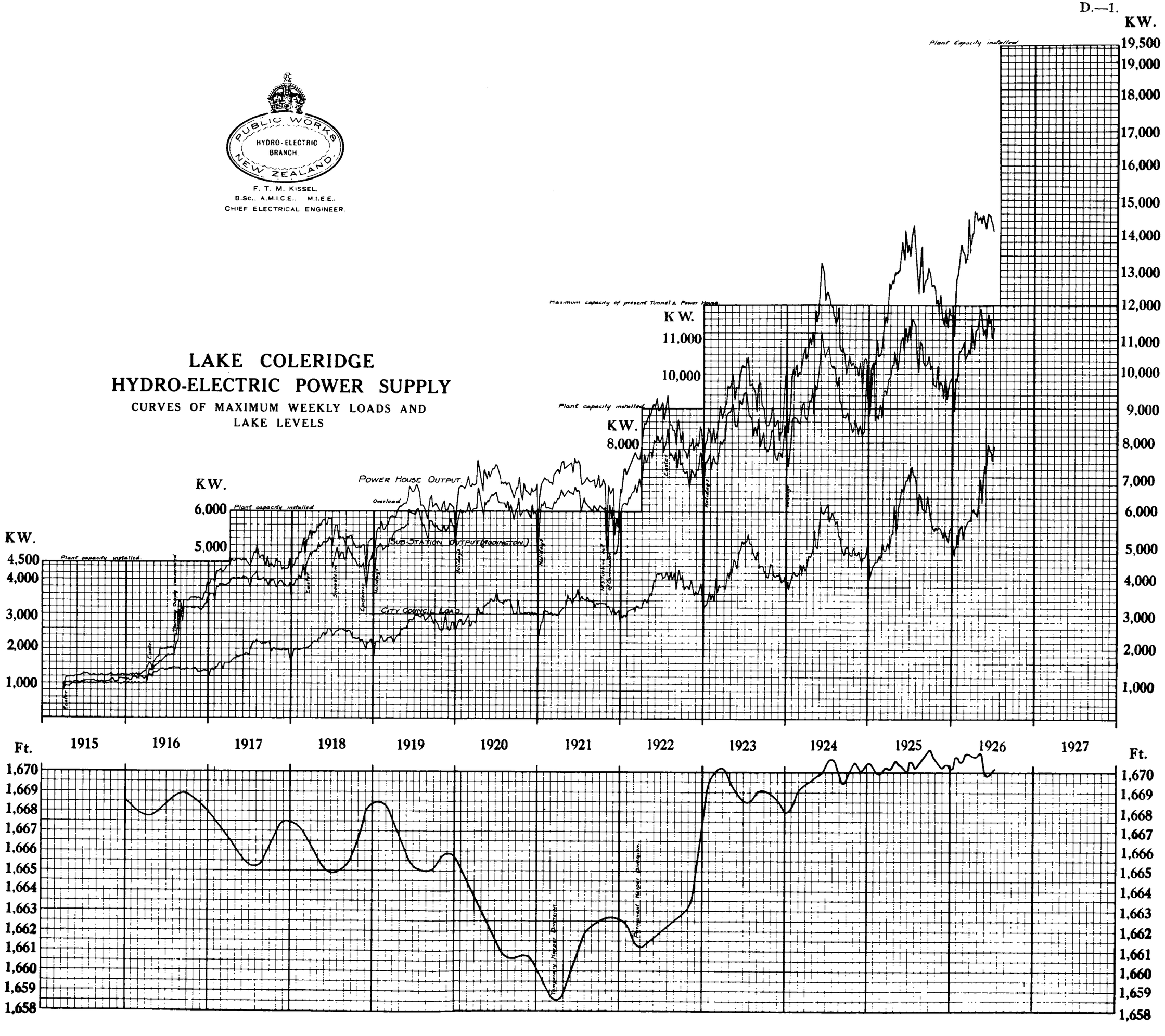
* Signifies daily storage available to utilize 50-per-cent. load factor. † Signifies seasonal storage made available.

PUBLIC WORKS
HYDRO-ELECTRIC BRANCH
NEW ZEALAND

F. T. M. KISSEL,
B.Sc., A.M.I.C.E., M.I.E.E.,
CHIEF ELECTRICAL ENGINEER.

LAKE COLERIDGE
HYDRO-ELECTRIC POWER SUPPLY

CURVES OF MAXIMUM WEEKLY LOADS AND LAKE LEVELS



APPENDIX E.

SECOND ANNUAL REPORT OF THE MAIN HIGHWAYS BOARD.

The CHAIRMAN of the MAIN HIGHWAYS BOARD to the MINISTER OF PUBLIC WORKS, Wellington.

SIR,—

In compliance with the terms of section 24 of the Main Highways Act, 1922, we have now the honour to submit to you the second annual report on the operations of the Main Highways Board.

It is recalled that although the Main Highways Act came into operation on the 1st April, 1924, the first instalment of main highways was not declared until the 9th June, 1924, and therefore this, strictly speaking, is the first report covering a complete year's operations.

INTRODUCTORY.

The Board, since its inception, has endeavoured to carry out the spirit of the Act, and at the same time has done its utmost to co-operate with local bodies in every part of the country in a joint effort to attain the objects of its creation. In some parts of the country such co-operation has produced spectacular results, notably in the Gisborne district, where two County Councils, in conjunction with the Board's representative, succeeded, in the course of a few months, in linking up an unmetalled gap of 15 miles of highway. The Board in its deliberations has been continually impressed with the necessity for amalgamation of groups of small counties in different parts of the Dominion, and has in several instances accorded its support to proposals for such amalgamation. Not only, in the Board's opinion, will amalgamation in a number of cases result in more efficient organization and management of county affairs, but it will greatly facilitate the administration of the Main Highways Act in encouraging a broader outlook in relation to the national roading system on the part of those responsible for local government.

It is continually being brought to the attention of the Board that sections of highway on the outskirts of counties in many instances do not receive the attention they deserve, on account of the contention by counties in control that they have little direct interest, although the contiguous counties may be vitally concerned. When such problems are being considered, the controlling authorities invariably introduce the question of foreign traffic, and apply the designation "foreign" to all traffic excepting that originating in their own particular areas. Such a limited interpretation of the word "foreign" in the present era of motor transportation is obviously productive of extraordinary anomalies. To the extent indicated, amalgamation of counties is therefore of considerable interest to the Board.

The Board has received a large number of applications for the declaration of new highways, but has adopted a conservative attitude in making its recommendations to you, as it believes that the mileage already declared is sufficient at present.

In the course of the first year's administration of the Act the necessity of certain amendments was disclosed. These amendments, which will be dealt with in detail later in this report, were embodied in legislation passed during the last parliamentary session.

With the object of gaining first-hand knowledge of local problems, various members of the Board have visited different parts of the Dominion from time to time. In addition to these individual visits, the full Board in January of this year made a comprehensive tour of the whole of the South Island, interviewing *en route* the representatives of practically every operative county, as well as the representatives of automobile associations and other interested sections of the community. This tour undoubtedly brought about a better understanding between the Board and the local bodies in the South Island, and at a later date it is proposed to make a similar tour of the North Island.

In framing and carrying out its policy the Board has always regarded the safety and the convenience of the road-user as of vital importance, and in furtherance of this policy it has done its best to bring about such improvements as the elimination of the worst railway level crossings, the betterment of dangerous road alignment, and the installation of danger and direction signs.

The Board took advantage of the Dunedin and South Seas Exhibition by installing a small exhibit significant of its operations, and in addition by distributing over ten thousand pamphlets giving a brief outline of its functions and policy.

Generally speaking a higher standard of both construction and maintenance has been attained and the tendency of local bodies to carry out reconstruction by the provision of funds out of ordinary revenue from rates is evident in certain quarters. The principle is one which the Board recommends and fosters as far as possible.

PERSONNEL.

During the year the following changes have taken place in the personnel of the Board: Mr. G. T. Murray, late Inspecting Engineer of the Public Works Department, by reason of his retirement on superannuation from the Public Service, resigned his membership. The vacancy was filled by the appointment of Mr. C. J. McKenzie, Assistant Engineer in Chief of the Public Works Department. For some time Mr. McKenzie was absent abroad on departmental business, and his place was taken by Mr. J. Wood, Inspecting Engineer of the Public Works Department.

Conference of Executives of District Highway Councils.

For the purpose of discussing possible amendments to the Main Highways Act, and also the Board's operations generally, a conference of the executives of all District Highway Councils, consisting in each case of three members, was held on the 27th July, 1925. The holding of such a conference in the early stage of the Board's existence and the discussion engendered thereby undoubtedly had a very beneficial result.

Main Highways Amendment Act, 1925.

As in the case of most measures providing for a new policy it was not anticipated that the Main Highways Act would cover all eventualities, and to make it a more workable statute the necessity for amendments or additions was only to be expected. The Main Highways Amendment Act was submitted to Parliament and passed in 1925 with the principal object of overcoming several legal difficulties which the first year's operations presented to the Board. The most important clause included in this Amendment Act, however, authorized the Board to increase its subsidy on the cost of maintenance on ordinary main highways from one-third to one-half, retrospective to the 1st April, 1925. In applying the provisions of this section it was made clear to local bodies by the Board that it was not the intention, by giving a more liberal subsidy, to relieve them of liability in respect to maintenance. On the other hand, it was pointed out that the additional subsidy payable was for the purpose of meeting the additional cost of maintenance brought about by the increased motor traffic. Another important amendment enabled the Board to inaugurate a special system of graduated subsidies towards the cost of erection of large bridges. The amendment provides for payment by the Board of (*a*) one-half the cost up to £10,000, (*b*) three-fifths of so much of the cost as exceeds £10,000 but does not exceed £20,000, and (*c*) two-thirds of so much of the cost as exceeds £20,000. The Amendment Act also provides for (*a*) a more liberal subsidy than £1 for £1 in the case of a major deviation of a main highway, (*b*) the repair of any extraordinary damage, and (*c*) certain allowances out of the funds of the Highways Board to be paid to members of the executive bodies of District Highway Councils.

The application of the provisions of sections 109, 119, and 120 of the Public Works Act, governing the apportionment of cost of works between different local bodies in certain cases, was also authorized by the Amendment Act, and the provisions of this clause have already been availed of in a number of cases where attempts to obtain mutual agreement as to the basis of allocation of cost in so far as affects the portion to be contributed by the local bodies have failed.

Power to sell roadmaking machinery, plant, equipment, and appliances to any local authority on terms providing for payment of the purchase-money by instalments extending over not more than four years is also embodied in this Act, and reference is made later to the advantage which local bodies are taking of this privilege. A special clause provides for the limitation of the Board's subsidy in any case where the standard of work adopted by any particular local authority is considered to be more elaborate than necessary to meet the present or early prospective traffic requirements. The Board has exercised this power in several cases.

Declaration of New Main Highways.

Section 11 of the Main Highways Act, 1922, requires that every District Council shall, for each year, submit to the Board with respect to its district recommendations as to any roads which should be declared main highways. In compliance with this clause the District Highway Councils recommended the declaration of a total of 747 miles of new highway. The following roads, of a total length of 317 m. 23 ch., were declared, bringing the total length of main highways in the Dominion, less the mileage revoked, up to 6,271 miles 70 chains :—

	M.	ch.
No. 1 Highway District—		
Tauhoa – Kaipara Flats	7	40
No. 2 Highway District—		
Te Awamutu – Pirongia	6	34
No. 3 Highway District—		
Tauranga–Waihi	39	40
No. 4 Highway District—		
Tuatini Township – Tokomaru Bay Wharf	2	20
Tolaga Bay Harbour Road	0	75
No. 6 Highway District—		
Piopio–Tatu via Aria and Ohura	44	0
Stratford–Taumarunui	37	0
Waitomo Caves – Lemon Point	34	50
No. 7 Highway District—		
Auckland–Wellington via Taranaki	34	40
Lepperton Junction – Hawera, via Opunake	23	0
Eltham–Opunake	13	10
Normanby to Manaia – Mt. Egmont Road, via Okaiawa	2	20
Eltham–Rawhitiroa	4	0
No. 9 Highway District—		
Woodville – Palmerston North (Manawatu Gorge Road)	1	20

MAP SHOWING

HYDRO-ELECTRIC POWER DEVELOPMENT.

MAIN TRANSMISSION LINES.

PROVINCE OF AUCKLAND.

Scale: of miles

10 5 0 10 20

Helensville
TAKAPUNA
Devonport
HENDERSON
Henderson
AUCKLAND
Ellerslie
PENROSE
Glen Eden
Onehunga
Otahuhu
Papatoetoe
Manurewa
Drury
Paerata Junc.
BOMBAY
Pukekohe
Waiuku
Pokeno
Mercer
Whangamarino
Rangiriri
Ohinewai
Huntly
Taupiri
Ngaruawahia
HAMILTON
Frankton Junc.
Rukuhia
Cambridge
Kimihia
Ohaupo
TE AWAMUTU
Te Kawa
Otorohanga
HANGATIKI
Te Kuiti
Thames
Omahu
Hikutaia
Komata N.
Paeroa
Waihi
WAIKINO
Te Aroha
WAIHOU
Wairongomai
Morrinsville
Kiwitahi
Walton
Matamata
Hinuera
Okoroire
Tirau
HORAHORA
Taumangi
Putaruru
ARAPUNI
Ngatira
Arahiwi
Mamaku
NGONGOTAHA
Rotorua
Tauranga
McLAREN'S FALLS

This map shows the power stations, main transmission lines, and the substations now in operation or under construction.

POWER STATIONS.

HORAHORA.—10,300 K.W.

ARAPUNI.—45,000 K.W., initial installation under construction.

McLAREN'S FALLS.—Approximately 2,000 K.W. is being supplied to the Department's lines by the Tauranga Borough Council from this station.

In addition, power can be supplied from the Auckland Power Board's steam plant at King's Wharf.

TRANSMISSION LINES.

50,000 VOLTS—IN OPERATION.

Horahora—Waihou—Waikino—McLaren's Falls

Horahora—Hamilton—Te Awamutu—Hangatiki

Horahora—Arapuni—Ngongotaha

50,000 VOLTS—UNDER CONSTRUCTION.

Penrose—Henderson—Takapuna

Bombay—Waikino tie-line

110,000 VOLTS.

Hamilton—Penrose (in operation at 50,000 volts).

Arapuni—Penrose (2-circuit steel tower-line under construction).

SUBSTATIONS.

110,000 VOLTS—UNDER CONSTRUCTION.

At Penrose, Bombay, and Hamilton.

50,000 VOLTS—IN OPERATION.

Waihou and Waikino, supplying the Thames Valley Power Board.

Hamilton, supplying the Central Power Board and the Hamilton Borough Council.

Te Awamutu, supplying the Te Awamutu Power Board.

Hangatiki, supplying the Waitomo Power Board.

Ngongotaha, supplying Rotorua.

Bombay, supplying the Franklin Power Board.

Penrose (temporary), supplying Auckland Power Board.

50,000 VOLTS—UNDER CONSTRUCTION.

Henderson and Takapuna, to supply the Waitemata Power Board.

Mamaku.

REFERENCE.

Power stations shown thus: □

Substations ,, ○

110,000 volt lines ,, ═══

50,000 ,, ,, ——— & ———

Railways ,, ———

SOUTH ISLAND

NEW ZEALAND

SHOWING

POWER BOARD DISTRICTS.

Scale: 35 miles to an inch.

Reference

Cities	thus	NELSON
Provincial Centres	..	HOKITIKA
Boroughs	..	TEMUKA
Town Districts	..	CLINTON
Small Centres	..	Lyell
Railways	..	
Coach Routes	..	
Boundaries of Land Districts	..	

TASMAN SEA

Lake Coleridge

Pegasus Bay

Banks Peninsula

Canterbury Bight

Stewart Island

South Latitude

East Longitude

ELECTRIC SUPPLY STATIONS.

Steam	▼
Gas	▲
Oil	●
Hydro.	■
P.W.D. transmission lines over 30,000 v.	———
P.W.D. proposed transmission lines over 30,000 v.	– – – –
Other supply authorities	·—·—·—

POWER BOARDS FORMED.

No	Name	Population	Value of Rateable Property unimproved.
1	Buller	9,197	696,374
2	Reefton	1,850	64,476
3	Grey	12,000	614,694
4	Westland	3,272	196,268
6	Southland	66,009	15,493,548
7	Otago	24,082	4,696,448
8	Teviot	2,400	183,022
9	Otago Central	5,170	1,087,518
10	Waitaki	17,580	4,646,292
11	South Canterbury	41,618	15,483,654
12	Ashburton	18,001	10,047,044
13	Malvern	5,050	3,891,668
14	Springs-Ellesmere	11,270	6,480,598
15	Banks Peninsula	4,000	4,218,326
19	Marlborough	20,780	6,728,793
21	Golden Bay	1,200	240,717
	Totals	261,059	74,769,440

POWER BOARDS PROPOSED.

Districts shown red.

NORTH ISLAND

NEW ZEALAND

SHOWING

POWER BOARD DISTRICTS.

Scale: 35 miles to an inch.

Reference

Cities	thus	AUCKLAND
Provincial Centres	..	O NAPIER
Boroughs	..	O FEILDING
Town Districts	..	O MANAIA
Small Centres	..	o Tokomaru
Railways	..	
Coach Routes	..	
Boundaries of Land Districts	..	

TASMAN SEA

SOUTH ISLAND

POWER BOARDS FORMED.

No	Name	Population	Value of Rateable Property unimproved.
3	Hobson	7,180	1,424,942
5	Waitemata	21,425	5,901,473
6	Auckland	175,000	43,469,850
7	Franklin	14,444	6,800,000
9	Wairere	2,500	872,434
10	Waitomo	8,500	3,566,152
12	Taranaki	22,000	5,974,732
13	Opunake	7,000	916,111
14	South Taranaki	17,612	7,914,269
15	Wanganui-Rangitikei	60,000	7,976,750
16	Manawatu-Oroua	40,000	13,955,493
17	Horowhenua	12,095	3,403,255
18	Hutt Valley	27,275	3,119,920
19	Wairarapa	19,000	9,370,503
20	Tararua	10,255	3,983,107
21	Dannevirke	12,081	4,686,713
22	Central Hawke's Bay	10,056	6,839,951
23	Hawke's Bay	40,104	11,611,022
26	Wairoa	7,712	2,639,968
27	Poverty Bay	23,986	9,591,676
28	Bay of Plenty	10,900	2,562,042
29	Tauranga	8,425	1,232,100
30	Thames Valley	30,000	7,550,000
31	Te Awamutu	8,500	1,668,509
32	Cambridge	6,000	1,841,209
33	Central	17,512	4,650,943
	Totals	619,562	173,482,924

POWER BOARDS PROPOSED.

1	Whangarei	25	Waimarino
2	Whangaroa	35	East Coast
4	Bay of Islands	37	Poverty Bay (alterations)
8	Waipawa	38	Thames Valley
11	Egmont	24	Rotorua

Districts shown red.

ELECTRIC SUPPLY STATIONS.

Steam	▼
Gas	▲
Oil	●
Hydro.	■
P.W.D. transmission lines over 30,000 v.	———
P.W.D. proposed transmission lines over 30,000 v.	– – – –
Other supply authorities	

Drawn by W. L. Harding

172° 173° 174° 175° East Longitude 176° 177° 178°

	M.	ch.
No. 10 Highway District—		
Pahiatua Station Road	0	72
Woodville–Palmerston North (Manawatu Gorge Road)	2	40
No. 13 Highway District—		
McKenzie–Mina	2	20
No. 14 Highway District—		
Ashley–Amberley	13	60
Teddington–Lyttelton	8	0
No. 16 Highway District—		
Arrow Bridge–Arrowtown	0	60
No. 17 Highway District—		
McNab–Edievale	29	28
No. 18 Highway District—		
Tuatapere–Orepuki	12	40
Willowbank–Waikaka	9	40
McNab–Edievale	5	40

The declarations of two sections of main highway were revoked, (*a*) Rotokautuku Bridge–Tikitiki via right bank Waiapu River, 1 mile 14 chains, and (*b*) a section of the McNab–Edievale Main Highway, 16 miles 72 chains. The latter revocation was brought about by a change of route of the main highway in the locality.

Declaration of New Government Roads.

During the year a number of new Government roads were declared, involving a length of 220 miles 65 chains of main highway. 38 miles 30 chains of Government road declarations were revoked, and the total length of highways declared to be Government roads is now 1,544 miles 37 chains.

The following are the Government road declarations for the year:—

	M.	ch.
No. 1 Highway District—		
Warkworth–Kaipara Flats Railway-station	6	40
Waimamaku–Ohaeawai	5	60
Maungatapere–Kaikohe	7	0
Wayby–Maungatoroto	13	20
Auckland–Helensville	2	50
Whangarei–Dargaville	3	20
Whangarei–Kawakawa	8	0
No. 2 Highway District—		
Pokeno–Waihi	4	38
No. 3 Highway District—		
Te Ngae–Paengaroa	8	0
Tauranga–Matamata	20	0
No. 4 Highway District—		
Gisborne–Wairoa via Hangaroa	14	20
No. 6 Highway District—		
Kawhia to Auckland–Wellington Main Highway via Kawa	1	75
Waitomo Caves–Lemon Point	7	31
Raurimu–Wade's Landing	16	72
No. 7 Highway District—		
Auckland–Wellington via Taranaki	13	20
Lepperton Junction–Hawera via Opunake	23	0
Eltham–Opunake	13	10
Normanby to Manaia–Mount Egmont Road via Okaiawa	2	20
No. 11 Highway District—		
Nelson–Westport	13	20
No. 13 Highway District—		
Waipara–Kaikoura via Culverden	1	66
No. 16 Highway District—		
Dunedin–Christchurch	8	0
No. 17 Highway District—		
Clarksville–Clyde	0	63
No. 18 Highway District—		
Gore–Te Anau	21	0
Kennington–Waikawa	5	0

The declarations of the following Government roads were revoked:—

	M.	ch.
No. 7 Highway District—		
Lepperton Junction–Hawera via Opunake	23	0
Eltham–Opunake	13	10
Normanby to Manaia–Mount Egmont Road via Okaiawa	2	20

FINANCE.

In the first annual report the estimated contributions to the Board's Revenue Fund for the year 1925-26 amounted to £385,000. The following tabulation shows how this amount was arrived at, and at the same time gives the actual receipts :—

	Estimate.	Actual Receipts.
	£	£
Transfer from Consolidated Fund	35,000	35,000
Proceeds of tax on tires and tubes, collected through the Customs Department	150,000	223,699
Registration and licenses of motor-vehicles to cover period to 31st March, 1926	200,000	78,038
	£385,000	336,737
Add proportion motor-registration and license fees payable before 31st March, 1926 (see explanation below)		150,000
		£486,737

For the year ending 31st March, 1926, the appropriations and expenditure under maintenance were as under :—

—	Available for Authorization.	Appropriated.	Expenditure.	Percentage of Expenditure to Appropriations.
	£	£	£	
North Island	250,891	162,780	182,370	112·03
South Island	129,037	83,720	97,035	115·90
Administration charges	13,500	13,500	15,081	111·71
Commission paid to Postal Department for collection of motor registration and license fees	..	..	2,690	..
Miscellaneous payments, including recoupment of interest on loans to Consolidated Fund	..	6,731	23,840	..
Totals	393,428	266,731	321,016	..

It is to be noted that the actual receipts are less than the anticipated revenue and that a sum of £150,000 has been added to the total. This adjustment is necessary to show the true position of the Board's income and is brought about by reason of the fact that the number-plates for motor-vehicles were not ready for issue on the 31st March, 1926.

In accordance with the Motor-vehicles Act, 1924, all license fees must be paid in advance. The license fees for the year 1926–27 should therefore have been received prior to the 31st March, 1926. It is estimated that the amount of revenue which would have been received in the ordinary course of events prior to 31st March, 1926, for license fees for the subsequent financial year would have been at least £150,000, and this figure has been added to the actual receipts, making the total revenue fairly apportionable to the financial year 1925–26, £486,737.

Strictly speaking, therefore, the revenue for the year exceeded anticipations by approximately £101,000. This was largely brought about by two factors—one the increase in the price of rubber, which had a direct effect on the Customs receipts, and the other the unexpectedly heavy importation of motor-vehicles. The rate of increase in registration of motor-vehicles throughout the year was over ninety vehicles per day.

Owing to the very satisfactory condition of its Revenue Fund, the Board recommended an increase in the maintenance subsidy of £1 for £2 ; and, as mentioned above, this recommendation was given effect to in the Main Highways Amendment Act, 1925, which permits of the Board increasing its subsidy to a maximum of £1 for £1 as funds permit. The Board also recommended that the payment of the increased subsidy should be retrospective to the 1st April, 1925, and this recommendation was likewise adopted.

It was pointed out previously in this report that the Board, in notifying local bodies of the increase in maintenance subsidy to £1 for £1, indicated that such increase was not intended to relieve them of their responsibilities, but, on the other hand, was to be treated as additional moneys available to meet the ever-increasing cost of maintenance. The figures for the financial year, which this report covers, are all in the direction of showing that local bodies have fairly complied with this condition.

Following on the direction contained in section 21 of the original Act, the Board, in May, 1925, resolved—" (1) That under section 21 of the Act the apportionment of the tire duty and license fees in each Island be made in proportion to the number of motor-vehicles registered in each Island on the 31st March, 1925, and in subsequent years on the basis of respective registrations in each Island on the 31st March of each year ; (2) that the interest and sinking fund on moneys borrowed for construction work by the Board in each Island shall be charged against the proportion of the allocation under clause 1."

At the 31st March, 1925, the North Island possessed 60·9 per cent. of the total number of motor-vehicles registered at that date, the corresponding figure for the South Island being 39·1 per cent.

The expenditure for the year out of the Revenue Fund in the North Island represents approximately 65·3 per cent. of the total, the corresponding figure for the South Island being 34·7 per cent. It will be noted that there is a balance of expenditure in favour of the North Island to the extent of 4·4 per cent., representing an amount of approximately £12,000. This discrepancy is likely to be reduced in the next twelve months, on account of the greater relative rate of the importation of motor-vehicles in the North Island, the figures at 31st March, 1926, being 61·4 per cent. and 38·6 per cent. for the North and South Island respectively.

It is interesting to note at this stage that the ratio of the contributions of the two Islands to the revenue of the Board differs from the ratio of the respective numbers of motor-vehicles, there being a slightly greater proportionate contribution from the North Island by reason of the fact that the motor-bicycle, the vehicle which pays the lowest rate of tax, is in greater evidence in the South Island than in the North Island; also the excess of motor-bicycles in the South is balanced in the North not by an excess of cars, but by an excess of motor-lorries, which, individually, pay the heaviest rate of tax.

For the year ending 31st March, 1926, the appropriations and expenditure under the Construction Fund were as under:—

——	Available for Authorization.	Appropriated.	Expenditure.	Percentage of Expenditure to Appropriation.
	£	£	£	
North Island	582,628	318,866	335,930	105·35
South Island	172,916	94,634	85,950	90·82
Administration charges and compensation for accidents to workmen	21,500	21,500	19,627	91·29
Totals	777,044	435,000	441,507	101·49

An analysis of the Board's expenditure and the expenditure by local bodies under the Construction Fund shows the following position:—

——	Board's Contribution.	Local Bodies' Contribution.	Total.	Percentage Board's Contribution to Total.	Percentage Local Bodies' Contribution to Total.
	£	£	£		
North Island	335,930	132,658	468,588	71·69	28·31
South Island	85,950	10,103	96,053	89·48	10·52
Totals	421,880	142,761	564,641	74·72	25·28

Maintenance.

The Board is still firmly of the opinion that the most effective way of getting immediate return from the funds at its disposal is by improving the maintenance of the highways, and takes every opportunity of impressing local bodies with the necessity for cheaper and better methods. The ever-increasing number of motor-vehicles using the highways demands a corresponding increase in the attention given to the highways themselves. It is pleasing to record that a number of progressive local authorities have adopted the methods recommended by the Board, and in every case where this has been done the results have proved gratifying.

In the first nine months of the Board's operations the average cost of maintenance throughout the country was at the rate of £51 per mile per annum, whereas during the past year the average cost of maintenance has increased to £73 per mile per annum. This substantial increase is due to several causes, the principal one being the more favourable subsidy granted by the Board, which has enabled many local bodies to undertake long-deferred maintenance. It is anticipated that there will be a further increase in the forthcoming year, and it is predicted that the average expenditure will be in the vicinity of £90 per mile per annum.

In a number of parts of the North Island there are many miles of pumice road. During the past year the Board's representatives in two districts have endeavoured to apply new methods to the maintenance of these pumice roads, with very encouraging results. The road-drag in particular has proved an effective piece of maintenance equipment.

Construction.

Since the Board's inception it has been the policy to eliminate unmetalled links on important routes, and during the past year, which has really been the first active year of the Board's operations, some notable achievements in this direction were attained. The most important connection made was that on the main highway from Auckland to Wellington via Taranaki. This connection means an all-the-year-round road between the two chief centres of population of the North Island. Another

important connection was made between Gisborne and Tolaga Bay, where a gap of 15 miles was metalled during the summer months. The success of the latter work was largely due to the excellent co-operation of the interested counties. A third important connection was made between Whangarei and Dargaville. Work was also commenced in a comprehensive manner on the Waitakaruru section of the Pokeno–Waihi Main Highway, between the Waikato and Hauraki Plains districts, and also on the Mamaku Bush section of the Hamilton–Rotorua Main Highway. It is hoped to have these two connections made by the end of the next construction season. The completion of the latter will give all-the-year-round road access to the most important tourist district in the Dominion.

A programme of construction for the Te Kuiti–Bull's (via Taumarunui) Main Highway—the central north-and-south artery of the North Island—has been decided upon. With a view to framing a similar programme for the connection of Auckland with the far north, comprehensive surveys have been put in hand so that the best route can be chosen and a complete programme of construction drawn up.

In considering extensive proposals for the reconstruction of main highways submitted by local bodies, the Board makes a thorough investigation to ascertain whether the proposals put forward are economically justified, taking into consideration the probable operating-costs of the future traffic and other pertinent matters. In several instances the Board has seen fit to ask local bodies to modify their proposals. In other cases the Board has allowed local bodies to proceed with the construction of a higher class of pavement than the Board itself considered justifiable, but has taken advantage of legislation brought down last year and limited its subsidy to half the amount which in the Board's opinion would have built a road satisfactory for the requirements of the community.

In connection with construction and reconstruction of main highways the Board during the year agreed, in cases where for the satisfactory prosecution of the work it is necessary to divert traffic to other roads, to subsidize the cost of maintenance of such detour roads. Any subsidy paid under this heading is treated as part of the construction cost of the main highway. A subsidy on the cost of maintenance of detour roads is not paid in every case, but only where it is proved to the satisfaction of the Board that the diversion of traffic is the most economical course to pursue and where the Board has not limited its contribution to construction to a fixed amount.

Purchase of Plant.

The Board believes that the use of up-to-date machinery on construction and maintenance of main highways is in the interest of economy and efficiency, and, with the idea of encouraging local bodies to use such plant, sought and obtained in the Main Highways Amendment Act, 1925, power enabling it to sell roadmaking machinery, plant, equipment, and appliances to local authorities on an instalment system. As a consequence of this legislation a number of local authorities have purchased modern roadmaking plant through the Board. The following statement shows the total orders placed to the 31st March, 1926, the amount involved being £28,634: Road-rollers, 11; road-graders, 5; crushers, 7; bin, 1; motor-lorries, 6; tractors, 7; trailers, 6; bitumen-heaters, 4; bitumen-sprayers, 3; water-carts, 2; conveyers, 3; and several minor items.

In addition to the above, the Board has purchased the following plant for its own use, at a total cost of £15,701: Road-rollers, 14; road-graders, 2; motor-lorries, 2; bitumen-heater, 1; bitumen-sprayer, 1; tractors, 3; air-compressors, 2; conveyor, 1; crusher, 1; and several other minor items.

Elimination of Railway Crossings.

As a basis of negotiation with the Railway Department, the Board, during the early part of the year, had a statement prepared showing the location of the 330 level crossings on the main-highways system, the relative danger of each, the best method of elimination of the most dangerous, and the approximate cost of elimination. A mutually satisfactory programme of elimination was arranged between the Board and the Railway Department, and on the majority of the eliminations agreed upon the Railway Department offered to find half the total cost, the Main Highways Board and the local bodies interested being required to find the other half.

Several local authorities are coming forward with substantial offers of assistance, whilst others are adopting a less commendable attitude in declining to find any contribution. As a means of enabling local bodies to find their contribution out of ordinary revenue the Board has indicated that it is prepared to accept equal annual payments without making any charge for interest on outstanding amounts. Preparations are already in train for the elimination of the following crossings:—

Auckland–Wellington (via Taranaki) Main Highway: Crossings at Porirua, Turakina, Hawera, Paraparaumu.
Wellington–Napier (via Wairarapa) Main Highway: Crossings at Piripiri, Matahiwi Hill.
Blenheim–Christchurch (via Parnassus) Main Highway: Crossing at Weka Pass.
Dunedin–Christchurch Main Highway: Crossing at Tumai.

Road-signs.

In the first year of the Board's operations a standard specification was drawn up for the construction and erection of road-direction and danger signs. The Board has since decided to subsidize the cost of erection of any signs complying generally with the specification, and such subsidy on a £1-for £1 basis is payable either to local bodies or to automobile associations. The subsidy payable on future signs is subject to the condition that the number of the highway is placed on the signboard.

In addition a suitable design for a boundary sign to be erected at county boundaries was issued to local bodies by the Board, with a suggestion that these be erected as opportunity offers.

Testing of Highway Materials.

At the beginning of the year the Petrological Laboratory commenced operations. Table 6 shows the results of stone tests carried out. In addition a considerable number of granulometric analyses were made. At the request of the Board a large number of tests of samples of bitumen, tar, and bituminous concrete were carried out by the Dominion Analyst, Wellington. A number of reports on stone-quarries have been furnished. There is an increasing tendency amongst local bodies to seek the assistance of the Laboratory before making decisions as to the use of roadmaking materials.

Examination of Foremen and Overseers employed in Road-construction.

Consequent upon the decision of the Board to issue certificates of competency to foremen and overseers of road-construction, as mentioned in the first annual report, an examination was held on the 11th December, 1925. Twenty-six candidates sat for the examination, out of which five obtained a complete pass and nine a partial pass. A further examination will be held during the current year.

Traffic Regulations.

On sections of highways under its immediate control the Board has taken the necessary steps from time to time to deal with infringements of the traffic regulations under the Public Works Amendment Act, 1924. For the purposes of checking the weights of heavy lorries the Board procured two portable weighing-jacks, which have been of considerable assistance. In addition to being used on highways under the Board's direct control the machines were also hired to a number of local authorities.

Progress Report.

The following statement shows the more important construction work carried out under the control of the Main Highways Board during the year ending 31st March, 1926:—

Waipapakauri - Victoria Valley.—¾ mile has been re-formed and metalled, and a further 1¼ miles is in hand.

Kohukohu - Te Karae.—Widening and metalling of this highway are in hand.

Kawakawa–Mangamuka.—A deviation 70 chains in length was formed and metalled at Rangiahua.

Waimamaku–Ohaeawai.—5½ miles of road has been metalled, enabling all-the-year-round connection to be obtained between the Hokianga County boundary, Rawene, and Waimamaku.

Maungatapere–Kaikohe.—½ mile of metalling was completed south of Kaikohe. Extensive widening-work has been carried out in the Awarua Gorge.

Whangarei–Dargaville.—On the Wheki Valley section the metal was connected up between Whangarei and Dargaville, enabling traffic to use the road the whole of last winter. A wearing-course of 3 in. of fine metal has since been laid over a distance of 3 miles.

Dargaville–Maungaturoto.—Donovan's deviation to Tokatoka has been formed over a length of 1 mile 65 chains. The Northern Wairoa River Bridge at Dargaville was opened for traffic during the year.

Waiwera–Mangawai.—The erection of the Hoteo River Bridge was almost completed. A commencement has also been made with the construction of Fall's Bridge.

Warkworth - Kaipara Flats.—About 1 mile of wearing-course was placed on a sandstone base.

Helensville-Waiwera.—30 chains of this road has been surfaced with shingle. The construction of Scott's Bridge was completed.

Auckland–Wainui, via Birkenhead.—A contract has been let for the reconstruction and surfacing with bitumen of the section of this highway between Birkenhead Borough Boundary and Albany. Preliminary widening work and metalling is in hand.

Kumeu–Albany.—The last unmetalled portion of this road between Kumeu and Riverhead has been completed, and a further 1½ miles of metalling is in hand north of the Riverhead Bridge.

Auckland–Helensville.—On the Waitakere section the surfacing of the unmetalled length between Lincoln Bridge and Kumeu, a distance of 73 chains, is in hand. In the No. 1 District the construction of the concrete pavement through New Lynn Town District has been completed, whilst the construction of the sections in the Henderson Town District and the Waitemata County is in hand. In the No. 2 District, 2 miles 25 chains of concrete road has been completed.

Great South Road.—In the Mount Wellington Road District, 1 mile 29 chains of concrete pavement 18 ft. in width has been completed. In the Ellerslie Town District a commencement has been made with a similar section of concrete paving, 51 chains in length. Proposals have been submitted and approved for the paving in concrete of the Great South Road within the Manukau County, the Papatoetoe Town District, and the Manurewa Town District. The bridge over the Wiri Stream has been reconstructed in reinforced concrete.

Pokeno–Waihi.—On the Franklin County section, 2 miles 20 chains of this highway has been formed and gravelled. On the Waitakaruru section 3 miles 42 chains of unmetalled road has been re-formed, and metalling is in progress. 40 chains of metalling was completed on the Pekapeka road. 1 mile 60 chains of metalling was completed on Wilson's Road. The Waitete Stream Bridge, on the Waihi Borough boundary, has been completed.

Pokeno - Tauranga to Coromandel.—A commencement has been made with the construction of the Waihou River Bridge at Kopu, estimated to cost £52,000. The manufacture of reinforced-concrete piles and cylinders is in hand.

Kopu–Raglan.—20 chains of re-formation at Waitoke and 60 chains of bottom course of metal have been completed. In the Tamahere Road District 24 chains of bituminous macadam has been completed, and the construction of a further 56 chains is in hand.

Hamilton–Rotorua.—Good progress has been made with the re-formation and surfacing of the section of this highway from Tapapa to the eastern boundary of the Matamata County. $2\frac{3}{4}$ miles has been regraded, formed to 24 ft. in width, and surfaced with rhyolite, and a further 4 miles is in hand. A commencement has been made with the construction of a reinforced-concrete bridge across the Oraka Stream, near Tirau. The metalling of the section between Ngongotaha and Rotorua is in hand, 1 mile 30 chains having been finished.

Waitoa–Taupo.—On the Piako County section 5 miles has been metalled. On the Matamata County section excellent progress has been made, 7 miles 52 chains of foundation course having been laid.

Matamata–Tauranga.—The original metalling on this road in the Matamata County has been widened over a length of 1 mile 50 chains. A deviation 15 chains in length near the old Kaimai Post-office has been completed, and widening and metalling a length of 3 miles in the Tauranga County have also been finished.

Gisborne–Whakatane, via Motu.—Between Motu and Willow Flat 120 concrete-pipe culverts were installed, and a number of sharp turns widened. The construction of the Waiaua Stream Bridge has been commenced. A contract has been let for the construction of the Waioeka River Bridge at Opotiki, and a commencement has been made with the work. Bridges over Sykes' Creek and the Waiopua Stream have been completed. At Mahaki 1 mile 10 chains of metalling has been laid, and on the Otoko Hill a further 60 chains of metalling was completed. A reinforced-concrete bridge was erected over Matawai Stream in Matawai Township. The Motu River Bridge, 150 ft. in length, was erected.

Whakatane–Tauranga.—36 chains of metalling in the neighbourhood of Thornton has been completed, thereby linking up Matata and Whakatane with a continuous metalled road. Formation and metalling of 40 chains of a deviation at Matata have been completed. The completion of the Rangitaiki outlet Bridge at Thornton is in hand. The Pikowai Bridge has been completed. 56 chains of metalling at Paengaroa and the Parawhenumea Bridge have also been completed.

Tauranga–Waihi.—The metalling of various sections, aggregating 74 chains, between the Wairo and Te Puna Rivers is in hand. Between Tuapiro Bridge and Waihi 2 miles of metalling is in hand, and a deviation at the Horseshoe Bend 15 chains in length has been completed.

Rotorua–Napier.—A length of 1 mile 11 chains of metalling at Hickey's Flat is in progress. A number of minor deviations have been constructed. Through the Taupo Township 51 chains of road has been re-formed and surfaced with pumice.

Whakatane–Rotorua.—1 mile of metalling is approaching completion on the West Bank section. A deviation 7 chains in length on the Rotoma Hill has been finished. Between Rotoma and Te Ngae, in the vicinity of Lakes Rotoma and Rotoiti, the abnormal rising of the lakes resulted in about 2 miles of the road having to be rebuilt and stone-protected.

Te Ngae – Paengaroa.—Between Rotorua and Te Ngae proposals for metalling $6\frac{1}{4}$ miles have been approved and a commencement has been made. At the Paengaroa end 1 mile 68 chains of metalling has been completed.

Gisborne–Opotiki, via the Coast.—The construction programme on this highway has been marked by two spectacular pieces of work—the linking-up of Tolaga Bay with Gisborne and the completion of the Rotokautuku Bridge. On the Gisborne – Tolaga Bay section, between 18 m. and 33 m., 15 miles of bottom course and $8\frac{1}{2}$ miles of top course were completed. This work was carried out by the co-operation of the Cook and Uawa Counties and the Public Works Department. The plant employed on the work included nineteen motor-lorries, four road-rollers, and two crushing plants, together with sundry teams, power graders, &c.,

It is interesting to record a comparative statement of the fares charged to travellers in 1925 and 1926 :—

	1925.		1926.	
	Fare.	Time taken.	Fare.	Time taken.
Gisborne – Tolaga Bay	£2	10 to 14 hours	7s. 6d. and 10s.	2 hours.
Gisborne – Tokomaru Bay	£3	$11\frac{1}{2}$ to $15\frac{1}{2}$ hours	£1	$3\frac{1}{2}$ hours.
Gisborne – Ruatorea	£4 10s.	2 days	£1 10s.	7 hours.
Gisborne – Te Araroa	£6	2 days	£3 10s.	1 day.

The enormous saving to the community brought about by this connection is self-evident. Between $42\frac{1}{2}$ m. and $43\frac{1}{2}$ m., 40 chains of heavy widening on the Uawa River Bluffs was completed. The Sawmill and Makokomuka Bridges have been completed in reinforced concrete, and the Arero Bridge is in hand. Near the 61 m. peg at Mangahawini, protective works were carried out. Construction of the Makarika Bridge has been commenced. Kopuaroa Bridge No. 2 has been completed, and Kopuaroa Bridge No. 3 is in hand. At 79 m., 60 chains of metal has been finished. The Makatototo Bridge was completed.

The Rotokautuku Bridge over the Waiapu River at $83\frac{3}{4}$ m. was finished and opened during the year. This bridge consists of four 140 ft. spans and one 20 ft. span on reinforced-concrete cylinders. The Waiapu River is one of the most treacherous in the Dominion, having a flood velocity at the bridge-site of 20 miles per hour. The construction of the bridge has been full of difficulties. Three

of the 140 ft. spans were erected ashore and slid into place, and the fourth 140 ft. span was erected *in situ*. This method of erection was used on account of the extremely sudden floods which take place in the river, making the maintenance of false-work a very precarious matter.

Between Rotokautuku Bridge and Tikitiki a deviation 12 miles in length to connect up with the Rotokautuku Bridge is well in hand, 8 miles having been completed.

On the Kai Inanga Hill, on the right bank of the Waiapu River, 2 m. of metalling was completed.

The Mangaoporo and Whakarei Stream Bridges are in hand. Between 104 m. and 106½ m., 60 chains of metalling was completed.

On the Hospital Hill, at 110 m., 26 chains of metalling was finished.

Between Te Araroa and Hick's Bay 1 mile of metalling was carried out.

Tokomaru Bay Township to Tokomaru Wharf.—The Waitakeo Stream Bridge was erected in reinforced concrete.

Gisborne–Wairoa, via Morere.—Between Gisborne Borough boundary and Matawhero 2½ m. of bituminous macadam surfacing, 16 ft. in width, was completed. Between 25 m. and 35½ m., 3 miles of bituminous penetration course and 7½ miles of sealing-coat have been completed.

Gisborne–Wairoa, via Hangaroa.—2 miles of re-formation and metalling were carried out.

Napier–Wellington, via Wairarapa.—The construction of 1 mile of Portland-cement-concrete road is in hand south of Napier Borough boundary. A contract for the construction of 4 miles of bituminous-concrete pavement adjacent to the Portland-cement-concrete pavement has been let. The raising of a dip in the road at Pakowhai has been carried out. Widening-work between Waipawa and Waipukurau is well in hand. The surfacing of the unmetalled section of this highway near Takapau is in hand. The Tamaki Bridge and approaches have been completed. An important deviation at Matamau has been commenced. The work will include the construction of a high-level bridge. The widening and straightening of the section of the highway between Oringi and Papatawa have been commenced. 1 mile 68 chains of the length between Woodville County boundary and the railway-crossing south of Oringi has been tar-sealed.

Napier–Omahu.—The construction of the Mill Stream Bridge has been completed. In the Taradale Town District a mile of bituminous sealing work has been carried out.

Havelock North – Fernhill, via Hastings.—Between the Hastings Borough boundary and the Havelock North Town District boundary 1 mile 12 chains of bituminous-concrete paving has been completed.

Petane–Taupo.—The Lucky Hill Bridge and approaches have been finished.

Otane–Elsethorpe.—Three small bridges near Elsethrope and the approaches to the Tukituki River Bridge at Patangata have been completed.

Dannevirke–Waipukurau, via Porangahau.—61 chains of this highway at Weber Township and 10 chains south of the Akitio River Bridge have been paved with bituminous macadam.

Woodville – Palmerston North.—In the Woodville County 1 mile of tar-sealing was completed. Between the Toll Bridge and the cemetery-gate the whole length was widened to 22 ft. and remetalled. The bridge at 0 m. 32 ch. close to the entrance of the Manawatu Gorge is in hand.

Kawhia to Auckland – Wellington Road, via Kawa.—The formation and sea-wall along the Puti waterfront 61 chains in length were completed. Between 6 m. 17 ch. and 7 m. 60 ch. the bottom course of metal was finished and the laying of the top course is in hand. Between Oparau and the county boundary several metalling contracts are in hand.

Auckland–Wellington, via Taranaki.—Between Hangatiki and Te Kuiti 2 miles of new formation has been completed, and a further 2 miles 35 chains is in hand.

Te Kuiti – Bull's, via Taumarunui.—Work has been commenced on the Kurakura deviation. Between Owhango and Raurimu 2 miles of heavy formation is in hand, about 60 chains having been completed.

Between Raurimu and Waimarino a further 1 mile 29 chains of re-formation and metalling have been completed.

Between Waimarino and Kaitieke County Boundary 1 mile 63 chains of metalling has been completed, and work on the remaining 6 miles of re-formation and metalling is in hand. A bridge was completed at 6 m. 67 ch.

Raurimu – Wade's Landing.—Between Kaitieke and Wade's Landing, near the Pukeatua Junction, 13¼ chains of re-formation and metalling was carried out.

Waitomo Caves – Lemon Point.—Construction work on this section is proceeding, 1 mile 32 chains of metalling having been completed.

Stratford–Taumarunui.—Between Ohura County boundary and Taumarunui County boundary 1 mile of metalling and formation near Tatu was completed, and a further 34 chains is in hand. 1 mile 7 chains of gravelling was also completed on the Harvey Road. Between the Taumarunui County boundary and Taumarunui 70 chains of metalling was completed and a further 1 mile 57 chains is in hand.

Auckland – Wellington, via Taranaki. — In May, 1925, the metalling was linked up between the Mohakatino and Tongaporutu Rivers, thus completing a most important connection and providing a metalled highway for the whole distance between Auckland and Wellington. Between Awakino and Mokau 1 mile 18 chains of foundation course was completed. The Mokau Bridge, 660 ft. in length, was put in hand, and a number of piers have been constructed. Between Mohakatino and Tongaporutu Rivers 1 mile 60 chains of foundation course was completed. 4 miles of bituminous macadam was completed south of the Mokau River, and 4 miles 67 chains of bituminous sealing work carried out between Uruti and Mount Messenger. A considerable amount of widening work was also carried out on the above sections. In the Taranaki County 2 miles 65 chains of bituminous macadam 14 ft. in width was completed. Between Inglewood and Tariki, 1 mile 41 chains of bituminous macadam 16 ft. in width was completed, and a further 1 mile 40 chains of foundation course was laid in preparation for bitumen grouting.

In the Patea County 1 mile 41 chains of bitumious macadam, 12 ft. in width, has been completed. Two dangerous railway-crossings have been eliminated from the main highway by the formation of a deviation near Waverley Racecourse, 40 chains in length. In the Waverley Town District 78 chains of bituminous macadam, 12 ft. in width, has been completed. Reinforced concrete bridges have been constructed over the Wiritoa and Tutaenui Streams.

Lepperton Junction – Hawera, via Opunake.—60 chains of bituminous macadam, 18 ft. in width, has been constructed from the New Plymouth Borough boundary northwards. Between Rahotu and Opunake, 6 miles 9 chains of bituminous macadam, 16 ft. in width, has been completed. A reinforced-concrete arch bridge over the Taungatara Stream, and a reinforced-concrete bridge over the Kapuni Stream, have also been completed.

New Plymouth – Kaimata, via Inglewood.—72 chains of bituminous macadam, 16 ft. in width, between the Waiwakaiho River and Inglewood, has been finished. The construction of the Ngatoro Stream Bridge and the Maketawa Stream Bridge, both in reinforced concrete, is in hand.

Ohura Highway.—At Whangamomona Saddle, between Pohokura and Whangamomona, 1 mile 30 chains was reformed and 60 chains metalled. Between Kohuratahi and Tahora, 1 mile 61 chains has been widened and metalled. A new reinforced-concrete bridge has been almost completed over the Waingarara Stream.

Bull's–Taumarunui.—On the Rangitikei County section 35 chains was metalled near Hihitahi, and on the Waimarino County section 1 mile 54 chains was metalled.

Ball Road.—A new deviation at Alton Gorge, 28 chains in length, was metalled.

Rangitatau East and Watershed Highway.—1 mile 37 chains of re-formation and metalling has been completed.

Wanganui–Horopito.—Heavy widening-work to a width of 18 ft. has been carried out over a length of 3 miles 30 chains. On the Waimarino County section 67 chains of road has been widened and 40 chains surfaced. The Taiaua Stream Bridge and the Otuhangatoi Stream Bridge were completed. The construction of a bridge over Upokongaro Stream is in hand.

Wellington–Auckland, via Taranaki.—Between Sanson and Bull's preparatory work for bituminous surfacing is in hand. On the Horowhenua County section 5 miles of bituminous macadam was completed with the exception of the sealing-coat. A considerable amount of preparation work was also carried out on this section. On the Hutt County section between Paramata and Pahautanui a commencement was made with reconstruction work, 1 mile of widening and metalling having been completed. Between Porirua and Paremata a length of 3 miles was completely reconstructed. 1 mile of this surface was treated with gravel, and a further 60 chains was given a coat of asphaltic road oil. At the southern end of the Ngahauranga Gorge 38 chains of bituminous-concrete paving were completed.

Wellington–Napier, via Wairarapa.—On the Upper Hutt section 2 miles of bituminous concrete paving was completed. Between Upper Hutt and Akatarawa Road junction, 1 mile 50 chains of bituminous macadam was laid. The Emerald Hill deviation was completed. Between Greytown and Waiohine Bridge 1 mile 58 chains of bituminous macadam was finished, and between the Waiohine Bridge and Masterton Borough boundary 1 mile 12 chains of similar work was carried out.

Greatford–Woodville, via Feilding and Ashhurst.—Between the lower Gorge Bridge and the southern end of the Manawatu Gorge 56 chains of re-formation and metalling was carried out. On Aorangi Street, in the Borough of Feilding, a boundary-road between the borough and the county, 40 chains of bituminous macadam was completed.

Levin – Palmerston North, via Shannon.—Preparatory work in anticipation of paving 3 miles 72 chains of this highway with bituminous macadam was put in hand.

Masterton–Weber, via Alfredton.—On Barton's Line 1 mile 8 chains of gravelling was completed. The Happy Valley Bridge was also completed.

Featherston–Martinborough.—On the Featherston County section 1 mile 12 chains of sealing-work was carried out, and also 1 mile 26 chains of bituminous macadam.

Featherston – Pigeon Bush.—The bridge at Pigeon Bush and the Cemetery Bridge at Featherston Borough boundary were reconstructed in reinforced concrete.

Blenheim–Nelson.—The construction of Pike's Stream Bridge is in hand.

Nelson–Westport.—An overbridge is being constructed at Annesbrook to eliminate a dangerous level crossing. A small reinforced-concrete bridge has been completed at Fairfax Street, in Murchison Township. Between Glenhope and 8 m., 11 chains of widening has been completed.

Richmond–Pakawau.—The Redwood Valley Bridge was completed. At the Motueka River Bridge a temporary structure 665 ft. in length was erected on the down-stream side of the old bridge, to enable the remainder of the old bridge to be reconstructed in reinforced concrete. On the Takaka County section, 21 chains of formation and the re-erection of the Washaway Creek Bridge have been completed. In the Collingwood County, 45½ chains of formation and metalling was carried out near Pakawau. On this section seven small reinforced-concrete bridges were also completed.

Westport–Karamea.—The Karamea Bridge, 456 ft. in length, has been completed and opened for traffic. The timber for the Lake Creek Bridge has been delivered on the site.

Westport–Nelson.—A commencement has been made with the construction of the Ohikanui River Bridge, 272 ft. in length, with cylinder and concrete piers and hardwood superstructure. Dixon's Creek Bridge has been completed. The Inangahua Junction Bridge, consisting of nine 60 ft. plate-girder spans on cylinder piers, has almost been completed. Ben's Creek Bridge is also practically finished.

Inangahua Junction – Waiho.—The following bridges were completed: Due North Bridge, Nelson Creek Bridge, Red Jack's Creek Overflow Bridge, Frosty Creek Bridge. A commencement has been made with the following bridges: Little Grey River Bridge at Maimai, bridge near Kokatahi Track, Totara River Bridge, Zalas Creek Bridge.

Arthur's Pass–Kumara.—At Aicken's a deviation of the road 17 chains in length has been completed to improve the visibility at a dangerous railway-crossing.

In addition to the above works in the No. 12 District a large number of timber bridges have been renewed.

Christchurch–Blenheim, via Parnassus.—The Clarence River Bridge reconstruction, involving the erection of three 112 ft. truss spans on reinforced-concrete cylinder piers, has been completed. Extensive protective works on the left bank of the river are in hand. The Starborough Stream Bridge has been completed. Between Clarence and Dashwood, 1 mile 38 chains of widening has been completed. The construction of substantial approaches to the Hapuku River Bridge is well in hand. Hartnett's Creek Bridge has been re-erected, and the bridge at Boundary Gully has been commenced. Protective works and approach banks to the two Greta Bridges were completed. In the Kaikoura County, near Goose Bay, a considerable amount of concrete walling was constructed to prevent erosion by the sea.

Waipara–Kaikoura, via Culverden.—The Charwell River Bridge and the Dry Creek Bridge have been commenced. On the Amuri County section the School Creek Bridge and the Wandle River Bridge have been re-erected. On the Whalesback section gravel surfacing was continued. A deviation at Peache's cutting was put in hand.

Kaiapoi–Waddington Junction to Bennett's, via Swannanoa.—The erection of the bridge at Cherry's Ford has been commenced.

Christchurch–Dunedin.—Between the Rakaia River and Rangitata River, via Hinds, formation work has been completed, and a commencement has been made with the metalling. Between Hinds and Tinwald reconstruction and metalling have been completed. The formation and metalling of Bridge Street, Rakaia, have been carried out. Between Timaru and Pareora Bridge 1 mile 54 chains has been surface-treated with bitumen. On the Waimate County section a large number of culverts have been extended. The section between Oamaru and Pukeuri Junction has been reconstructed. On the Waitati section, 7 miles of the highway was totally reconstructed, and 3 miles has been surface-treated with tar and asphaltic road oil.

Washdyke–Tekapo.—The Opihi River Bridge has been completed.

Pukeuri–Kurow.—Henderson's Creek Bridge and Waikaura Bridge were completed in reinforced concrete.

Rakaia Gorge Bridge to Arundel.—Formation and metalling is in hand on this highway.

Raikaia–Methven.—The metalling of Back Road has been commenced.

Palmerston–Queenstown, via Beck's.—1½ miles of remetalling was completed on the Queenstown–Roaring Meg Section, and 52 chains of similar work was completed in Blackstone Survey District.

Cromwell - Hawea Flat.—2 miles of this highway was gravelled.

Dunedin–Invercargill.—The construction of the Waiwera Stream Bridge and Lovell's Stream Bridge has been commenced.

Clarkesville–Clyde.—On the Manuka Gorge section the reconstruction of several bridges is in hand.

Invercargill–Riverton.—A commencement was made with the construction of 3¼ miles of bituminous macadam, 1 mile being completed. In addition, a considerable amount of preparation work has been carried out.

Kennington–Waikawa.—Between McManus Road and Shoot Road the reconstruction of 5 miles of the highway has been proceeded with, approximately 1 mile having been completed.

Riversdale–Waikaia.—The Waikaia River Bridge, 300 ft. in length, has been completed.

Signed on behalf of the Main Highways Board—

C. J. McKenzie,
Chairman.

TABLE 1.—MAIN HIGHWAYS ACCOUNT.

CONSTRUCTION FUND.

INCOME AND EXPENDITURE ON CAPITAL ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1926.

EXPENDITURE.	Government Roads.	Ordinary Main Highways.	Total.
	£ s. d.	£ s. d.	£ s. d.
To Net expenditure on construction and improvement of main highways, including cost of administration by Public Works Department and accident compensation—			
Highway District No. 1	19,652 18 5	46,335 19 10	65,988 18 3
„ 2	15,259 2 0	31,880 8 2	47,139 10 2
„ 3	4,752 17 6	6,554 3 8	11,307 1 2
„ 4	47,374 12 1	25,773 4 6	73,147 16 7
„ 5	1,733 6 11	13,961 16 4	15,695 3 3
„ 6	19,460 1 3	4,512 17 1	23,972 18 4
„ 7	49,431 6 8	16,586 4 6	66,017 11 2
„ 8	4,511 12 10	9,298 14 8	13,810 7 6
„ 9	13,625 4 0	12,809 15 4	26,434 19 4
„ 10	160 10 3	7,660 7 1	7,820 17 4
„ 11	1,653 16 10	2,108 1 6	3,761 18 4
„ 12	38,152 16 3	190 0 8	38,342 16 11
„ 13	5,001 5 7	14,965 12 6	19,966 18 1
„ 14	..	277 4 9	277 4 9
„ 15	..	2,392 11 5	2,392 11 5
„ 16	..	21,958 19 6	21,958 19 6
„ 17	1,242 15 7	27 2 5	1,269 18 0
„ 18	..	2,201 10 5	2,201 10 5
	222,012 6 2	219,494 14 4	441,507 0 6
Balance, being excess of capital income over capital expenditure for year, transferred to Main Highways Construction Fund Account	..	..	258,499 18 10
			700,006 19 4

INCOME.	Government Roads.	Ordinary Main Highways.	Total.
	£ s. d.	£ s. d.	£ s. d.
By Recoveries on account of expenditure of previous years—			
Highway District No. 2	6 0 0	..	6 0 0
„ 4	0 19 4	..	0 19 4
	6 19 4	..	6 19 4
Receipts under section 15 (2), Finance Act, 1923, from Public Works Fund, General Purposes Account (amount due)*	..	..	200,000 0 0
Loan raised under Main Highways Act, 1922, (New Zealand Consolidated Stock, 1945) ..	..	542,007 14 0	
Less cost of raising loan	..	42,007 14 0	
			500,000 0 0
			700,006 19 4

* Interest on this amount is paid from Consolidated Fund.

TABLE 1.—MAIN HIGHWAYS ACCOUNT—*continued.*

REVENUE FUND.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1926.

EXPENDITURE.	Government Roads.	Ordinary Main Highways.	Total.
To Net expenditure on maintenance of main highways—	£ s. d.	£ s. d.	£ s. d.
Highway District No. 1	5,397 14 3	13,376 3 8	18,773 17 11
,, 2	60 19 5	21,638 7 10	21,699 7 3
,, 3	10,812 17 3	4,195 8 9	15,008 6 0
,, 4	7,132 6 5	4,775 3 2	11,907 9 7
,, 5	6,715 14 7	23,574 15 10	30,290 10 5
,, 6	10,891 4 4	5,100 8 9	15,991 13 1
,, 7	5,206 18 11	12,632 13 8	17,839 12 7
,, 8	..	13,933 7 5	13,933 7 5
,, 9	4,117 13 2	15,699 11 8	19,817 4 10
,, 10	1,277 12 2	15,830 7 10	17,108 0 0
,, 11	6,046 3 0	5,885 19 8	11,932 2 8
,, 12	29,594 19 11	265 0 0	29,859 19 11
,, 13	3,295 12 5	5,568 11 11	8,864 4 4
,, 14	..	8,531 13 5	8,531 13 5
,, 15	..	16,445 14 10	16,445 14 10
,, 16	..	3,290 5 9	3,290 5 9
,, 17	..	6,111 10 3	6,111 10 3
,, 18	..	11,999 12 2	11,999 12 2
	90,549 15 10	188,854 16 7	279,404 12 5
Fees and travelling-expenses of members of the Main Highways Board, other than Government members			1,245 17 0
Administration and supervision expenses, including salaries and travelling-expenses of Public Works officers, printing, stationery, postages, and miscellaneous expenses			13,835 12 10
Commission on collection of motor-registration fees by Postal Department ..			2,690 6 6
Depreciation of furniture and fittings			26 12 3
Recoupment to Consolidated Fund of interest on loans (section 4, Finance Act, 1919)			16,504 13 6
Abolition of toll-gates (section 20, Finance Act, 1925)			6,730 14 7
Miscellaneous expenses—		£ s. d.	
Accident compensation		161 17 2	
Engineering survey		220 12 11	
Exhibit at Dunedin Exhibition		73 18 8	
Maps, advertising, &c.		85 7 6	
Traffic tallies		36 7 1	
			578 3 4
Balance, being excess of income over expenditure for year, transferred to accumulated Revenue Fund Account			49,390 16 5
			£370,407 8 10

INCOME.				
By Income from—			£ s. d.	£ s. d.
Tire-tax (sections 13 and 14, Main Highways Act, 1922)				223,699 5 9
Motor-registration licenses, fees, and fines (section 24, Motor-vehicles Act, 1924)				78,038 0 4
Rent of and tolls from ferries				630 11 4
Interest from investments of—		£ s. d.		
Revenue Fund		24,630 3 8		
Construction Fund		8,288 9 7		
				32,918 13 3
Interest from local bodies on plant purchased on their behalf				120 18 2
Amount transferred from Consolidated Fund (section 14, Main Highways Act, 1922)				35,000 0 0
				£370,407 8 10

TABLE 1.—MAIN HIGHWAYS ACCOUNT—*continued.*

GENERAL BALANCE-SHEET AS AT 31ST MARCH, 1926.

LIABILITIES.	Revenue Fund.	Construction Fund.	Total.
	£ s. d.	£ s. d.	£ s. d.
Accumulated Revenue Fund	645,285 14 5	..	645,285 14 5
Construction Fund	..	251,210 17 2	251,210 17 2
Sundry creditors	80,849 1 4	90,724 19 10	171,574 1 2
Interest accrued on loan	2,004 13 6	..	2,004 13 6
Writings off in Suspense	29 18 0	257 17 3	287 15 3
	728,169 7 3	342,193 14 3	1,070,363 1 6

ASSETS.			Revenue Fund.	Construction Fund.	Total.
			£ s. d.	£ s. d.	£ s. d.
Cash in Treasury—					
At call			2,608 14 11	30,104 1 6	32,712 16 5
Temporarily invested until required			652,000 0 0	90,000 0 0	742,000 0 0
Sundry debtors			4,250 8 0	2,076 13 6	6,327 1 6
Amount due from Public Works Fund			..	200,000 0 0	200,000 0 0
Motor-registration fees in hands of Postal Department			2,030 9 0	..	2,030 9 0
Tire-tax in hands of Customs Department ..			9,917 5 7	..	9,917 5 7
Interest due and accrued			10,838 9 4	..	10,838 9 4
Stocks of material, tools, &c.			4,103 19 10	16,796 7 0	20,900 6 10
Stocks Deficits Suspense Account			29 18 0	257 17 3	287 15 3
Roadmen's cottages, huts, and road buildings generally			1,513 0 0	2,958 15 0	4,471 15 0
Furniture and fittings—	£ s. d.				
Expenditure to 31/3/26 ..	356 6 9				
Depreciation to 31/3/26 ..	45 8 4				
			310 18 5	..	310 18 5
Plant and equipment—					
For Main Highways Board—	£ s. d.				
Expenditure to 31/3/26 ..	17,604 0 6				
Less depreciation charged to works	479 12 6				
			17,124 8 0	..	17,124 8 0
Purchased for local bodies—	£ s. d.				
Expenditure to 31/3/26 ..	25,160 0 6				
Less instalments of principal—					
Paid .. 270 9 0					
Due .. 1,447 15 4					
	1,718 4 4				
			23,441 16 2	..	23,441 16 2
			728,169 7 3	342,193 14 3	1,070,363 1 6

J. J. GIBSON, Accountant, Public Works Department.
C. J. McKENZIE, Chairman, Main Highways Board.

TABLE 2.—LENGTHS OF MAIN HIGHWAYS AT 31ST MARCH, 1926.

Number and Name of Highway District.	Ordinary Main Highways.	Main Highways declared Government Roads.	Total all Main Highways.
	M. ch.	M. ch.	M. ch.
1. Auckland North	423 15	138 30	561 45
2. Auckland South	375 47	35 13	410 60
3. Tauranga	169 0	268 0	437 0
4. Gisborne	110 41	138 40	249 1
5. Napier	393 70	36 50	430 40
6. King-country	199 42	149 68	349 30
7. Taranaki	191 10	113 10	304 20
8. Wanganui	271 0	40 60	311 60
9. Wellington West	271 42	23 8	294 50
10. Wellington East	307 22	14 0	321 22
Totals, North Island ..	2,712 49	957 39	3,670 8
11. Nelson	156 56	127 4	283 60
12. West Coast	..	331 5	331 5
13. Canterbury North	265 34	40 6	305 40
14. Canterbury Central	309 60	54 0	363 60
15. Canterbury South	430 40	..	430 40
16. Otago Central	233 20	8 0	241 20
17. Otago South	224 65	0 63	225 48
18. Southland	394 29	26 0	420 29
Totals, South Island ..	2,014 64	586 78	2,601 62
Totals, Dominion ..	4,727 33	1,544 37	6,271 70

TABLE 3.—CONSTRUCTION WORK COMPLETED DURING YEAR 1925–1926.

Number and Name of Highway District.	Formation.	Gravelling and Metalling.	Tar and Bituminous Surfacing.	Bituminous Macadam (Penetration).	Bituminous Concrete.	Portland Cement Concrete.	Bridges.	Engineering Surveys.	
								Surveys completed.	Plans completed.
	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	Ft.	M. ch.	M. ch.
1. Auckland North	5 52	15 73	..	..	..	1 48	110	52 63	52 13
2. Auckland South	5 19	8 74	..	2 24	..	3 56	141	43 12	10 48
3. Tauranga	0 55	3 51	..	..	..	..	105	7 42	4 37
4. Gisborne	6 26	14 70	..	9 37	..	..	878	20 79	21 39
5. Napier	2 52	1 20	4 55	0 75	1 12	1 0	251	10 44	10 44
6. King-country	5 02	14 27	..	..	..	..	35	13 74	13 74
7. Taranaki	..	7 70	4 1	15 42	..	..	134	8 26	8 26
8. Wanganui	3 30	5 01	..	2 39	..	..	124	2 31	2 31
9. Wellington West	5 01	..	0 60	9 10	2 38	..	49	60 77	60 77
10. Wellington East	..	1 8	1 12	4 26	..	..	252	23 03	23 3
11. Nelson	0 51	0 51	..	..	..	..	815	12 44	0 47
12. West Coast	0 41	0 65	..	..	..	..	1,172	0 20	0 20
13. Canterbury North ..	..	..	..	..	..	..	545	..	..
14. Canterbury Central ..	..	..	..	..	..	..	20	..	..
15. Canterbury South ..	1 61	1 61	1 54	..	..	..	217	..	..
16. Otago Central	7 40	11 54	3 58	..	..	..	20	7 40	7 40
17. Otago South	..	..	..	..	..	..	..	..	1 0
18. Southland	0 60	0 27	..	1 13	..	..	300	3 45	3 45
Total	45 10	88 12	16 0	45 26	3 50	6 24	5,168	267 40	220 64

TABLE. 4.—APPROPRIATIONS AND EXPENDITURE.

Number and Name of Highway District.	Construction.		Maintenance.	
	Available for Authorization.	Expenditure.	Available for Authorization.	Expenditure.
	£	£ s. d.	£	£ s. d.
1. Auckland North ..	87,886	63,987 14 4	24,449	18,773 17 11
2. Auckland South ..	92,199	44,993 8 1	28,704	21,699 7 3
3. Tauranga	52,509	10,814 12 2	16,316	15,008 6 0
4. Gisborne	82,973	69,641 17 8	18,354	11,907 9 7
5. Hawke's Bay ..	46,278	14,903 18 9	33,578	30,290 10 5
6. King-country ..	43,928	23,106 19 1	13,920	15,991 13 1
7. Taranaki	70,590	62,459 8 6	38,186	17,839 12 7
8. Wanganui	30,143	13,198 7 0	26,906	13,933 7 5
9. Wellington West ..	49,533	25,361 1 9	23,602	19,817 4 10
10. Wellington East ..	26,589	7,462 12 0	26,876	17,108 0 0
11. Nelson	19,034	3,621 15 2	17,655	11,932 2 8
12. West Coast	43,569	36,533 18 8	32,534	29,859 19 11
13. Canterbury North ..	31,083	19,054 10 10	10,552	8,864 4 4
14. Canterbury Central ..	19,766	265 2 4	15,946	8,531 13 5
15. Canterbury South ..	18,444	2,287 8 9	16,808	16,445 14 10
16. Otago Central ..	19,456	20,858 17 3	6,368	3,290 5 9
17. Otago South ..	5,156	1,176 6 6	8,290	6,111 10 3
18. Southland	16,408	2,152 7 2	20,884	11,999 12 2
Totals for Dominion ..	755,544	421,880 6 0	379,928	279,404 12 5
Totals, North Island ..	582,628	335,929 19 4	250,891	182,369 9 1
Totals, South Island ..	172,916	85,950 6 8	129,037	97,035 3 4

TABLE 5.—MAINTENANCE OF MAIN HIGHWAYS (INCLUDING BRIDGES).

Number and Name of Highway District.	Length maintained.	Expenditure.			Average Cost per Mile per Annum, 1925–26.	Average Cost per Mile per Annum, 1924–25.
		By Board.	By Local Authority.	Total.		
	M. ch.	£	£	£	£	£
1. Auckland North	561 45	18,774	12,748	31,522	56·1	77·0
2. Auckland South	410 60	21,699	13,256	34,955	85·1	53·5
3. Tauranga	437 0	15,008	6,231	21,239	48·6	28·1
4. Gisborne	249 1	11,907	11,489	23,396	93·9	59·5
5. Hawke's Bay	430 40	25,054	19,944	44,998	104·5	73·4
6. King-country	349 30	15,992	3,377	19,369	55·4	58·5
7. Taranaki	304 20	17,840	14,116	31,956	105·0	67·1
8. Wanganui	311 60	13,933	13,805	27,738	88·9	54·4
9. Wellington West	294 50	19,817	15,601	35,418	120·2	91·7
10. Wellington East	321 22	17,108	16,523	33,631	104·7	77·7
Totals, North Island ..	3,670 8	177,132	127,090	304,222	82·9	62·9
11. Nelson	283 60	11,932	6,221	18,153	63·9	48·1
12. West Coast	331 5	29,860	1,472	31,332	94·6	61·6
13. Canterbury North ..	305 40	8,864	5,725	14,589	47·7	37·7
14. Canterbury Central ..	363 60	8,532	8,230	16,762	46·1	52·2
15. Canterbury South	430 40	16,446	15,353	31,799	73·9	39·7
16. Otago Central	241 20	3,290	3,000	6,290	26·1	12·6
17. Otago South	225 48	6,112	6,112	12,224	54·2	22·5
18. Southland	420 29	12,000	11,812	23,812	56·6	24·6
Totals, South Island ..	2,601 62	97,036	57,925	154,961	59·6	38·5
Totals for Dominion ..	6,271 70	274,168	185,015	459,183	73·2	51·7

TABLE 6.—TESTS OF STONE COMPLETED TO 31ST MARCH, 1926.

Locality.	Weight in Pounds per Cubic Foot.	Absorption of Water in Pounds per Cubic Foot.	Abrasion.		Hardness.	Toughness.	Geological Classification.
			Percentage of Wear.	French Coefficient.			
1. Papakura, Hunua Gorge ..	175	0·05	3·20	12·20	19·30	30·0	Greywacke, fine.
2. Te Miro, 10 m. south-east from Cambridge	171	0·04	2·82	14·20	19·30	27·0	Greywacke, moderate grain.
3. Belmont, Hutt Valley ..	170	0·03	3·74	10·70	19·20	21·0	Greywacke, weathered along some joints.
4. Pairere, Waikato River, near Tirau	177	0·08	3·10	12·90	19·20	21·0	Greywacke, rather shaly.
5. Motumaoho, Piako County, near Matamata	170	0·08	2·82	14·28	19·20	33·6	Greywacke, rather fine.
6. Tahuna, west side of Hauraki Plains	170	0·31	3·42	11·71	18·07	29·0	Greywacke, many joints.
7. Ngaruawahia Gorge ..	165	0·13	4·56	8·10	18·65	11·5	Fine-grained greywacke, much jointed.
8. Mount Eden Prisons quarry	187	1·04	3·44	11·60	19·00	25·0	Basalt, unweathered.
9. Pairere Bridge over Waikato, near Tirau	182	0·30	4·26	9·40	16·90	9·0	Basalt, dyke.
10. Te Kawa, north of Te Awamutu	179	0·13	4·14	9·60	18·10	10·0	Basalt, coarsely crystalline.
11. Mercer County quarry ..	182	0·12	3·95	10·01	19·05	36·0	Fine-grained basalt, much olivine.
12. Waikato River, near Tuakau	190	0·18	3·26	12·30	19·07	31·0	Fine-grained basalt, much olivine.
13. Te Miro, 10 m. south-east from Cambridge	177	0·64	3·64	11·00	18·70	22·0	Andesite, slightly weathered.
14. Pairere Bridge over Waikato, near Tirau	171	0·48	4·40	9·10	18·50	14·0	Boulder of hypersthene augite andesite.
15. Waiorongomai, 10 m. south-west from Te Aroha	162	0·32	3·20	12·50	18·80	13·3	Hornblende andesite.
16. Bald Hill, near Kaiwaka, Kaipara	157	1·61	3·30	12·10	18·70	23·0	Andesite, nearly pure feldspar.
17. Gordon's, 20 m. south-west from Te Aroha	175	0·62	3·12	12·84	19·35	23·4	Hypersthene andesite.
18. Aongatete, near Katikati, Bay of Plenty	168	0·26	3·46	11·42	18·27	12·0	Hypersthene andesite.
19. Te Puke, 15 m. east of Tauranga	151	0·58	5·34	7·90	18·40	7·0	Rhyolite, many crystals of feldspar.
20. Ngongotaha, Rotorua ..	113	6·72	25·10	1·70	16·38	4·0	Spherulitic rhyolite, vesicular.
21. Athenree, 5 m. south of Waihi	152	1·24	12·71	3·20	18·30	7·0	Rhyolite traversed by minute crevices.
22. Matamata (Sayer's pit) ..	126	10·62	19·32	2·10	..	..	Soft white rhyolite; did not stand up to drill.
23. Rotorua Borough quarry ..	139	3·74	10·62	3·76	16·50	7·0	Grey rhyolite, partly spherulitic.
24. Te Ngae, Lake Rotorua ..	111	5·12	12·16	5·10	12·90	4·0	Silicified pumice sand.
25. Ruawai, Otamatea County, Kaipara	183	0·49	..	..	18·60	14·0	Diabase.
26. Donovan's quarry, Tokatoka	166	0·62	5·46	7·32	17·83	13·0	Altered diabase.
27. Cemetery quarry, Tokatoka	170	0·62	..	..	18·89	23·0	Altered basalt.
28. Mount William quarry, Weber	153	0·58	4·20	9·52	17·63	12·0	Calcareous sandstone.
29. Inglewood, No. 1 grade ..	174	0·94	3·70	10·81	18·94	15·0	Augite andesite.
30. Inglewood, No. 2 grade ..	156	3·18	14·60	2·70	16·87	6·0	Hornblende andesite.
31. Dreyer's rock, Mauriceville ..	154	0·81	22·40	1·80	15·87	5·0	Balanus limestone.
32. McGovern's pit, Mauriceville	147	1·43	25·86	1·58	14·40	3·5	Balanus limestone.
33. Horokiwi quarry, near Petone	164	0·05	3·80	10 53	19·11	19·0	Greywacke.
34. Wellington City quarry, Ngahauranga Gorge	170	0·05	3·08	13·00	19·16	36·0	Greywacke.
35. Green Knoll, Tokatoka ..	176	0·31	5·85	6·20	17·95	11·0	Altered diabase.
36. Green Hill quarry, Tokatoka	167	0·43	3·86	10·37	18·68	27·0	Hornblende andesite.
37. Morris' quarry, Karangahake	164	0·62	4·86	8·20	18 86	12·5	Hypersthene andesite.
38. Kummer's pit, Mauriceville..	165	0·50	5·13	7·78	..	..	Weathered greywacke.
39. Mount Bruce, Mauriceville ..	164	0·70	9·66	4·14	..	..	Weathered greywacke.
40. Rock Point, Mauriceville ..	164	0·50	7·64	5·23	18·00	7·0	Weathered greywacke.
41. Maungatuna quarry, Uawa..	156	2·59	5·08	7·80	15·42	9·0	Glauconitic limestone.
42. Mokau River quarry ..	151	5·30	13·20	3·03	14·43	10·5	Glauconitic limestone.
43. Waipukurau, 9 m. from Dannevirke	164	0·62	9·18	4·34	..	..	Glauconitic limestone.
44. Inglewood	176	0·75	6·02	6·64	18·01	10·5	Coarse-grained basalt.
45. Te Wera quarry, Taranaki ..	166	0·52	11·56	3·46	16·81	10·0	Shell limestone.
46. Te Arai, Mangawai ..	158	3·02	10·16	3·93	13·74	4·2	Argillite.
47. Carswell's quarry, Castlepoint	161	0·62	11·90	3·36	18·14	6·8	Fine-grained greywacke.
48. Repongaere quarry, Gisborne	162	1·87	5·20	7·69	16·84	12·5	Shell limestone.
49. Campbelltown, Southland ..	180	0·08	1·86	21·51	19·23	62·2	Altered basalt.
50. Campbelltown, Southland ..	181	0·02	1·76	22·70	19·20	55·5	Altered basalt tuff.
51. Motuhora quarry, Gisborne	165	0·34	3·84	10·42	18·43	19·5	Greywacke.
52. Oakley Creek, Auckland ..	177	1·16	4·62	8·66	18·84	19·5	Basalt.
53. Waitakarei, Auckland ..	161	1·18	6·46	6·19	15·60	11·5	Altered basalt.
54. Waiongona River, Taranaki	168	0·66	4·78	8·37	17·95	14·5	Andesite.

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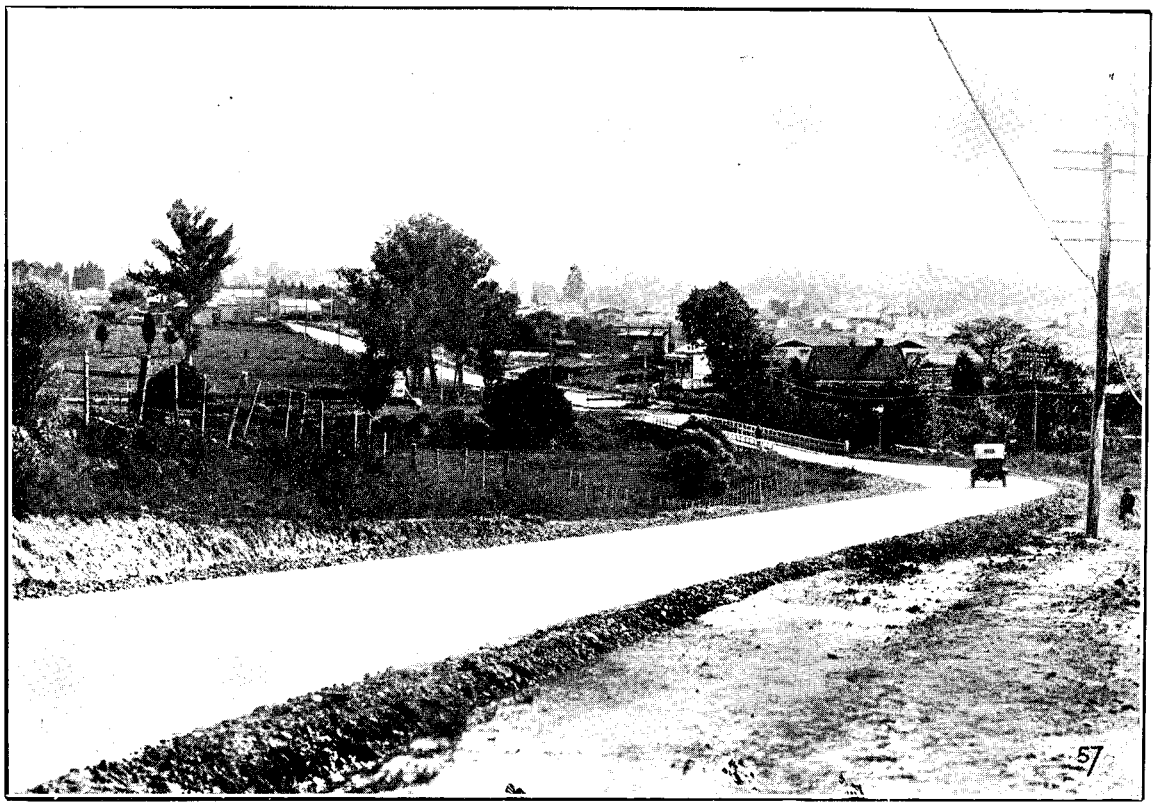
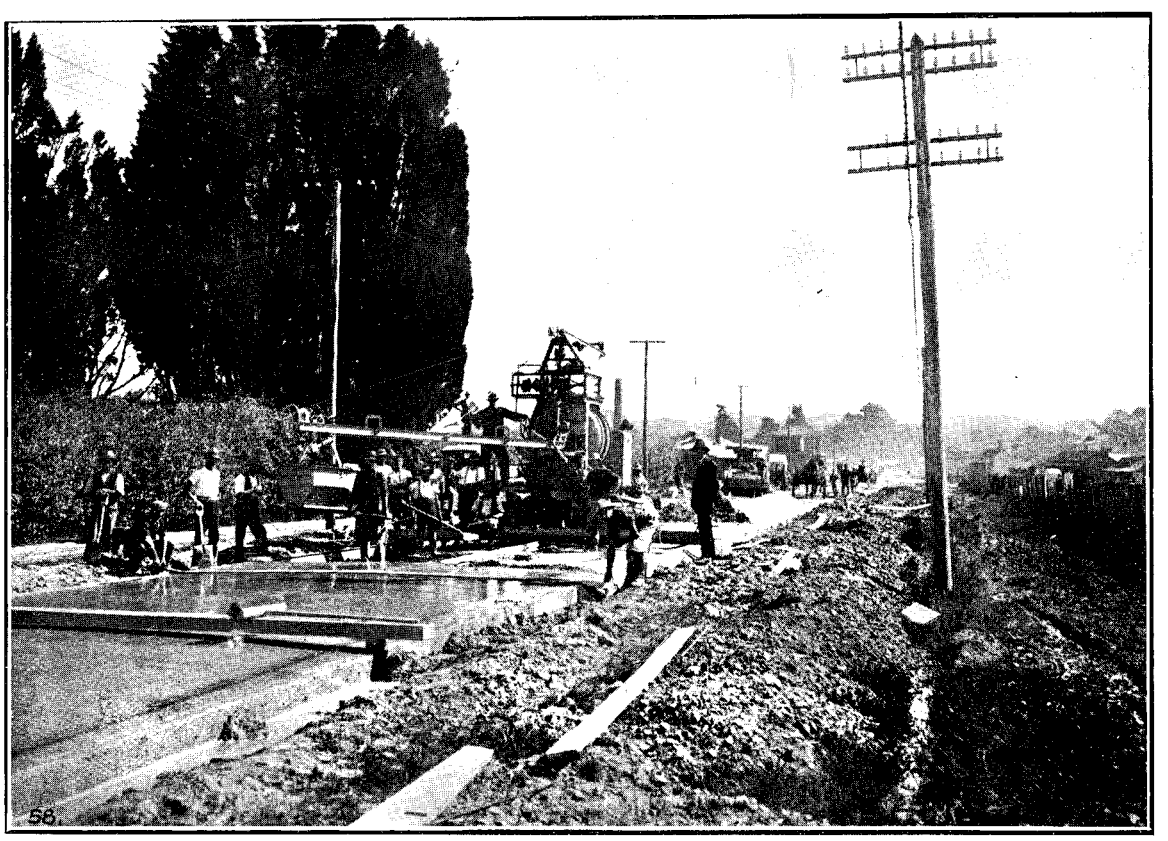
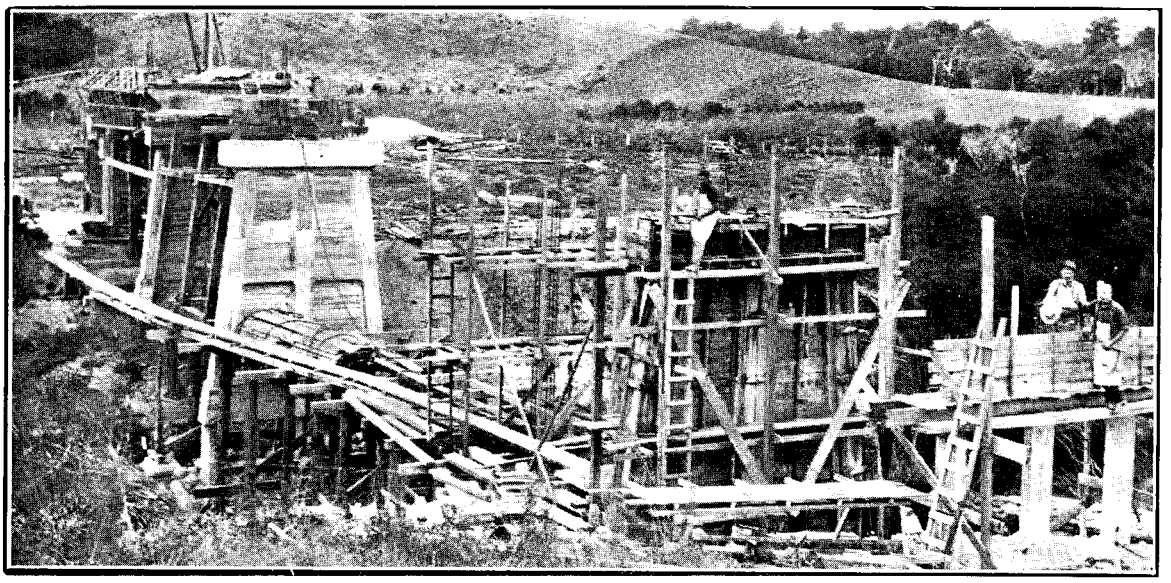


Auckland Helensville Main Highway, Avondale Section: Completed Concrete Paving.

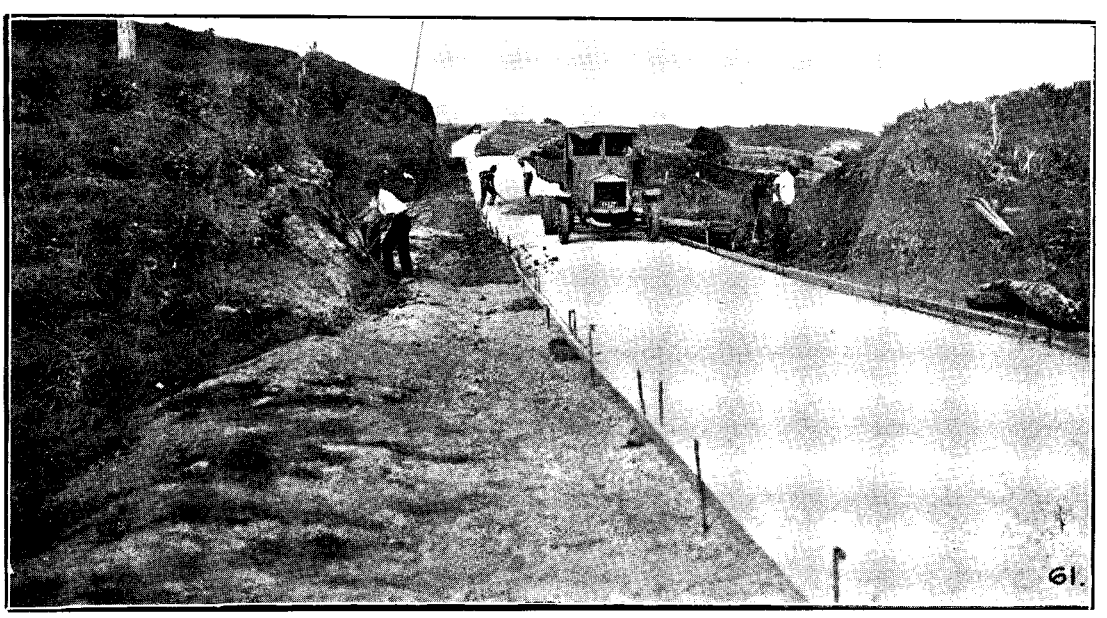


Auckland-Helensville Main Highway, New Lynn Section: Concrete-paving Plant.

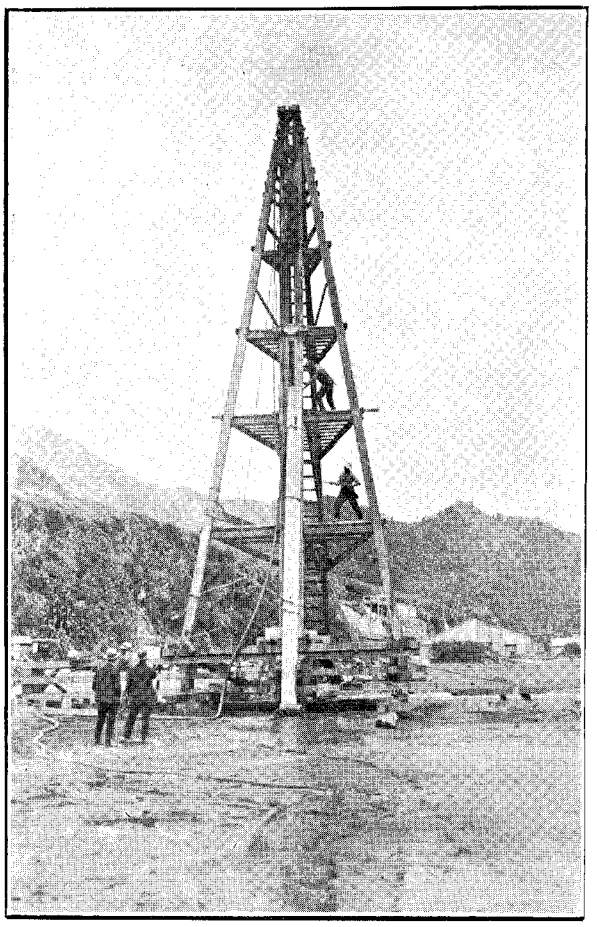


Waiwera–Mangawai Main Highway: Hoteo River Bridge under construction.

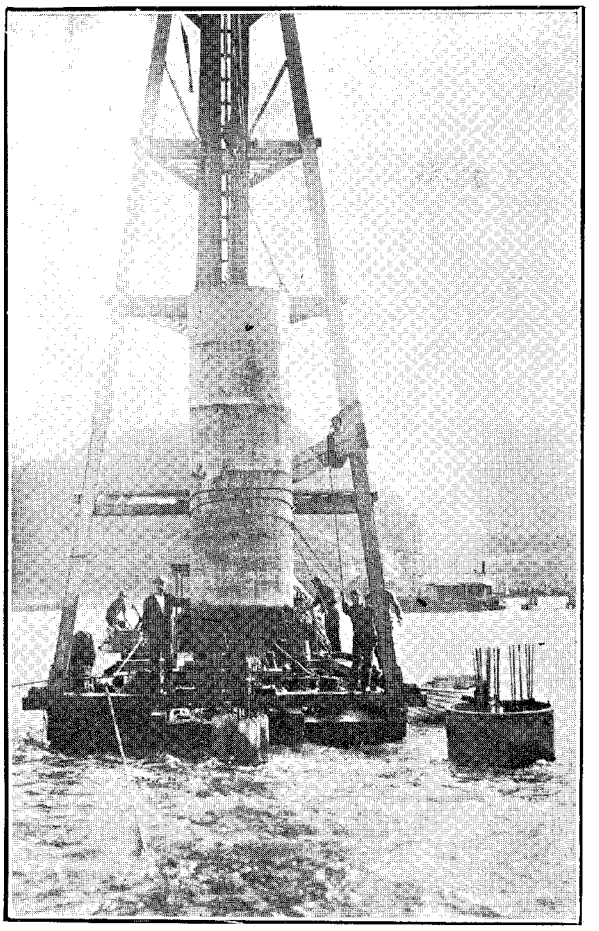
Auckland–Wellington (via Taranaki) Main Highway, Mount Wellington Section: Concrete Paving in progress.



Auckland–Wellington (via Taranaki) Main Highway, Tongaporutu–Mokau: Spreading Stone for Bituminous macadam Wearing-course.



Sinking Concrete Pile with Water-jet.

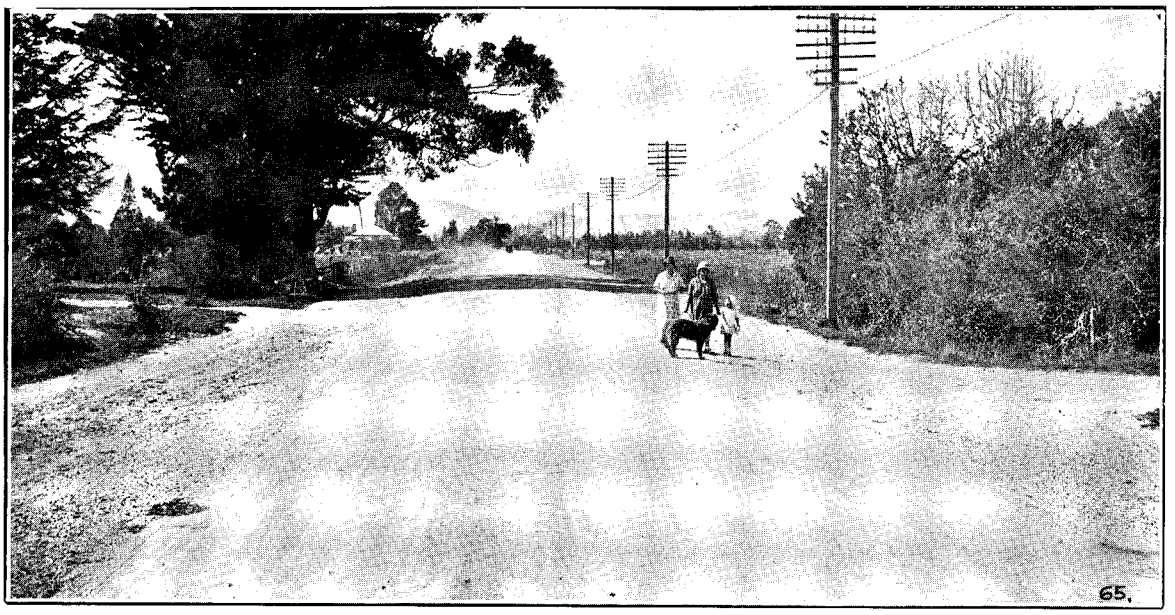


Lowering 5 ft. Diameter Concrete Casings over Piles.

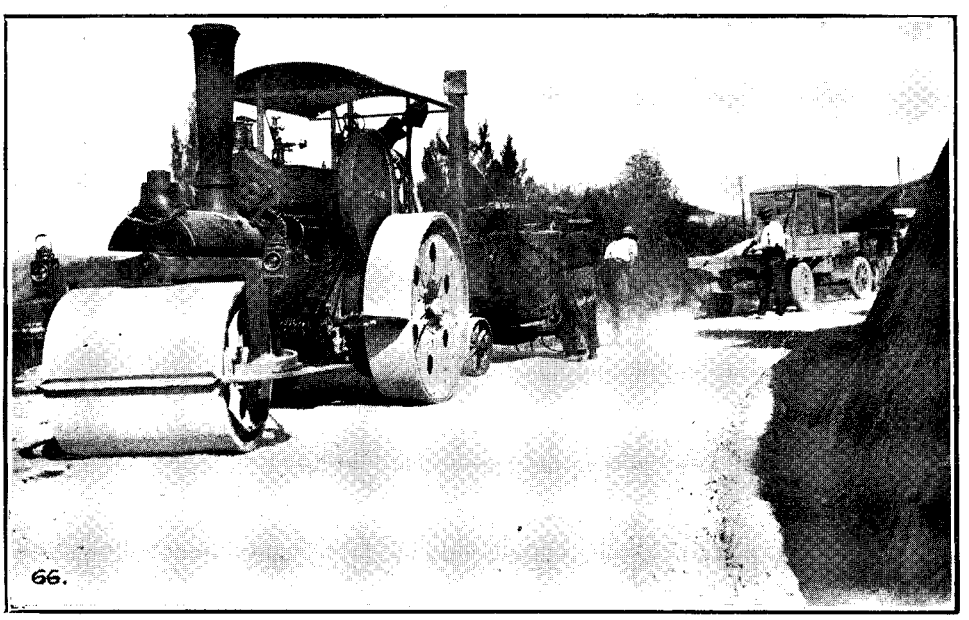
Auckland–Wellington (via Taranaki) Main Highway: Mokau Railway Bridge.

Gisborne–Wairoa (via Morere) Main Highway, Tarewa Section.

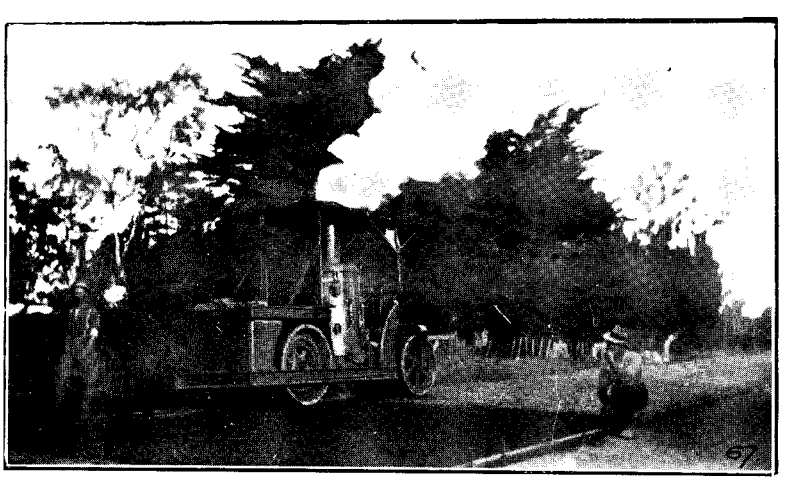
Stone is exceedingly scarce in this district. The view shows methods used to exploit small scattered deposits.



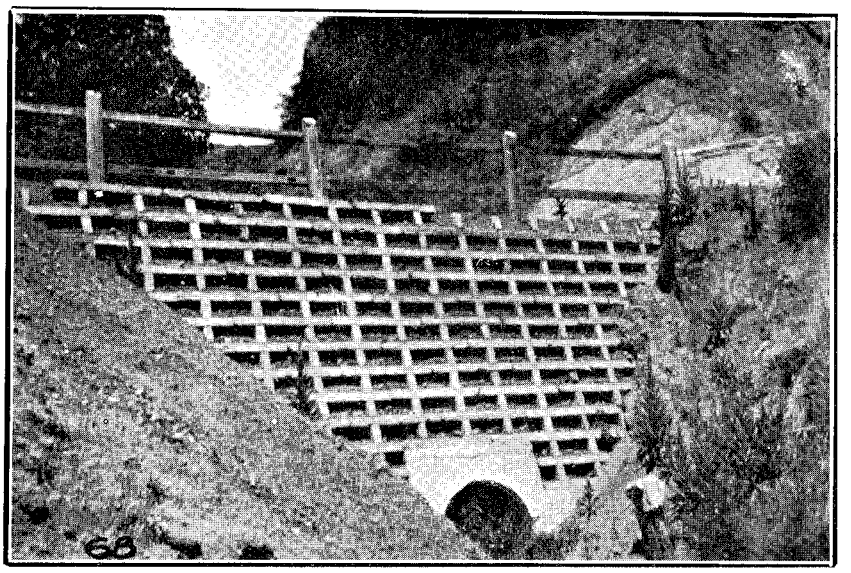
Gisborne–Wairoa (via Morere) Main Highway, Matawhero Section: Bituminous Macadam (Penetration).



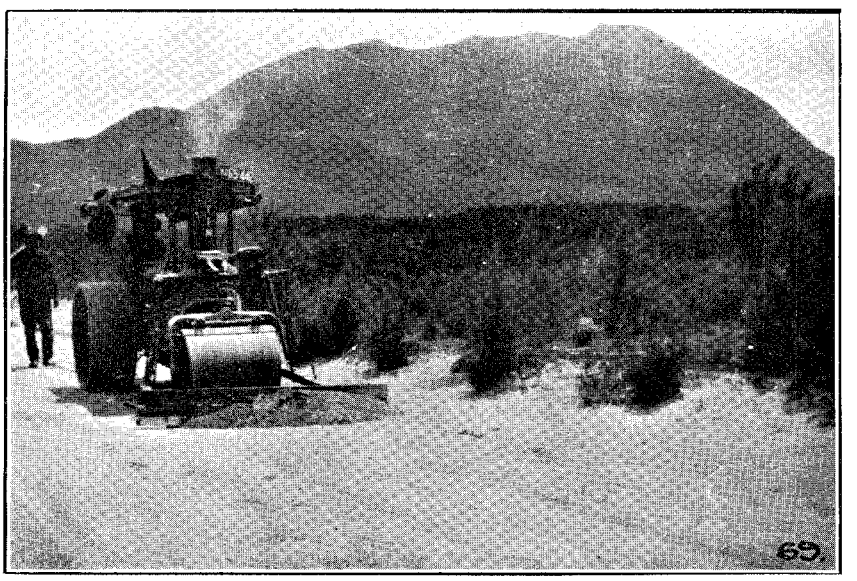
Gisborne–Wairoa (via Morere) Main Highway: Spraying Bituminous Penetration Course near Tarewa.



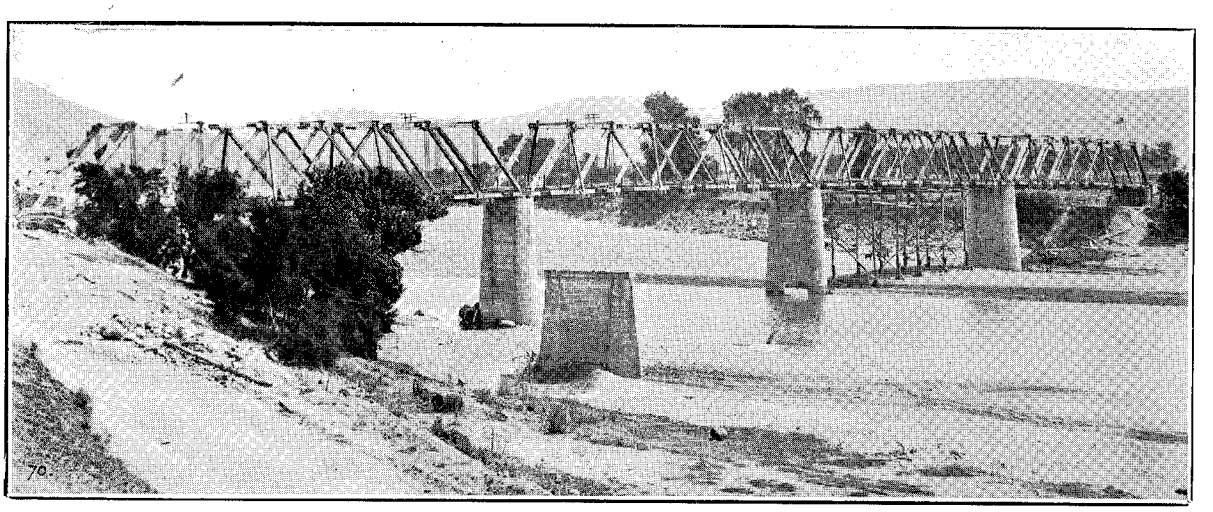
Havelock North – Fernhill Main Highway: Rolling Bituminous-concrete Pavement.



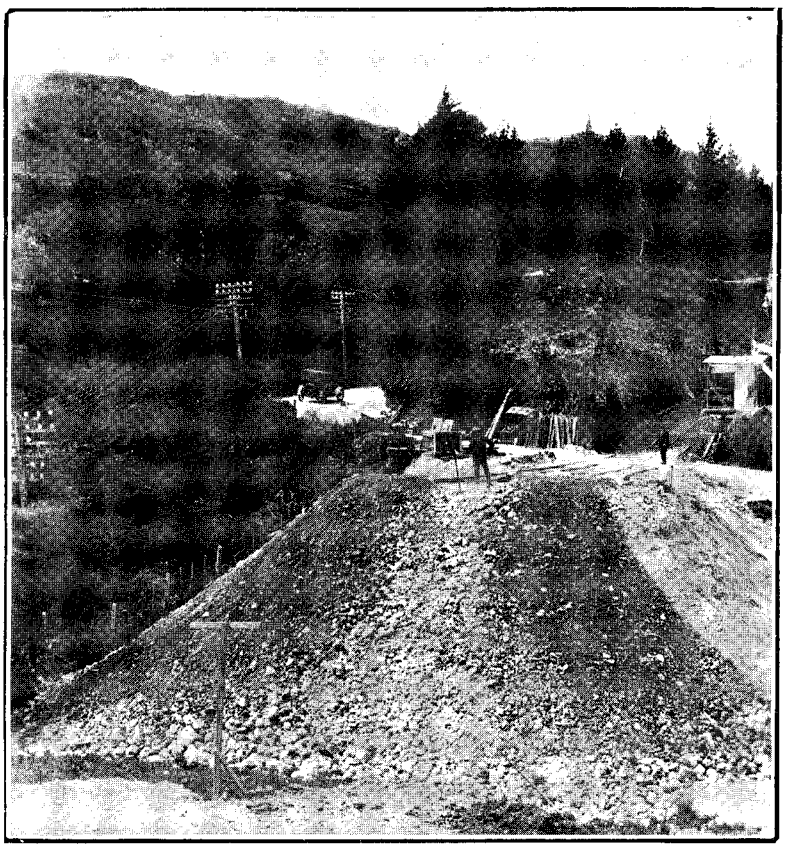
PETANE–TAUPO MAIN HIGHWAY: CULVERT AND CONCRETE CRIB RETAINING-WALL.



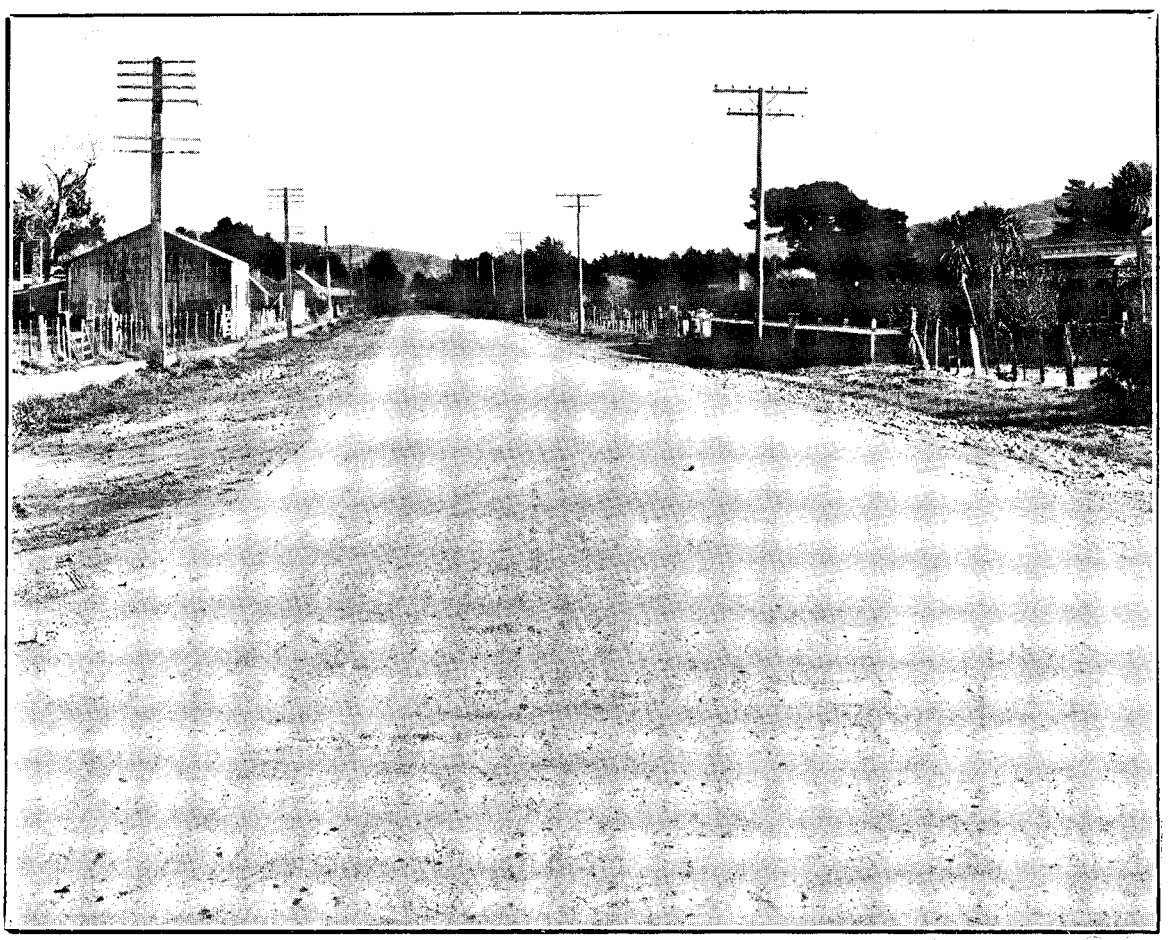
ROTORUA NAPIER MAIN HIGHWAY, TAUPO TO MOHAKA RIVER: SMALL ROLLER MAINTAINING PUMICE-SURFACE ROAD.



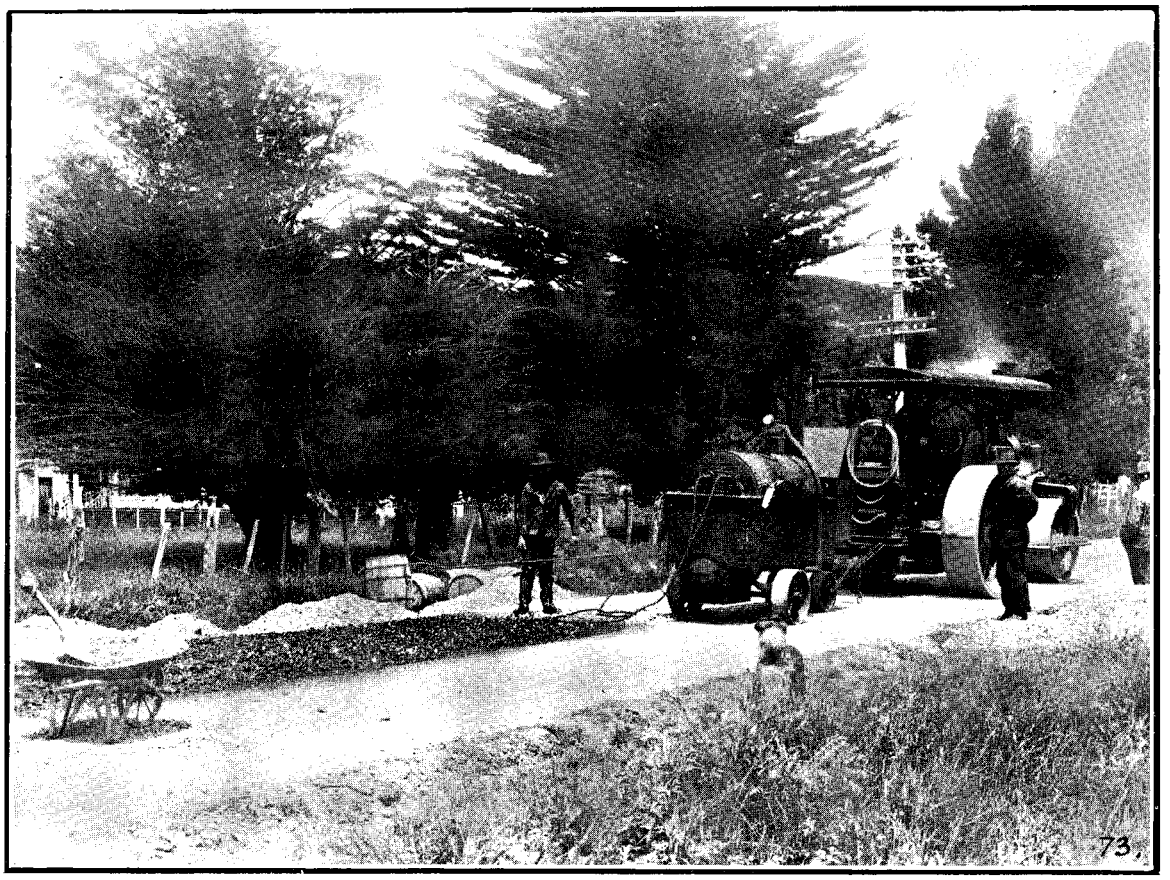
GISBORNE–OPOTIKI (VIA THE COAST) MAIN HIGHWAY: ROTOKAUTUKU BRIDGE.



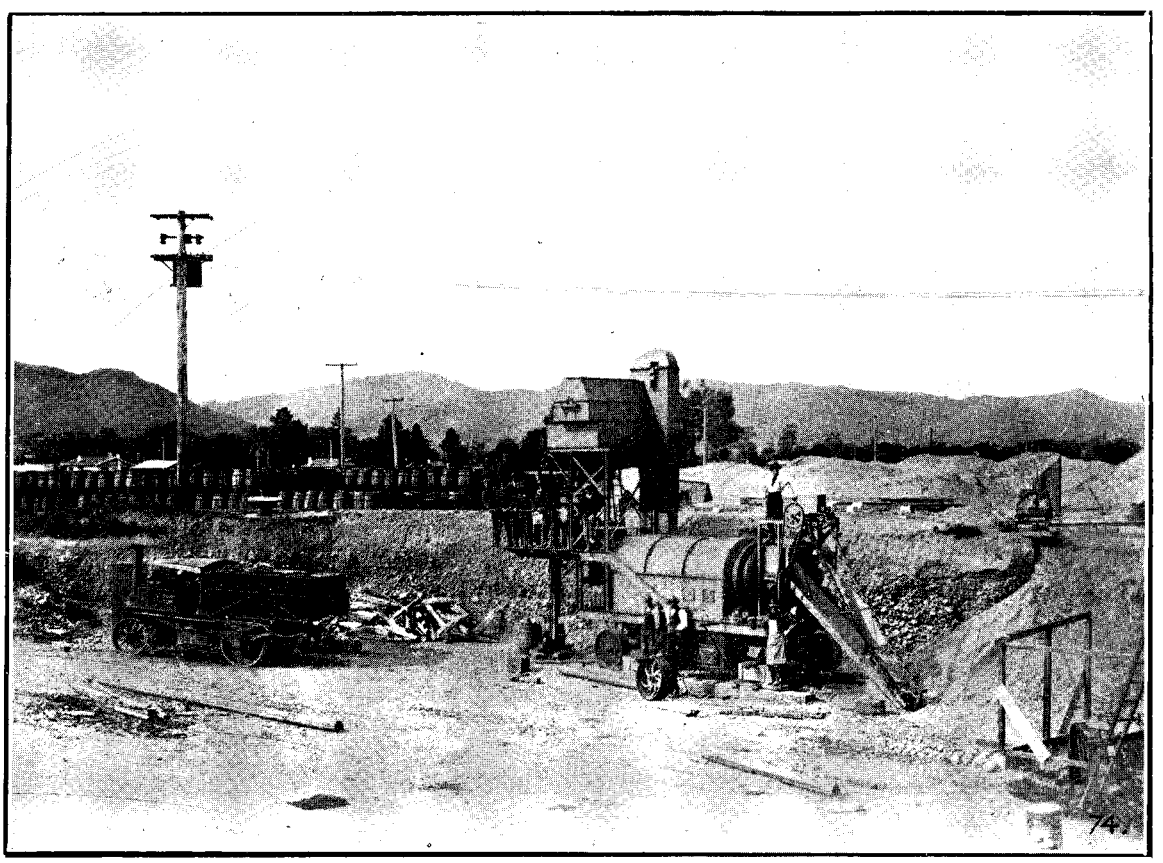
Wellington Napier (via Wairarapa) Main Highway: Cutting to improve Alignment.



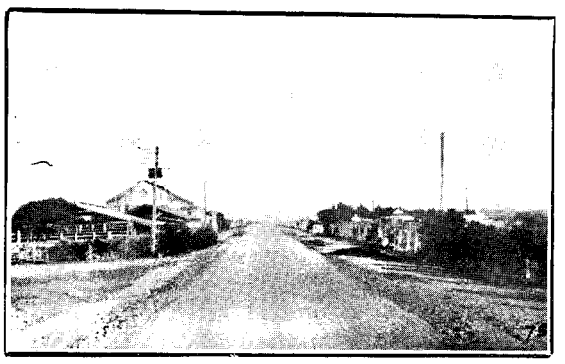
Wellington–Napier (via Wairarapa) Main Highway, Upper Hutt Section: Bituminous Concrete Pavement.



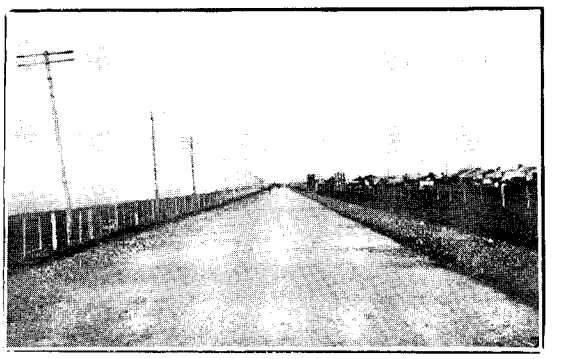
WELLINGTON NAPIER (VIA WAIRARAPA) MAIN HIGHWAY, AKATARAWA SECTION: CONSTRUCTION OF BITUMINOUS-MACADAM WEARING-SURFACE.



WELLINGTON–NAPIER (VIA WAIRARAPA) MAIN HIGHWAY, UPPER HUTT SECTION: BITUMINOUS-PAVING PLANT IN COURSE OF ERECTION.

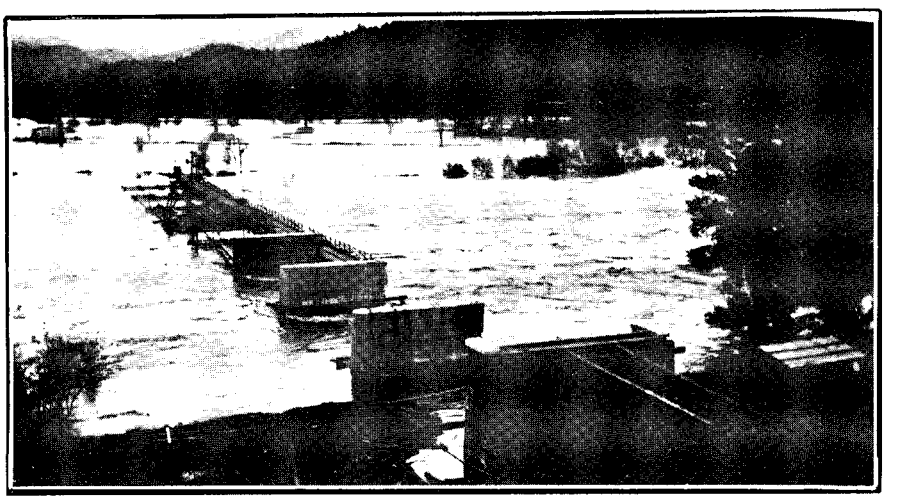


Bituminous-concrete Pavement near Awatoto.

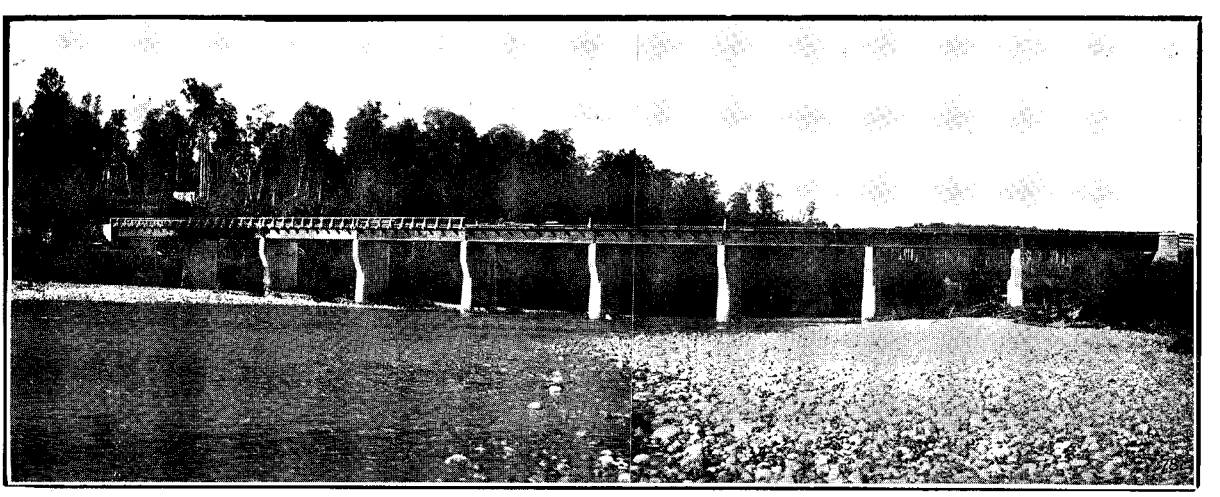


Concrete Pavement south from Napier Borough Boundary.

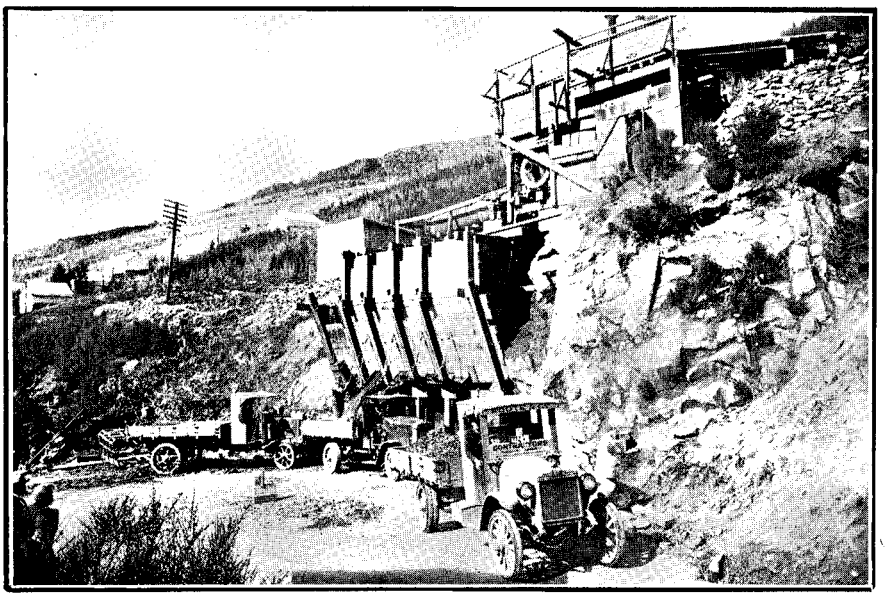
WELLINGTON–NAPIER (VIA WAIRARAPA) MAIN HIGHWAY.



WESTPORT–NELSON MAIN HIGHWAY: INANGAHUA JUNCTION BRIDGE—FLOOD DURING CONSTRUCTION.

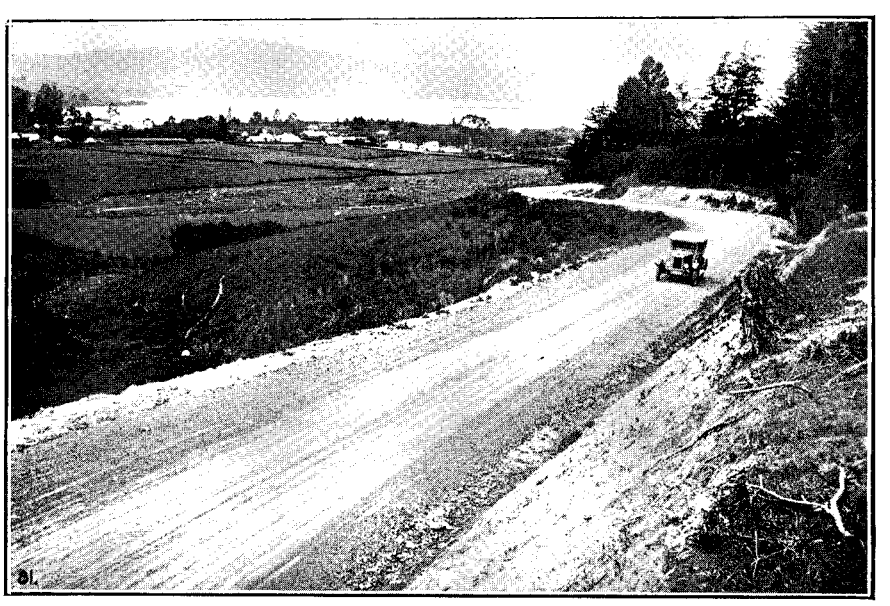


WESTPORT–NELSON MAIN HIGHWAY: INANGAHUA JUNCTION BRIDGE NEARING COMPLETION. WIDE PIERS PROVIDED FOR FUTURE RAILWAY-BRIDGE.



Crushing and Screening Plant.

Easing of Curves.



Water-bound Macadam before being Surface-treated with Bitumen.

CHRISTCHURCH–DUNEDIN MAIN HIGHWAY, WAITATI SECTION.