1935.

NEW ZEALAND.

PUBLIC WORKS STATEMENT

(BY THE HON. J. BITCHENER, MINISTER OF PUBLIC WORKS).

MR. SPEAKER,—

A public-works policy should be one that essentially aims at increasing the country's prosperity. However much we may be diverted from this purpose by the necessity for finding work for unemployed, or by restricted finance due to periods of severe depression such as we have been experiencing, this aim should never be lost sight of nor cease to be the main objective of a public-works policy.

I have been and am extremely apprehensive of undertaking works that do not show in a very large measure a proportionate return for the expenditure incurred, but I know this cannot always be fully obtained; in fact, to seek a full direct financial return for the expenditure of loan-money at the present time would simply mean that many public works would cease.

I have had many proposals submitted to me for works which cannot show anything like an adequate return for even a small proportion of their cost. Unless it can be shown that there is some indirect return, either social or financial, that could reasonably justify them I have thought it better to reject such proposals altogether.

On the other hand, there are now before me many projects which, though they cannot be shown to be fully productive, will yet give a financial return on a fair proportion of the expenditure involved. I would not hesitate to expend loan-money on such works in proportion to the returns produced therefrom, provided the balance of the expenditure required could be met from some source that would not necessitate an annual interest and sinking-fund burden on the future finances of the country. I disagree very strongly with any expenditure that cannot be expected to provide a reasonable return either direct or indirect and that leaves a lasting debt upon the country.

Generous assistance from the Unemployment Board's funds has made it possible to reduce the capital expenditure on many works to a payable point, and every new project is examined carefully in the light of what assistance can be found from the revenue of the Unemployment Board and of what amount can be justifiably charged to loan expenditure. This is the method which I am anxious to adopt, and intend to adopt as far as I possibly can. I realize that there is a wider view which takes into account the indirect social or financial benefits obtainable from loan expenditure, but this aspect must be looked upon with great caution, and the benefits must not be too remote.

A Committee of departmental officers has been investigating a programme of suitable works upon which to absorb a larger number of our unemployed. I believe they have, to a large extent, taken the same view as I have indicated above towards the methods to be adopted in selecting such works.

The public-works estimates, which have already been presented, provide sufficient money to go some way towards meeting the present demand for employment, but further works are required in order to ensure the placing of an appropriate number of men in full employment.

The Committee referred to above has submitted its first report, which has been approved by the Government, and contains a schedule of useful and necessary works on which some eight thousand men will be provided with employment at standard rates of pay. As the works will relieve unemployment to a marked degree, the Unemployment Board is assisting financially.

Provision for some of the proposed undertakings appears on the estimates already submitted to Parliament, and honourable members will be asked to grant by a rearrangement of votes, including in some cases additional items, the balance of the capital moneys required for this financial year when dealing with supplementary estimates.

The Government, recognizing the desirability of transferring men from rationed to full-time employment, has arranged for an immediate commencement to be made with some of the works, and the others will be started directly surveys and other necessary preliminaries have been completed.

The approved works include an extended small-farm scheme in the King-country by the salvaging of Crown securities; formation and metalling of settlement roads in the North Island, for which items appear on the public-works estimates and on which a total of thirteen hundred men will be placed; Ashburton irrigation scheme; Hoteo River (destruction and removal of willows); reclamation of tidal flat at the mouth of the Hutt River, conditionally on satisfactory terms being arranged with the Hutt River Board; extensions of the Kaipara Mud-flat reclamation and small-farms scheme; Ohinemuri River (raising of stop-banks and earthworks); Rotorua–Waikaremoana Road (widening and metalling); Great South Road, Westland (formation, metalling, and bridging between Weheka and Bruce Bay); accelerated buildings programme; aerodromes and emergency landing-grounds; elimination of level railway-crossings on main highways; and employment by the Railway Department of almost eleven hundred men on various works.

In considering and selecting for recommendation works which are capable of being put under way immediately two factors have been taken into account. First, the benefit likely to be derived from the work either by way of direct financial return or indirect financial or social benefit; and, second, the usefulness of the work as a means of providing employment for workers at present unemployed at standard rates of pay.

Special importance has been attached to the second of these principles in that providing the loan expenditure necessary apart from contributions from the unemployment funds appears justified. Emphasis has been placed upon—

(*a*) The volume of labour which would be encouraged by a given amount of loan expenditure;

(*b*) The location of the work in relation to the severity of the unemployment; and

(*c*) The type of work in relation to the occupation of unemployed workers in the locality.

At a time like the present, the use of unemployment funds in this way is fully justified. Not only does it provide a means of assisting the unemployed through the provision of work at standard rates of pay, but it also enables work to be directed in ways which would not otherwise be possible. As long as the expenditure of loan-moneys is reasonably justified by direct or indirect returns labour is utilized which would otherwise be wasted and thereby involve a direct social loss. In addition, it is clearly desirable to avoid the deterioration in morale occasioned by prolonged enforced idleness by providing unemployed men with useful occupations.

So far the attention of the Committee has been directed to the consideration of work capable of being put into operation immediately.

Another function of the Committee is to collect and arrange in convenient form information on which a long-range programme of public works covering several years may be based.

This does not necessarily involve an increase in the total of public works, but it should enable the public-works programme to be more closely related to the general economic position. In addition, it will enable preliminary surveys to be made so that works may be commenced just when required, and will assist the Unemployment Board in planning its finance.

I cannot stress too strenuously the advantages to be obtained by employing men on a full-time basis instead of on a rationed system: not only does it result in the men receiving a more reasonable wage and settling down contentedly to their work, but it means a real economy to the Government because the men can be employed upon a contract system that ensures a fair return on both sides.

But to ask men to work industriously on this system I believe a reasonably good rate of wages should be offered, and I therefore view with much satisfaction the decision to increase the rate of wages to 12s. per day for married men. I anticipate a much better return for the expenditure incurred with this increase in wages.

Experience in the past has shown that there has been considerable difficulty in persuading unemployed workers engaged on No. 5 schemes or in receipt of sustenance in the towns to accept employment in the country. In fact, there has been a tendency for them to move from the country into the towns.

It is hoped that the increase in the standard rates of pay from 10s. 6d. to 12s. will provide an additional incentive and encourage men to go where useful works can be undertaken.

The increase in the standard rate, however, raises the problem that farm labour may be attracted into public works. The Government is fully alive to this problem, and it is the intention of the Unemployment Board to take action which it is hoped will meet this difficulty.

I do not intend to traverse in these general remarks the results or scope of public-works expenditure for the past year, the details of which I have given under the different headings in my Statement, and which may also be studied in the various reports attached, but I would like to draw attention to the increasing proportion of expenditure by the Public Works Department from revenue in contradistinction to the expenditure from loan-money during the last five years. Revenue from the Main Highways Fund, unemployment-tax funds, and hydro-electric revenue account in a great measure for this change, and it is well to note this when considering the comparatively large number of approximately eleven thousand men employed by the Department. Ten years ago the expenditure of loan-money by the Public Works Department represented about 89 per cent. of the cost of works, whereas in the year just past only 32 per cent. of the Department's expenditure was from loan-money. This change is due, of course, to a great extent to the financing of constructional work from current revenue, though a change also in the nature of the Department's activities accounts a good deal for the alteration.

The amount of work now carried out by the Department has practically reached that undertaken by it before the years of depression. Moreover, it is of a more varied nature, and the staff is having some difficulty in keeping pace with the survey and design of new works. The proposals of the Departmental Committee for increased absorption of men on works will considerably accentuate this difficulty, but I have no doubt that my Department can meet the situation if some increase in staff is provided.

In my previous Statements I have divided public works estimated expenditure for the year into four main headings. A division on these broad lines gives a comprehensive view of the works proposed. To lines of communication there must

now be added the construction of aerodromes and emergency landing-grounds for aeroplanes. The following gives this year's proposed expenditure under each heading :—

	£
(1) Construction and improvement to lines of communication (railways, highways, roads, harbours, and aerodromes)	2,730,000
(2) Land-development, including settlement of unemployed workers	819,500
(3) Development of electric power	621,500
(4) Erection of public buildings	561,000

As already announced by the Right Hon. the Minister of Finance, the amount of revenue to be made available for highways purposes during the current year will be augmented by virtue of the fact that it is not proposed to retain any portion of such revenues in the Consolidated Fund for general purposes. This will mean that less loan-money will be absorbed for highways construction. With additional funds it is hoped that it will be possible this year for the Main Highways Board to prosecute many works which necessarily had to be deferred during the recent years of financial stringency.

On the recommendation of the Public Accounts Committee of this House, the Government decided that the construction of the tourist road to Milford Sound should be a charge against the Main Highways Construction Fund instead of against the " Roads " vote of the Public Works Fund. The recommendation arose from the fact that practically all the revenue receivable as a result of the road construction will be from increased consumption of motor-spirits by motor traffic using the road. Under these circumstances, the Government adopted the Committee's suggestion and the road was added to the highway system on the 21st May, 1935, from which date construction costs have been met from highways funds with consequent relief of the Public Works Fund as regards loan charges and of the Consolidated Fund for interest and sinking fund.

Extension of hydro-electric power made a considerable advancement last year with the completion of the Waitaki Power-station, and this year will see continued progress in this direction with the construction of additions to the Arapuni Power-station.

The erection of public buildings is now receiving a good deal of attention, and I am anxious that careful consideration be given to suitable proposals in this direction. It was quite obvious that not only was considerable congestion taking place in the present public buildings in Wellington and Auckland, but that the Government was losing money by the necessity for renting private buildings for public purposes. It has therefore been decided to erect new public buildings in these two cities, and plans are now being prepared for suitable buildings, both of which will be of considerable magnitude.

The policy of the construction of a chain of emergency landing-grounds for aeroplanes still continues to receive the attention of the Government, and, as indicated in more detail in a later part of this Statement, considerable progress is now being made in this connection. The question of up-to-date ground organization in view of the licensing of commercial air services now becomes a matter of great importance, and emergency landing-grounds form a vital part of such an organization. I am pleased to say that, with the assistance of unemployment-tax funds, finance for these purposes is now being made available.

Considerable activity is now taking place in land improvement and development, and the Department's work in this direction is shown in my Statement under the headings of Irrigation, Land-improvement, and Settlement of Unemployed Workers.

The total net expenditure under all votes proposed this year in the public-works estimates is £5,200,000 (which includes £1,310,000 from Main Highways Revenue Fund and £450,000 from Main Highways Construction Fund), as against an appropriation last year of £4,731,654, which included £1,120,000 from Main Highways Revenue Fund and £510,000 from Main Highways Construction Fund.

I would like to take this opportunity of placing on record the extreme readiness and willingness with which my officers have met the demands of a considerably increased programme of public works within the last few months.

FINANCE.

The payments and receipts for the year 1934–35, and accumulated totals, in connection with the Public Works Fund and other associated votes and accounts are shown in the tabulation below. The gross expenditure amounted to £5,563,883, of which £932,136 was expended by other Government Departments; the recoveries in reduction of expenditure amounted to £1,106,882, of which £219,407 was recovered by other Departments; the net expenditure totalled £4,457,001, of which £712,729 was expended by other Departments. In addition the Department collected £977,009 from sales of electricity and from other forms of revenue.

Class of Work.	Expenditure, 1934–35.			Total Net Expenditure to 31st March, 1935.
	Gross.	Recoveries.	Net.	
EXPENDITURE, PUBLIC WORKS FUND.				
Railways—	£	£	£	£
New construction	7,675	37,048	*Cr.* 29,373	38,840,036
Improvements and additions to open lines	184,615	29,642	154,973	17,618,985
Roads	524,332	152,759	371,573	22,542,180*
Public buildings	307,367	20,399	286,968	11,722,278†
Lighthouses, harbour-works, and harbour defences	8,015	1,413	6,602	1,319,127
Tourist and health resorts	13,410	530	12,880	703,473
Telegraph extension	187,932	51,999	135,933	11,560,538
Departmental	216,568	140,082	76,486	3,020,723
Irrigation, water-supply, and drainage	117,555	26,314	91,241	1,217,765
Lands-improvement	148,433	66,341	82,092	891,133
Swamp land drainage	25,255	10,236	15,019	43,258
Settlement of unemployed workers	251,441	29,132	222,309	513,140
Native-land settlement	230,273	104,605	125,668	295,561
Plant, material, and services	203,533	214,046	*Cr.* 10,513	118,967‡
Cost and discount, raising loans, &c.	600	..	600	3,828,307
Unauthorized	30,395	30,273	122	..
Closed accounts (for more detail see Table 1)	..	..	..	7,996,549
Totals, General Purposes Account	2,457,399	914,819	1,542,580	122,232,020§
Electric Supply Account (previously Aid to Water-power Works Account)—				
Construction (expenditure as per accounts in Table 5)	382,963	..	382,963	12,919,154
Working-expenses (expenditure as per accounts in Table 5)	156,010	..	156,010	..
Waihou and Ohinemuri Rivers Improvement Account	..	..	..	709,740‖
Totals, Public Works Fund	2,996,372	914,819	2,081,553	135,860,914
EXPENDITURE, OTHER VOTES AND ACCOUNTS.				
Main Highways Account—				
Revenue Fund—				
Annual appropriation (maintenance, interest and loan redemption)	1,247,657	88,189	1,159,468¶	..
Permanent appropriation (rate subsidies, interest on transfer from Public Works Fund, &c.)	448,084	..	448,084	..
Construction Fund—				
Annual appropriation	371,824	54,832	316,992¶	5,550,471**
Unauthorized	900	..	900	..
Consolidated Fund—				
Maintenance, public buildings, roads, &c.	140,887	49,042	91,845	..
Closed accounts (for details see Public Works Statement, 1933)	..	..	..	18,955,387
Unemployment Fund (expenditure by Public Works Department): Amounts not included above	358,159	..	358,159	..
Totals, Other votes and accounts	2,567,511	192,063	2,375,448	24,505,858
Grand total of expenditure, Public Works Fund and other votes and accounts for the year ended 31st March, 1935	5,563,883	1,106,882	4,457,001	..
Capital expenditure to date	..	..	..	160,366,772

* Includes £4,500 expended under section 16, subsection (1), Native Land Amendment and Native Land Claims Adjustment Act, 1923. † Excludes expenditure on Workers' Dwellings totalling £319,918 now transferred to State Advances Account. ‡ Includes £5,763 previously expended under Vote—Quarries (acquisition and operation), and *Cr.* £3,875 previously expended under Vote—Timber-supply and sawmills. § Does not include expenditure under Ellesmere Land Drainage Act, 1905, or £1,226,000 transferred to and included in Main Highways Construction Fund. ‖ Excludes interest and loan charges. ¶ For annual income and expenditure accounts, see Appendix E. ** As per accounts in Appendix E.

Class of Work.	Recoveries, 1934–35.
Receipts,* Public Works Department.	£
Ordinary Revenue Account, Irrigation (receipts for year)	19,687
Electric Supply Account (sales of energy, miscellaneous receipts, &c.): Receipts for year ..	941,194
Main Highways Revenue Fund (repayment of advances, &c., and interest): Receipts for year ..	16,128
Total receipts	977,009

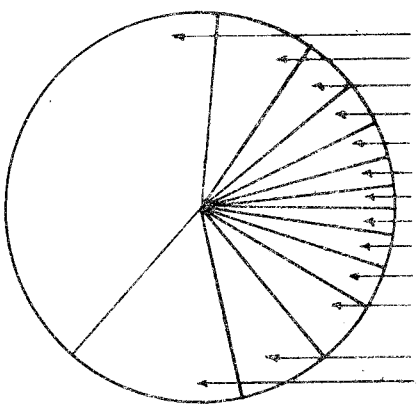
Summary.

—	Public Works Department.	Other Departments.	Total.
	£	£	£
Gross expenditure	4,631,747	932,136	5,563,883
Recoveries and receipts	1,864,484	219,407	2,083,891

* Excludes motor-spirits tax, registration fees, &c., collected by other Departments, also other small registration fees, &c.

Of the net payments totalling £4,457,001 shown above, £2,213,566 may be regarded as expended from loan-moneys and £2,204,807 as expended from annual taxation.

In diagrammatic form the ratio which the various classes bear to the whole is shown below. It should be noted that the figures are gross—that is, before deducting recoveries, which include subsidies from the Unemployment Fund and similar amounts which, if deducted, would detract from the true portrayal of activities.



	£		Per Cent.
Roads, including main highways	2,592,797	=	39·64
Hydro-electric (construction and working expenses)	538,973	=	8·24
Public buildings, including schools	307,367	=	4·70
Settlement of unemployed workers	251,441	=	3·84
Railway construction, improvements, and additions	192,290	=	2·94
Lands improvement	148,433	=	2·27
Irrigation	117,555	=	1·80
Public buildings, roads, &c. (maintenance) ..	140,887	=	2·15
Telegraph extension	187,932	=	2·87
Native-land settlement	230,273	=	3·52
Unemployment Board (expenditure by Public Works Department)	358,159	=	5·48
Miscellaneous	497,776	=	7·61
Revenue (receipts)	977,009	=	14·94
Total revenue and gross expenditure for year	£6,540,892		100·00

In regard to the ways and means of the General Purposes Account of the Public Works Fund the position is as under :—

	£	£
Balance available, 1st April, 1934		825,960
Add funds received during the year—		
Finance Act, 1930 (No. 2), section 2	1,386,910	
Miscellaneous	523,571	
		1,910,481
		2,736,441
Deduct expenditure during 1934–35—		
Under annual appropriations ..	1,541,980	
Under permanent appropriations ..	1,130	
		1,543,110
Balance available, 31st March, 1935 ..		£1,193,331

The estimated net expenditure under the General Purposes Account for the current financial year, 1935–36, is £2,818,500, and arrangements are being made with the Minister of Finance to provide the necessary funds. This is the amount shown on the Public Works estimates, which also show an estimated net expenditure of £621,500 from the Electric Supply Account and £1,760,000 from the Main Highways Account, a total for all these accounts of £5,200,000.

MAIN HIGHWAYS.

The activities of the Main Highways Board during the past year are more particularly described in the Board's Annual Report accompanying this Statement.

It is of interest to note that last year the expenditure from highways funds on actual works amounted to £385,000 more than in the preceding year.

The maintenance expenditure throughout the entire highways system averaged £100·3 per mile per annum, compared with £78·6 for the year 1933–34.

Special attention has been given to the maintenance of main highways, a feature which the Board has stressed from its inception, and a matter which must always be regarded as of paramount importance by all roading authorities.

Wherever possible, steps are taken to reduce future maintenance costs. For example, the Board has adopted the practice of renewing and constructing bridges in permanent materials, preferably in reinforced concrete, on which latter type of structure maintenance costs are relatively small indeed.

The extension of dustless surfacing means the preservation of the foundations of a greater proportion of our main highways, with consequent savings in maintenance, because road crusts do not require renewal. In addition, travelling conditions for highway users are much improved, while property-owners are relieved of a nuisance which deteriorates our primary products and is often detrimental to stock.

During the year 1934–35, 204 miles of highway were paved for the first time, and at the end of the financial year 14 per cent. of the total main highways had dustless surfaces.

It is gratifying to be able to report that, with the approval of the Government, arrangements have been made whereby a definite programme for the elimination of level railway crossings on main highways is to be financed between the Main Highways Board, the Unemployment Board, and the Railways Board. The Main Highways Board has already commenced engineering investigations of a number of crossings with a view to framing proposals which can be commenced in the early future. In spite of the many difficult problems which will have to be overcome, I am confident that the active co-operation displayed by these Boards will result in a number of dangerous crossings being made safe for road traffic in the very early future. The programme which has been arranged will extend over the next three years, during which period extensive improvements should be effected.

The Board has continued to substantially assist local authorities in financing necessary highways works. It is obvious that in the absence of such assistance local authorities would not be in a position to maintain or develop the primary roads of the Dominion sufficient for modern requirements.

For example, the renewal of large structures such as the Balclutha Traffic Bridge and the Fitzherbert Bridge, both of which cost in the vicinity of £40,000, would have been impossible but for the monetary aid extended by the Government through the highways fund.

The Highways Board's proposals for the current year provide for additional dustless surfacing, as distinct from maintenance surfacing, and the renewal of numerous bridges which are decayed or obsolete, while the improvement of some sections which are dangerous to traffic and expensive to maintain will receive attention.

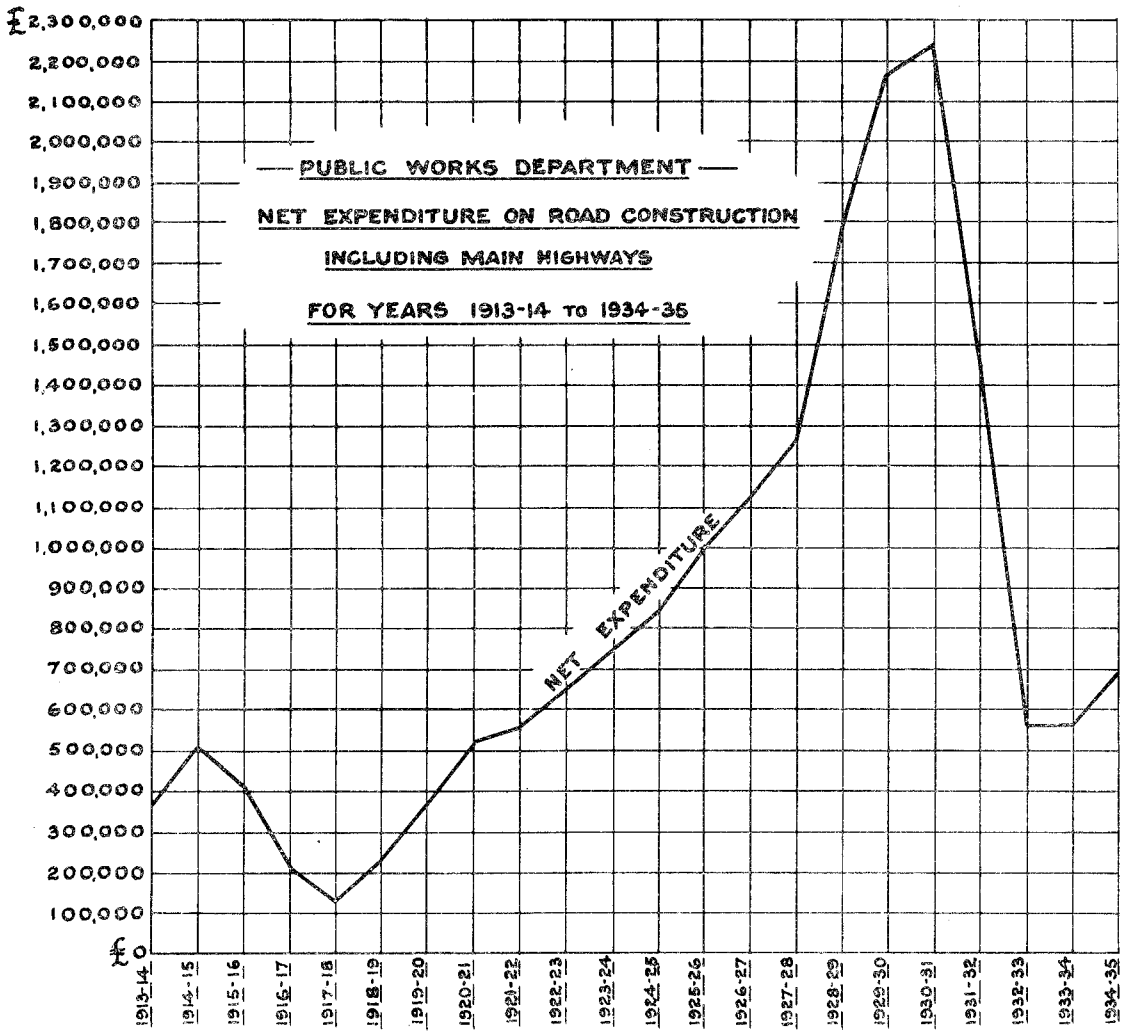
ROAD CONSTRUCTION AND METALLING.

The expenditure from capital funds on this class of work (£688,565) shows an increase of £136,615 over last year's figures (£551,950). The expenditure on roads other than main highways was £371,573 and on main highways £316,992, compared with £359,671 and £192,279 respectively.

Roading, even if main highways are disregarded, is still a major public-works activity. When framing the estimates for the present and two previous years preference has been given to metalling of existing settlement roads, although, of course, provision has had to be made for construction of roads, including bridges, to new settlements and older localities without road access. Last year approximately 303 miles of dray-road were reformed and/or formed by my Department

and the various local bodies under subsidy from the Public Works Fund, and, in addition, approximately 714 miles were metalled. The figures for the previous year were 242 miles reformed and/or formed and 578 miles metalled. The benefit to the country, and particularly to the farming community, of this commendable achievement cannot be overestimated, and doubtless the provision of essential all-weather access has encouraged and assisted numerous settlers in outlying districts to carry on during the period of low prices of primary products, besides making their environment more congenial through not having to negotiate almost impassable clay roads in winter.

The rise and fall of expenditure over the last twenty years is illustrated by graph hereunder.



HYDRO-ELECTRIC DEVELOPMENT.

Results for the year under review continue to show increased activity in the electrical supply business of the Department which, to date, represents the capital investment of £12,903,410.

The outstanding event of the year was the completion of Waitaki Power-station, which added a further 30,000 kw. of active generating capacity to the South Island System, with provision for the installation of an additional 45,000 kw. as demands for power increase. This station was officially opened by Lord Bledisloe on 27th October, 1934, and was placed in commercial operation as from 1st January, 1935.

The 110 kv. transmission line from Waitaki to Dunedin was also completed, and Dunedin City Corporation has commenced taking supply under its contract with the Department. This contract has already demonstrated its value to Dunedin on the occasion of a recent interruption to the major supply from Waipori.

The main activity in the North Island has centred around the enlarging of Arapuni Power-station to its full size to accommodate four additional generators, two of which, each rated at 24,000 kv.a., are now on order. Construction work has been commenced in connection with the 50 kv. transmission line from Henderson to give supply to North Auckland District, and plans are being prepared for the extension of the 110 kv. transmission line from Masterton to Melling, thus providing a ring-main system for Wellington District. The main office for Wellington District, which has been located at Shannon since 1923, has recently been moved to new premises erected for the Department in Palmerston North.

At Waikaremoana investigations have been started to explore the possibilities of the more effective control of the water from the Onepoto outlet, and, if satisfactory, a major work will be commenced in connection with the further development of this scheme.

With the completion of the 110 kv. transmission line connecting Arapuni with the southern portion of the North Island System the financial and operating statistics for each of the North Island schemes have been amalgamated, and, commencing with this year, will in future be published under the heading of the North Island Electric-power System.

Similarly, with the completion of Waitaki and its inter-connection with Lake Coleridge, the financial and operating statistics hitherto published under the heading of Lake Coleridge Electric-power System now include those associated with Waitaki Station, and, commencing with this year, will in future be published under the heading of the South Island Electric-power System.

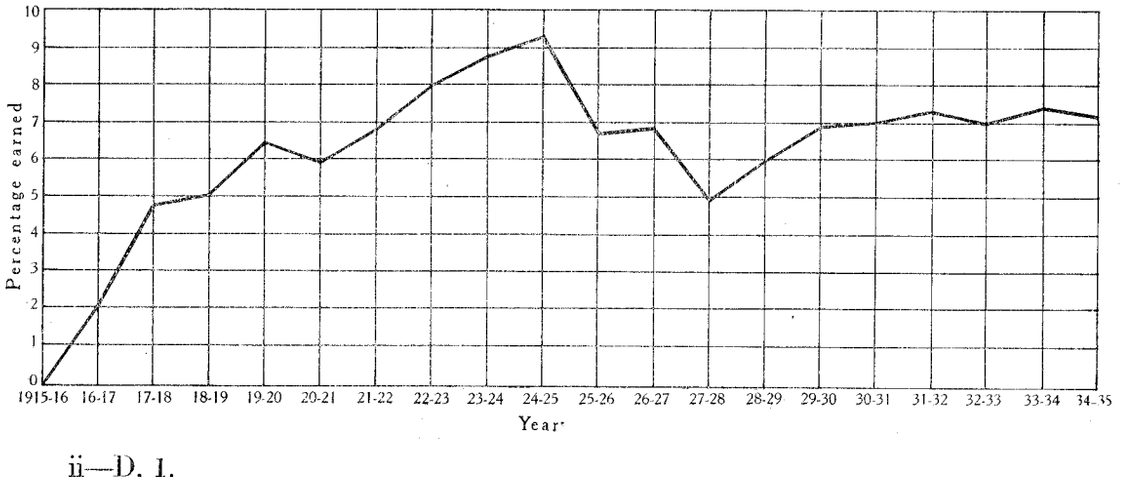
The year's operations are summarized in the following table, and a comparison of the percentage earned on operating capital over a period of years is shown on the graph below.

It is anticipated that owing to the substantial addition to operating capital for the South Island System, which will appear in next year's figures, the percentage earned will tend to show, for a year or two, a decrease from that pertaining up to the present. This anticipation can be explained by the fact that as Waitaki did not come into commission until January, 1935, the interest on the capital associated with its operation for the year ending 31st March, 1935, is shown for three months only, and depreciation for twelve months, but for each succeeding year interest and depreciation charges will be both brought to account for the full twelve months.

PERCENTAGE EARNED ON OPERATING CAPITAL AFTER PAYING WORKING-EXPENSES.

——	Average Operating Capital.	Gross Revenue.	Working-expenses.	Net Balance.	Percentage of Net Balance to Operating Capital.
	£	£	£	£	Per Cent.
North Island System	8,350,506	712,766	120,927	591,839	7·087
South Island System	2,577,083	228,097	35,083	193,014	7·490
Totals	10,927,589	940,863	156,010	784,853	7·182

PERCENTAGE EARNED ON OPERATING CAPITAL AFTER PAYING WORKING-EXPENSES.



The State Supply of Electrical Energy Act requires that each scheme, after paying net working-expenses, shall be charged with interest on the capital in operation and with depreciation at the rate of 2 per cent. on the capital invested in depreciable assets. It also requires that out of profits remaining the schemes shall pay 1 per cent. to a sinking fund and any further balance to a general reserve fund.

As a result of the amalgamations previously outlined, the statutory depreciation charge of 2 per cent. is now payable on the combined assets, and, as a consequence, this year's annual depreciation charges for each Island show a substantial increase over those of previous years.

For some time prior to the amalgamations two of the individual schemes—namely, Mangahao-Waikaremoana and Lake Coleridge—had each reached the 12½ per cent. statutory limitation payments into their respective depreciation funds, but the combinations which have now been effected have created a new set of conditions on which the depreciation charge has to be computed.

The general position to date is that the Electric Supply Account has been able to meet all operating and interest charges, has provided £695,837 towards the statutory requirements of £1,282,686 for depreciation, and, in addition, has provided £326,484 to sinking fund and £241,419 to general reserve from profits made from time to time on Lake Coleridge and Horahora Systems. In other words, the Electric Supply System as a whole has paid interest and operating charges and provided £1,263,740 in reserves, of which £308,145 has already been utilized by Treasury for the paying-off of loans which formed part of the original capital.

Electric-supply Operating Accounts.

North Island Electric-power System.

The Arapuni-Mangahao-Waikaremoana plants have operated satisfactorily throughout the past year, and the revenue shows an increase of £30,887 over that of the previous year.

The result of the year's operations was as follows:—

	£	£
Capital investment at end of year		8,505,539
Revenue	712,766	
Operating-expenses	120,927	
Balance	£591,839	

This balance has been used in paying interest charges, £414,042 and £37,687, as the Department's share of the capital charges on the King's Wharf generating-plant of the Auckland Electric-power Board, but is £10,428 short of being able to provide the full statutory contribution to depreciation.

Accumulated losses to date amount to £586,849, but the Reserve Accounts established in connection with this system show that £959,086 has been credited to depreciation and £55,930 to sinking fund, which latter amount has been utilized in the redemption of loans.

South Island Electric Supply System.

The Lake Coleridge - Waitaki plants have operated satisfactorily during the past year, and the revenue shows an increase of £8,605 over that of the previous year.

The year's operations resulted as under:—

	£	£
Capital investment at end of year		4,397,871
Revenue	228,097	
Operating-expenses	35,083	
Balance	£193,014	

The balance has been used in payment of interest £97,792, £78,552 has been paid to depreciation, and the remaining £16,670 to sinking fund.

Bulk Supply Charges.

I indicated in my Statement of last year that the question of the Government charges for power supplied in bulk had been given a great deal of consideration and that the various requests for reductions received indicated that some at least of the supply authorities making the requests were not fully acquainted with all the factors bearing on this important matter. During the year just completed the matter again received a good deal of attention, and the Power Boards and Electric Supply Authorities Association at its annual conference in 1934, recognizing that the matter was one that required very careful consideration by men acquainted with all aspects of the matter, set up a committee composed of engineers and secretaries to draw up a report on the question for consideration at the 1935 conference. This report was considered and adopted by the Supply Authorities Conference recently held in Wellington, and no doubt will be submitted for the Government's consideration. In general, I think it may well be claimed that the report is a general endorsement of the policy of the Government in its handling of the electric-supply business. There are, of course, several points on which modifications are suggested, but it supports the Government policy on practically all major points on which previous discussions have arisen. It recognizes that for the present, at least, the financial position of the Government's Electric Supply Account is such that it cannot afford to make any reductions in charges which would result in reduced revenue. It recognizes the Government claim that some graduation in charges is necessary to meet variation in the amount of power taken by various authorities. It recognizes and approves the basic principle of charging on the maximum-demand system, and of granting a certain amount of subsidy to local authorities owning standby plants which can be made of advantage to the system generally. It makes suggestions for modifications in the Government tariff which would result in reduced charges for supply authorities. Though there is nothing particularly new or novel in these suggestions, they will all serve a useful purpose in indicating the direction in which the various distributing authorities are of opinion that reductions should be made when the financial position of the Electric Supply Account justifies such reduction. The preparation and publication of the report has certainly done a great deal of good in making people associated with the various electrical supply authorities more familiar with some of the problems which have to be faced by the Government in dealing with this particular utility. It is not clear, however, that the report does anything to actually reduce the cost of generating and supplying electricity. It makes suggestions for alterations in the method of setting out the accounts which might indicate some change in the cost, but which do not affect the real cost at all. It makes various suggestions for rearrangements of the total cost as between the supply authorities and the Government, but again these suggestions only alter the distribution but do not really reduce the cost. In fact, some of the suggestions in respect of more extended use of auxiliary generating-plants actually increase the total cost. It is indeed questionable if we have not been contributing by way of rebate on ordinary charges too much towards the cost of these standby stations. As pointed out previously, it is recognized that the owner of such a plant, even when not operated, has to pay capital charges in respect to its original cost in addition to whatever he may have to pay to the Government for power purchased in bulk. It will, however, be found in all cases that the amount paid for power purchased is less than would have been the net operating cost (exclusive of capital charges) if the same amount of power had been generated in the stations replaced by Government supply. It is recognized that such plants have some value as an insurance against interruption, but that insurance is of a special value to the owner much in excess of its value to the system as a whole. In the North Island system, for example, the value of allowances made for these plants plus the cost of maintaining the Department's own standby amounts to about £80,000 per annum, a sum which is more than twice the total annual operating cost of the whole of the Government's own main generating plants in the same area. Electric supply has become such an important factor in the everyday life of the community that interruptions to supply certainly cause a great deal of inconvenience. An examination of all interruptions over a period of years indicates that power was not available when required for about one ten-thousandth part of

the time. The existence of the contracts under which the present standby plants are operated reduced this to some extent. The provision of additional ones would not completely eliminate it. The Government has always recognized and will continue to recognize an obligation to make some contribution towards the cost of standby plants in approved localities. It must, however, always be remembered that absolute security is not obtainable, and the cost of security beyond what is now attained may be secured in particular localities at too high a cost to the system generally.

The cost of power supplied in bulk represents only about 30 per cent. of the total cost of power delivered to the consumer. In its investigation the committee in question indicates that no great reduction in cost can be made in this section of the total, but the scope of its inquiry did not include any investigation into any possible savings that might be made in the operation of the other 70 per cent. that goes to make up the total cost.

The present system of control has developed, and undoubtedly has been very successful, as a means of making power available as widely as possible throughout the country. As to whether or not it is just as well suited for the future administration is being given a considerable amount of attention to see if any modifications are desirable in the interests of uniformity and economy.

Electrical Supply and Electrical Wiring Regulations.

The Electrical Supply Regulations and Electrical Wiring Regulations, which were issued in 1927, have been under review by the Regulations Advisory Committee since 1931, and complete new editions of same have recently been gazetted.

General.

The capital invested in the electric-supply systems operating throughout the Dominion totals £32,823,944, which includes £12,903,410 of Government expenditure, and the gross revenue received for the year was £4,577,998. After paying working-costs, interest, sinking fund, and depreciation charges, the net profit for the year under review was £449,499, as compared with £460,489 for 1934, which indicates that the electric-supply business as a whole is in a healthy condition.

It is gratifying to notice there is distinct evidence of expansion of business among the electric-supply authorities. An analysis and summary of the operating results and other statistics furnished by each electric-supply authority reveals the fact that there has been an increased consumption of electrical energy amounting in the aggregate to approximately 7·35 per cent. over that of 1934.

The statistics also indicate that during the past year new consumers have been connected at an average rate of approximately 650 per month, and the completed figures for the year show that the ratio of number of consumers of electricity to the total population of the Dominion is 23·6 per cent.

The statistical data relative to each electric-supply authority will be found in the series of tables accompanying the report of the Chief Electrical Engineer.

RELIEF OF UNEMPLOYMENT WORKS.

As in previous years, the Public Works Department has co-operated with the Unemployment Board to the utmost possible extent in arranging useful work for unemployed, and, as indicated earlier, the financial assistance received from the Board enabled me to embark on a considerably larger programme of developmental work of all classes than would have been possible if I had been dependent solely upon available loan-money.

During the year under review a weekly average of 6,774 men were engaged on relief-of-unemployment works controlled by my Department, and the following schedule of some of the work accomplished will, I am sure, be both interesting and informative to honourable members :—

Dray-roads—	
Formed	144 miles.
Widened	81 miles.
Metalled	400 miles.
Stumping and logging—	
Heavy	2,397 acres.
Light	1,716 acres.
Scrub-cutting	17,032 acres.
Bushfelling	89 acres.
Fireblight-protection: Hawthorn-hedge cutting	12½ miles.
Sand-dune reclamation: Marram-grass and lupin planting	5,000 acres.
Farm lands cleared of boulders, ploughed, sown, &c.	2,204 acres.
Land cleared of noxious weeds	993 acres.
Fencing	130 miles.
River-control works—	
Channel-improvement excavation	39,093 cubic yards.
Widening, clearing, and deepening channels	145 miles.
Stop-banking	14 miles.
Willow-clearing	76 miles.
Groynes erected	2,673 lineal feet.
Land drainage—	
Excavation of drains, deepening and improving	122 miles.
Water and sewerage pipes laid	18,000 feet.
Small Farm Schemes—	
Fencing	61 miles.
Bushfelling	92 acres.
Buildings erected: cottages and milking-sheds &c.	110
Land cleared	1,869 acres.
Area ploughed, &c.	1,262 acres.
Area sown in grass or crops	513 acres.
Drains laid	1½ miles.
Stumping and logging	567 acres.
Aerodrome-construction—	
Scrub-cutting	65 acres.
Land-levelling	63 acres.
Returfing and top-dressing	26 acres.
Irrigation—	
Tunnels	5,223 lineal feet.
Rock excavation	3,000 cubic yards.
Dry rock dam	30,180 cubic yards.
Rock in mortar	4,641 cubic yards.
Concrete placed	6,335 cubic yards.
Races constructed	1,428 chains.
Concrete syphons, 15 in. by 54 in. diameter	8,620 lineal feet.

PUBLIC BUILDINGS.

General Departmental Buildings.

At Whangarei a Public Works garage and fitting-shop was erected; at Wellington storage accommodation was provided for the Dominion Laboratory; at Timaru an additional room was built for the Pensions Department. The total net expenditure under this vote for the period was £30,802, which includes a further Government subsidy of £30,000 towards the cost of erecting the National Art Gallery and Dominion Museum Buildings at Wellington.

Courthouses.

Expenditure under this heading for the year ended 31st March, 1935, was quite small, totalling £533, and comprising improved heating facilities to the Napier Courthouse, some additions to the Palmerston North Courthouse, and part of the cost of erection of a new courthouse at Putaruru which was in course of construction at the end of the year, and is now in occupation.

Requirements in capital expenditure for the current year ending 31st March, 1936, will also be fairly extensive, as several works which have been deferred for some years are now being proceeded with. Arrangements are in hand for a new courthouse at Ashburton, but it is expected that by exchange of the valuable site on which the old courthouse now stands that the credits will exceed the expenditure. The erection of the Auckland Supreme Court Library additions is now under way, and it is anticipated will be completed by the end of this year. The estimated cost is slightly less than £12,000, of which sum the Auckland Law Society has contributed £2,250. At Palmerston North some further very essential additions are contemplated, and it is hoped that these will be approved and under way at an early date. At Wairoa a new courthouse has been commenced and is expected to be in occupation by the time this is in print. This was a very necessary building and replaces the exceedingly old and dangerous building at present in occupation. At Invercargill some improved accommodation is necessary, as the existing courthouse which was erected about fifty years ago does not provide suitable accommodation for the conduct of the Court business. It has not yet been decided whether this will be rebuilt or whether reconstructive alterations and renovations will be carried out.

Prison Buildings and Works.

Expenditure under this heading has been kept to the bare essential minimum, with special consideration to the decreasing prison population which occurred during the last twelve months. During the year the sum of £1,605 was expended.

At Invercargill further draining and roadmaking in connection with the Estuary Reclamation was carried out. The laundry equipment at Point Halswell Borstal was modernized, and a water-supply on portion of the farm at Waikeria Borstal, near Te Awamutu, was provided. At Rangipo Prison Camp the erection of a combined laundry and bathroom was completed, and improvements and additions were made to the officers' quarters. The installation of a cooler at the Auckland Prison was completed.

The following shows the total annual expenditure of a capital nature on prison and borstal buildings since 1922:—

Year ended	Amount. £	Year ended	Amount. £
31st March, 1923	23,148	31st March, 1930	8,205
„ 1924	27,259	„ 1931	2,504
„ 1925	25,279	„ 1932	2,621
„ 1926	24,196	„ 1933	2,026
„ 1927	22,812	„ 1934	1,036
„ 1928	22,359	„ 1935	1,605
„ 1929	12,572		

Police-stations.

Of the £7,500 that was voted for police-stations the net capital expenditure was £2,798. New police-stations were erected at Taradale and St. John's (Wanganui), and additions were made to Portobello and Otahuhu Police-stations.

Post and Telegraph Buildings and Land.

Although the preparation of plans for several buildings was in hand at the end of the financial year, the only building actually under construction at that time was the new Chief Post-office at Dunedin. Good progress is being made with the construction of that building, which was commenced early in 1934. Small additions and alterations to buildings were undertaken at a number of places during the year, and the following works were also carried out: The erection of a new post-office building at Karori, Wellington; the completion of the new post-office buildings at

Taumarunui and Waitakaruru, which were commenced in the previous year; the reconstruction of the upper storys of the Eketahuna and Woodville post-office buildings; and additions to the post-office buildings at Pokeno and Ruawai.

Areas of lands no longer required at Glen Oroua and Woodgrove, the old post-office building and site at Tophouse, and the temporary post-office building at Port Ahuriri erected after the Hawke's Bay earthquake in 1931 were disposed of during the year.

Areas of land were acquired as follows: Kaitaia (for drainage purposes), St. Heliers (for automatic-exchange building), Te Puke (for garage, &c.), Waimate (for improved access to post-office site), Wanganui (for store, garage, and workshops).

Fire destroyed the Toko post-office building in March, 1935.

Mental Hospitals.

The capital expenditure for the year on mental-hospital buildings was £98,630, being £25,609 more than that of the previous year. It is proposed to appropriate £90,000 for expenditure on capital works for the current year.

Auckland: At Avondale a new residence and garage were erected for the Medical Officer.

Puhitahi: At Puhitahi, four new villas were completed during the year; additional roading, water-supply, sewage works, and electric reticulation were carried out.

Tokanui: At Tokanui a new villa for farm labourers was completed. Water-mains were extended and renewed, and a complete remodelling of the sewage-system was undertaken.

Nelson: At Ngawhatu two additional villas, laundry, and boilerhouse were completed, and the installation of necessary machinery is well in hand. The water-supply system, including a new reservoir, was completed. A rearrangement of the electrical reticulation is in hand.

Hokitika: A new villa was erected during the year, and was fully furnished.

Christchurch: A new villa for women was erected at Sunnyside, and two additional villas were erected at Templeton. Good progress has been made with the water-supply scheme at Templeton.

Seacliff: A new nurses' home was erected, and new machinery was installed in the boiler-house.

Health and Hospital Institutions.

The net expenditure under this vote for the year was £656, and was mainly expended on additions to the St. Helens Hospital, Wellington.

Expenditure approximating £40,000 is contemplated at Queen Mary Hospital, Hanmer Springs, in providing a new hospital for male patients, administration block, bulk store, and male staff quarters. Improvements to the water-supply for the hospital and township are also being undertaken.

Provision is made for the payment of an initial instalment on account of the Government grant of £20,000 towards the cost of the new Obstetric Hospital at Dunedin.

Minor alterations and additions to St. Helens Hospitals, Auckland and Wellington, are also being undertaken.

EDUCATION.

A further effort was made during the year to keep as low as possible the expenditure of capital funds on the erection of school-buildings, additions, and teachers' residences, and the purchase of sites, the net expenditure for the year being £57,160. Included in this figure is the sum of £5,871 which was provided out of the Consolidated Fund to cover the cost of works under £200.

The following table shows for the last three years the capital expenditure on new school-buildings, additions, sites, and teachers' residences.

	1932–33.	1933–34.	1934–35.
	£	£	£
Public schools	36,290	57,664	35,105
Secondary schools	22,909	2,568	14,679
Technical schools	4,110	1,504	12,851
Native schools	869	2,698	5,419
Gross total	64,178	64,434	68,054
Less credits-in-aid	7,050	7,778	10,894
	£57,128	£56,656	£57,160

IRRIGATION.

Owing, no doubt, to the decline in wool prices from that of the previous year, payments for irrigation water was slightly less than for the preceding season, being £21,835, as against £22,132. The principle of making settlers who are in arrears with their rates pay for water in advance is still having a beneficial effect on the season's payments, but, unfortunately, the total arrears on water rates still amounts to £12,534. Investigations into the financial position of those irrigators who are in arrears are now being made by the Otago Mortgagors Relief Commission, with a view to hardening up on the conditions of service and taking more rigorous methods to secure payment.

No new schemes have been undertaken in Central Otago, but the building of two additional reservoirs is now under way. These have both been investigated from a financial point of view, and, making allowance for the liberal contributions received from the Unemployment Board's funds for labour, they will pay a full return on the capital invested.

As indicated in my Statement of last year, I am convinced of the lasting benefits obtainable from the conservation of water in Otago Central, and, if in any way justifiable, I am sympathetic towards this class of public work. The available water that can now be impounded in the eight dams built in Otago Central amounts to some 70,000 acre-feet, sufficient to irrigate approximately 35,000 acres of land, although, of course, this quantity is not drawn from storage every season.

The Maniototo Irrigation Scheme, upon which complete and comprehensive survey investigations have now been made, includes the construction of a very low-cost dam that will impound some 300,000 acre-feet, or more than four times the quantity of water impounded in all the dams so far built. This dam would provide sufficient water to irrigate the whole of the 90,000 acres of irrigable land in the Maniototo Plains. It is estimated, however, that the cost of such a scheme would be approximately £1,400,000, and unless extremely liberal funds from the unemployment-tax could be justified from the point of view of providing work for the unemployed the scheme would not be financially sound. It is well worth further consideration, however, with my colleagues the Ministers of Finance and Employment, as the land is of excellent quality and urgently in need of water.

With the exception of this scheme, Otago Central does not seem at present to warrant any really justifiable extension in irrigation, and the scene of future operations would appear to be shifting to the Province of Canterbury, where irrigation, although perhaps not so vitally needed, can be undertaken so much more cheaply than in Otago Central. The frequent droughts experienced so often in Canterbury in summer, together with the severe drying effect of the north-west winds, seems to have at last aroused the farmers to the necessity for an assured supply of water, and I predict an increasing demand for irrigation there in the future.

For this reason, I have not hesitated to expend a fairly considerable amount of money in surveying the water resources of Canterbury, and in making a careful investigation to determine what amount of irrigation is required to produce the most beneficial results. Careful and regular measurements of soil-moisture at successive

depths already indicate a serious deficiency in moisture-content in the dry months of the year, and these measurements, in conjunction with rainfall, wind-movement, and evaporation statistics, as well as soil-analysis, are being constantly recorded, and will be continued for at least some years.

I would like to place on record the help I have received towards this work from the Unemployment Board and from the Departments of Scientific and Industrial Research, Agriculture, and Lands and Survey. I welcome very much their co-operation in a work which I consider of such vital interest to the advancement of the country, and I feel encouraged to continue with the accumulation of such valuable information.

Comprehensive investigation is also being made into the amount of water available from the Canterbury Rivers. This information is valuable not only for land irrigation, but in connection with hydro-electric-power development, general water-supplies, and bridge-construction. A thorough topographic survey of the whole of Canterbury Province to determine the location of water-races and the cost of irrigation is well advanced, and to date 1,100,000 acres have been contour-surveyed.

Coming now to a brief description of the works in hand, that of greatest magnitude is the Omakau Irrigation Scheme, which provides for the irrigation of 14,000 acres in the Manuherikia Valley. During the year the rock-fill dam on the Manuherikia River was completed, with the exception of the completion of the concrete tunnel spillway and the outlet valves. About 35,000 cubic yards of rock-fill were deposited in the dam, and 4,200 cubic yards of reinforced concrete placed in the cut-off wall and impervious cover on the upstream face of the dam.

On the race-system at Omakau two miles and a half of main race and fifteen miles and a quarter of branch and distributory races were cut, making a total length of thirty-eight miles and a half of race. Some 9,000 ft. of concrete siphons, varying from 15 in. to 54 in. in diameter, were constructed, and about sixty road-crossings and bridges over the races. Work is now well in hand on the intake-gates and sluiceway. It is anticipated that water will be delivered during the coming season.

The tunnel that was needed to replace the 36 in. steel pipe on the Teviot Irrigation Scheme has progressed well, 3,420 ft. of excavation having been completed during the year and 2,000 ft. of concrete lining. A concrete diverting weir was also built.

The work on Conroy's Dam in the Last Chance Scheme has been completed, 1,550 cubic yards of concrete being placed during the year. To further increase the available water-supply in this scheme another dam at Butcher's Gully was put in hand, and the foundations are now being taken out. These are the two additional dams mentioned by me above which are now required to store water for the dry season.

Another dam is about to be built on the Fraser River to increase and improve the water-supply to the Earnscleugh Irrigation Scheme. This one will also prove financially sound with the help of unemployment-tax funds.

A tunnel in connection with the Butcher's Gully Dam is now being driven to improve the race-system.

The improvement to the drainage of the Ida Valley Scheme by the straightening and cleaning-out of the Poolburn Stream is well in hand, about four miles having now been completed.

Construction on the first irrigation scheme to be undertaken in Canterbury was commenced during the year—the Redcliff Irrigation Scheme. About eighty men are now employed on it, and to date three miles of main race and five miles of lateral race are completed. This scheme will supply water to an area of 4,600 acres, and it is expected that water will be available during the coming summer.

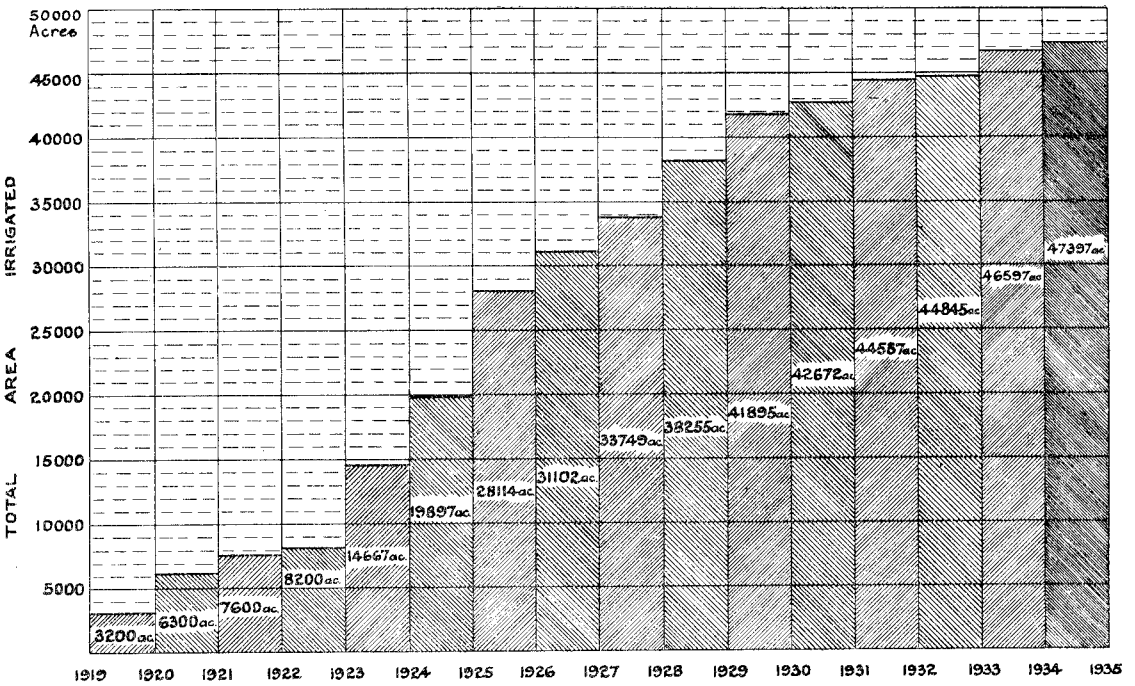
During last season 38,027 acres were irrigated in Central Otago by 402 irrigators. This is slightly more than last season, but is about 4,000 acres less than would have been irrigated had the irrigators who were in arrears with their rates not been compelled to pay for water in advance.

The schemes now operating on a trading basis are as follows: Ardgour, Arrow, Bengerburn, Earnscleugh, Galloway, Hawkdun, Idaburn, Ida Valley, Last Chance, Manuherikia, Tarras, and Teviot.

Those schemes which have no storage reservoirs were somewhat short of water during the latter part of the summer, which was very dry, but very little inconvenience was caused.

Thunderstorms occasioned breaks in the races of the Manuherikia and Tarras schemes, but these were rapidly repaired.

The following graph shows the growth of irrigation areas under Government schemes in the last sixteen years :—



In addition to the comprehensive survey of water resources in Canterbury, to which I have already alluded, detail surveys for the preparation of plans and working drawings of the Maniototo Scheme were practically completed, and the layout of the scheme and design of structures is now in hand.

Trial surveys were made for a small scheme for Hawea Flat with water from Timaru Creek, gauging records of lake-levels, and the usual meteorological records were carried out systematically.

LANDS IMPROVEMENT.

The net capital expenditure from the Public Works Fund was £82,092, as against £71,825 for the previous year. Practically the whole of the works that come under this vote have, however, been subsidized from Unemployment Board's funds, many of them to the extent of practically the whole cost, so that, in the aggregate, the volume of work carried out has been very large.

The works so carried out come under the following general headings, and will be briefly commented on under those headings.

Works for the drainage of farm and swamp lands.
Works for the reclamation of sand-dune areas.
Works for the reclamation of tidal-flat lands.
Works for the improvement and control of rivers.
Works for the clearing of farm lands.

Of the drainage works, the largest is that for the drainage of the Taupiri River and Drainage District, where 93,000 acres are either being drained or are having drainage improvement effected. On the work, which will cost £150,000 when completed, 175 men were employed during the year, and work is now more than half complete. Other major works in hand are the drainage of the Te Kawa Drainage District, and of the Waimatua drainage area adjoining Invercargill. The whole constitutes a series of operations of great value to the Dominion.

Sand-dune reclamation works have now been carried on under the control of the Minister of Public Works for the past three years, and during the year covered by this report the programme has been fully maintained. The important areas being dealt with are situated on the west coast of the North Island in the Wellington and Auckland Provinces. Operations are in hand on areas totalling 30,000 acres, and it can be said that by the end of the year 19,000 acres had been planted in marram and lupin, and are quickly reaching a degree of more or less stability. It is intended to follow the stabilization with marram by tree-planting operations as a forestry undertaking, and initial work with this object is in hand. As these bare sand dunes have been a menace to farm lands and to adjoining watercourses for many years, the value of the work thus initiated will be readily appreciated.

Works for the reclamation of tidal flats have been carried on in the Hokianga, Whangaroa, and Kaipara Harbours, and on the Ahuriri Lagoon at Napier. The total area that is included in these operations is approximately 9,000 acres, the bulk of this area being in the Ahuriri Lagoon. The development is being carried on with the approval of the Small Farms Board, and involves a long-range programme aiming at the establishment of farmers who will take over small farms, fully developed with pasture, fencing, housing, water-supply, &c.

The programme for the improvement and control of rivers has been continued. The largest work is that for the diversion of the Tutaekuri River, Hawke's Bay. In this case the work is actually being carried out by the Hawke's Bay Rivers Board, under subsidy from and supervision by the Public Works Department. Another large work is the Ashley River Control Scheme, Canterbury, carried on as an unemployment relief work. Quite a large number of other smaller works are in hand for the clearing of willows and the improvement of streams generally. The willow menace on many of the rivers of the Dominion is a very serious and increasing one, and it calls for the urgent consideration and attention of the local authorities concerned.

Works for the clearing of farm lands have been carried on by the Public Works Department with Unemployment Board's funds, and with the assistance of contributions from the settlers concerned. The work has been of quite a large extent and is of great value, and has been guided with the object of the rehabilitation of farming lands that has seriously deteriorated under slump conditions, and to the provision of cleared areas by stumping, logging, and burning on former bush farms to enable the settler to produce hay, ensilage, and root crops. This work has met with great appreciation in the districts in which it has been carried out.

SMALL-FARM SCHEME WORKS.

These works are, of course, under the control of the Small Farms Board and the Lands Department, but as a great deal of the development work is carried out by the Public Works Department on behalf of the Small Farms Board, it should be briefly referred to here. Generally the work consists of land clearing and drainage, cultivation, the erecting of fencing, farm cottages, milking-sheds, and the provision of water-supply and access roading. The work is carried out by selected prospective farm applicants, and by special single men's camps. The number of blocks on which operations are at present in hand, excluding tidal-flat reclamation blocks, total twenty-six, the bulk of these being in the Whangarei, Auckland, and Taumarunui Public Works Districts, and in the aggregate is giving employment to an average of 740 men.

ESTABLISHMENT OF AERODROMES.

During the year a considerable addition to my Department's activities has occurred in consequence of the demand that has suddenly been made for the establishment of aerodromes throughout the country to serve the Dominion's air transport needs. While this work was briefly mentioned in my last Statement, the expansion that has been necessary to meet the rapidly growing demand has been far beyond what was contemplated last year. The developments that have

taken place abroad in the design of efficient and economically operated aeroplanes, and the improvements that have been effected in the mechanical technique of instrument flying, have been such as to put this new means of transport in a position where it can no longer be ignored if this Dominion is to remain progressive.

The services that have already commenced operation on the east coast of the North Island and the west coast of the South Island have clearly demonstrated the great use that this new form of transport will have in further opening up the country. The case of the South Westland air service is unique in that the entire passenger and mail transport needs of the scattered community in the far South can be met at a fraction of the cost that would be necessary for the provision of roads, without considering the cost of bridging the many deep and turbulent rivers in the district.

During the coming year very great developments in civil aviation in this country can be expected, and I must place on record the very great assistance and close co-operation the officers of my Department have received in this work from the staff of the Unemployment Board.

RAILWAYS—IMPROVEMENTS AND ADDITIONS TO OPEN LINES.

The net expenditure out of the Public Works Fund under the above heading for the year ended 31st March, 1935, was £154,973. The charges for Public Works administration costs were £500, making the total expenditure £155,473. Practically the whole of the expenditure was incurred in connection with the new terminal facilities at Wellington.

At the beginning of the year the contractors for the new station (Messrs. The Fletcher Construction Co., Ltd.) were engaged in excavating and pile-driving. In October the erection of steel work was begun, and by March the work of concreting was under way. At the same time the Railway Department was engaged on the alterations to the yard. Sidings were laid down and ballasting-work proceeded with, and by January the new car-yard had been completed. Pile-driving for the new locomotive depot was begun. At the 31st March the erection of a signal cabin was proceeding and platform fronts were being erected. Considerable work was also done on roading.

Satisfactory progress was also made on the electrification of the Wellington-Paekakariki area, the erection of poles to carry the 33,000-volt transmission-lines being carried on throughout the year. All drilling and grouting preparatory to the erection of overhead gear in the tunnels was completed, and sections of the 11,000-volt armoured cables have been laid.

During the year rails were laid on the Wellington–Tawa Flat deviation, and at the end of the year sufficient progress had been made to indicate that one line would be available for goods traffic in July of this year. From the Wellington yard to the north end of No. 2 tunnel the line has been laid with 100 lb. rails. A novel feature in so far as New Zealand is concerned is the welding of complete sections of line in the tunnels.

LIGHTHOUSES.

The net expenditure on lighthouses for the year was £4,021. At Baring Head the new lighthouse was completed and put into operation on 18th June last, with the simultaneous closing-down of Pencarrow Light.

At Tiritiri Island a fog signal is in the course of preparation. The machinery and equipment is to hand and is being placed in position.

HARBOUR WORKS.

The expenditure on harbour works for the year was £2,581. The works completed are Pitt Island Jetty at Chatham Islands and Tryphena Wharf, Great Barrier Island. At Westport the suction dredge was engaged during the period clearing the bar and dredging in the floating basin and berthages. Shipping at this port showed a slight improvement on that of the previous year.

TOURIST AND HEALTH RESORTS.

The net expenditure was £12,880, as against £13,510 for the previous year. The main items of expenditure were the completion of the Blue Bath House at Rotorua, the sealing of paths and drives in the Rotorua Sanatorium grounds, the installation of a new water-supply system at Milford Hostel (Milford Sound), and extensions to the Rotorua electric and water and drainage systems.

During the current year it is proposed to proceed with the erection of additions to the Te Anau Hotel, the erection of a reservoir at Rotorua to provide more pressure in the water-supply system, and the erection of staff quarters at Lake House, Waikaremoana, and the Chateau Tongariro.

TELEGRAPH EXTENSION.

The expenditure for telegraph extension by the Post and Telegraph Department for the financial year in respect of telephone, telegraph, and wireless facilities throughout the Dominion amounted to £135,933 as against £144,159 for the year ended the 31st March, 1934.

The amount available for extension purposes, which was approximately the same as in the previous year, was insufficient to enable a large programme of extension works to be undertaken, but a number of works were proceeded with.

The main works in connection with the toll and telegraph services were the installation of additional carrier toll systems between Gisborne and Napier and between Napier and Palmerston North; the installation of printing telegraph systems between Gisborne and Napier, New Plymouth and Auckland, New Plymouth and Wanganui; the provision of toll dialling facilities between a number of stations; and the installation of equipment for "demand" working on the Auckland toll board. In addition, an increase in efficiency of toll and telegraph facilities between a large number of stations was effected by the reconstruction of existing equipment, the rearrangement of circuits, and, in a few instances, the erection of new lines.

The number of new telephone-exchange connections for the year exceeded the relinquishments by 2,237, as against an excess of relinquishments over new connections of 775 in the previous year. The position in this connection, which reflects the improved economic conditions of the Dominion, is extremely gratifying.

To improve the standard of service for existing subscribers and to provide for future requirements, the following additions to the telephone-exchange plant were made:—

- The laying of 1½ miles of underground cable ducts.
- The laying or erecting of 17 miles of lead-covered cable containing 2,016 miles of wire for subscribers' circuits.
- The erection of 95 miles of pole-line, and 1,412 miles of open aerial wire for telephone-exchange subscribers' circuits.

The telephone-exchange system has been improved in other directions, some of which are indicated hereunder:—

- The installation of six public call offices and four pay stations.
- The installation of branching multiple switchboard exchange equipment at Taumarunui and Ashburton and the removal of the Taumarunui Exchange to the new building.
- The replacement of the existing switching equipment at Kerikeri, Kawhia, Wakefield, Otorohanga, and Te Akau.
- The installation in the Wellesley Street (Auckland) automatic exchange for battery charging purposes of a 100-ampere motor-generator set and a 100-ampere motor-generator booster.
- The installation of secondary batteries at a number of exchanges.
- The replacement by high-grade transmitters of some 19,000 more or less unsatisfactory transmitters on subscribers' telephones in automatic telephone-exchange areas throughout the Dominion.

In respect of departmental radio-telegraph and radio-telephone stations, the year just closed has marked probably the most extensive constructional programme since the opening of the stations. As a result, the coast stations of the Dominion are fitted with modern equipment capable of giving a high standard of service. Coincidently with the improvements in the building accommodation at Wellington-Radio, arrangements have been made to modernize all the transmitting facilities.

Improved stability has been provided for the trans-Tasman radio-telephone transmitter, and arrangements are in train to facilitate a quick change of wave-length which will be necessary to enable a 24-hour service to be provided. At Awarua-Radio the obsolete spark transmitter has been replaced by a valve transmitter of a power suitable for all normal traffic requirements. In addition, a modern short-wave transmitter has been provided, and when the installation of these sets has been completed the stations will be well equipped for all classes of radio-telephone service. The improvements at Chatham Islands-Radio during the year included the provision of a valve transmitter of 50-watt aerial rating in place of the spark apparatus, which has been retained for emergency use. Radio equipment has also been installed at Christchurch to provide an independent channel of communication in the event of any major dislocations of land line facilities.

SETTLEMENT OF UNEMPLOYED WORKERS.

During the year steady progress was made with the development of the areas acquired by the Small Farms Board for settlement under the provisions of the Small Farms (Relief of Unemployment) Act, 1932–33.

The acquisition of additional properties, and an extension of the development programmes on some of the blocks mentioned in last year's Statement, resulted in an increase in the number of workmen employed from 570 to 1,264.

The cottages erected during the twelve months totalled 151, the average cost being £241, as against £214 for those erected during the year 1933–34. The increase may be accounted for by the rise in the cost of building materials, and a further improvement in the design of most of the cottages.

The following summary shows the expenditure under the vote, and the results for the year :—

Capital expenditure	£218,657
Small farmers established	127 on 12,128 acres.
Number of sections under development, and area	459 on 35,364 acres.
Number of share milkers established	7
Number of men employed on development	1,264

PLANT AND MECHANICAL EQUIPMENT.

Whilst maintaining the Government's policy regarding unemployment it was found necessary to utilize a quantity of mechanical plant in wet places, and upon those portions of works outside the scope of man power, and at the same time to facilitate the economic employment of as many men as possible.

The works upon which the plant was used comprised, principally, the clearing, stumping, draining, reclaiming, and irrigation of farm lands at many places scattered all over New Zealand, whilst the construction and maintenance of roads and bridges and the completion of hydro-electric works necessitated the use of a further quantity of plant.

The plant actually in use during the year represents a capital value of approximately £445,000, and consists principally of power pumps, quarry plant, electric generators, drag-lines, concrete-mixers, tractors, and log-haulers, the whole of which were available from the plant already held by the Department.

In maintaining the motor-vehicle fleet and road-maintenance machinery to the required standard of efficiency, replacement items were purchased at a total cost of £16,686.

The principal works upon which construction plant was used during the year comprised—Ahuriri Lagoon Reclamation, swamp drainage and removal of willows in the Taupiri district; Irrigation Works in Central Otago; Arapuni Power-house extension; Upper Waikaremoana and Waitaki Electric-power development, land clearing and stumping and farm-development generally; scattered stone-quarries, including major quarries at Tauraroa and Motutara Island; Te Anau–Milford new roadworks, and also bitumen-sealing and new-road-construction works generally; whilst a considerable quantity of plant was also used upon road-maintenance work throughout New Zealand.

The fact that the only high-speed, modern power graders available in New Zealand were being imported from the United States of America decided the Department to design a modern grader and advertise a contract for the manufacture of a number of these machines in New Zealand.

It is gratifying to note that as a result of the Department's efforts in this connection a contract has been let to the lowest New Zealand tenderer at a lesser price than that of the imported foreign grader. This action has also resulted in a number of New Zealand artisans being now employed upon the work, and 65 per cent. of the cost of the machines retained in this Dominion, whilst the balance of 35 per cent. represents materials indented, principally, from the British Empire.

Similar action has been taken by the Department regarding the manufacture in New Zealand of road-planers, which hitherto were indented from the United States of America, the only source of supply previously, and, to date, contracts have been let to different New Zealand firms for the manufacture and delivery of ten of these machines, eight of which are already in service and proving to be of greater utility and of better construction generally than the imported foreign machines.

The Department introduced several valuable improvements in the design of the road-planer, and upon calling competitive tenders found that the improved machines can be produced in New Zealand at much less cost than was paid for the imported machines.

The standardization of grader and planer blades by the Department, and the obtaining of these in high carbon steel from England on best competitive New Zealand tenders, has resulted in the saving of money to the Government and also to local bodies throughout the Dominion.

Efforts to sell surplus plant during the year resulted in the return of the sum of £7,822 upon sales made, and a quantity of plant has been hired at reasonable hire rates to local bodies and private parties requiring plant for short periods.

Numerous contracts for the supply of plant for local bodies and General Government Departments have been prepared and arranged by the Department after calling for tenders in the public press at the four main centres, the resulting construction contracts being supervised and payments made by my Department.

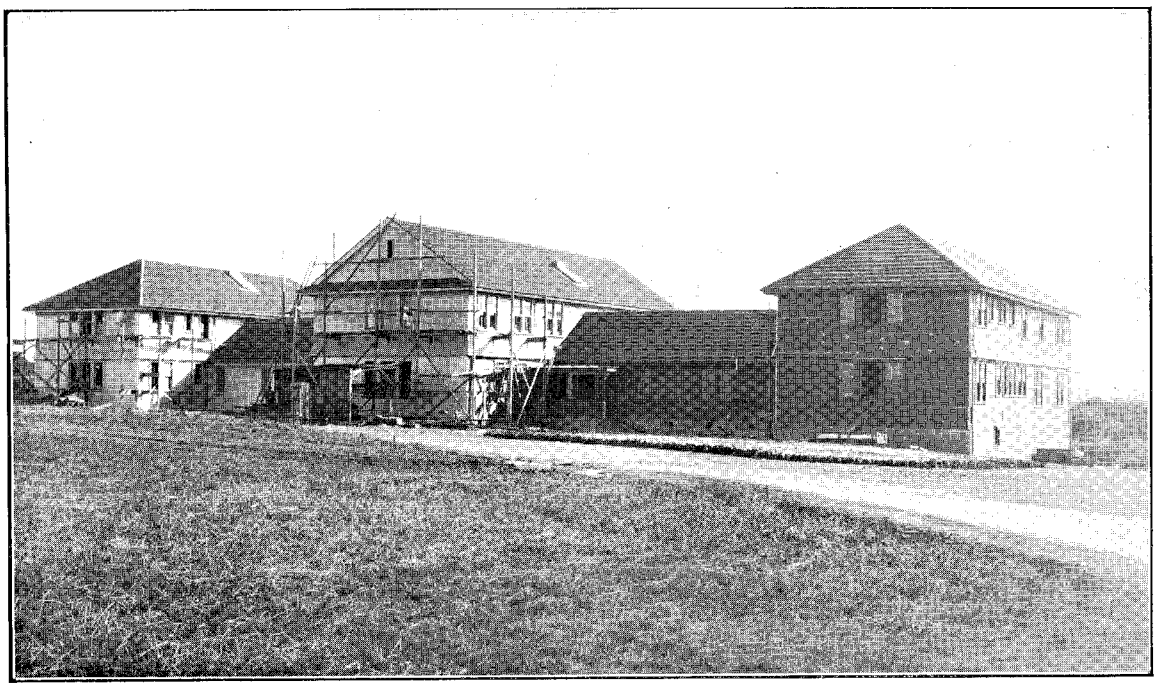
Mechanical inspections, and the issue of certificates of fitness for all licensed passenger-carrying motor-buses and service cars throughout New Zealand have been carried out during the year on behalf of the Transport Department, and the portable weighing equipment used by local-body and Main Highways Board Inspectors in checking overloading upon the highways is periodically tested, adjusted, and certified by my Department as a security in obtaining convictions against offenders. This latter work was previously done by the agents in Australia.

The Department's motor-vehicles have been maintained efficiently, and the total all-in running costs per mile of both cars and trucks continues to show a downward tendency upon the previous year's figures; the running-cost of the cars and light delivery trucks now being down to the satisfactory average figure of 3·20d. per mile, and the trucks (1 ton and upwards) to an average of 5·63d. per mile, as compared with 3·38d. and 6·29d. respectively for the previous year.

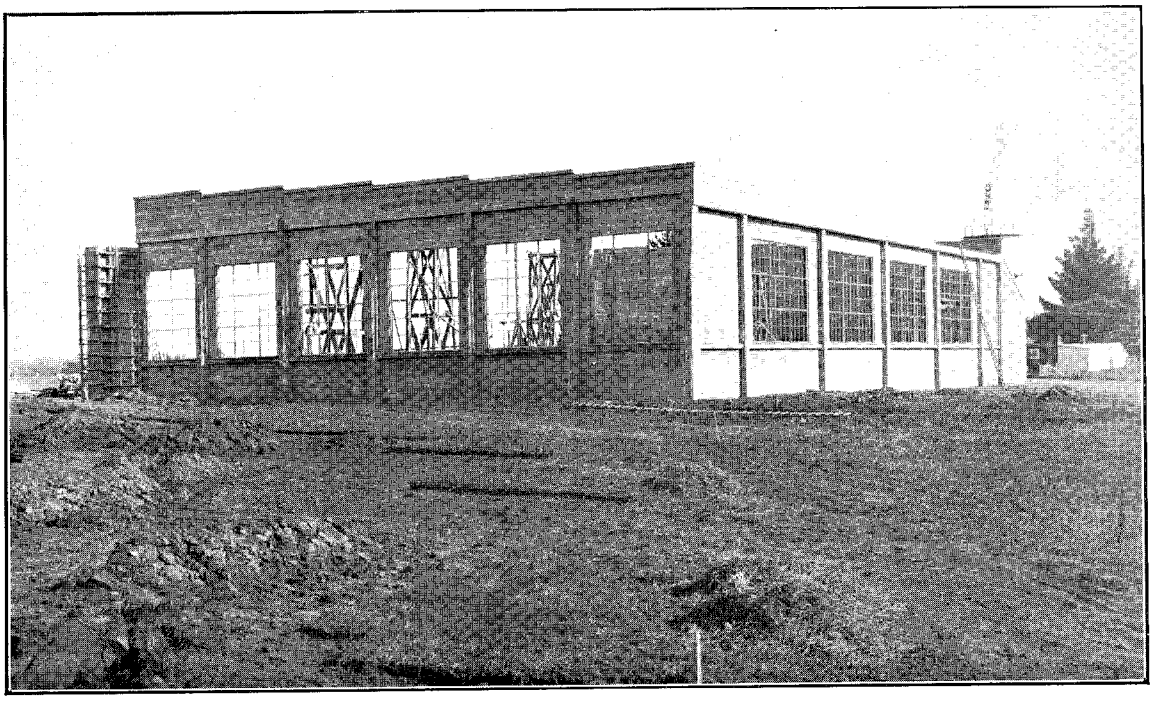
It is worthy of note that every $\frac{1}{10}$d. saved in the running-cost per mile on the mileage run last year represents a sum of £1,400.

A considerable amount of mechanical work was carried out on behalf of other Government Departments during the year, the major works including plant installations at Baring Head Lighthouse and at Tiritiri Fog-signal Station for the Marine Department, and a complete reorganization of the boiler-house and the installation of a new steam boiler and auxiliaries at the Hamilton Hospital.

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

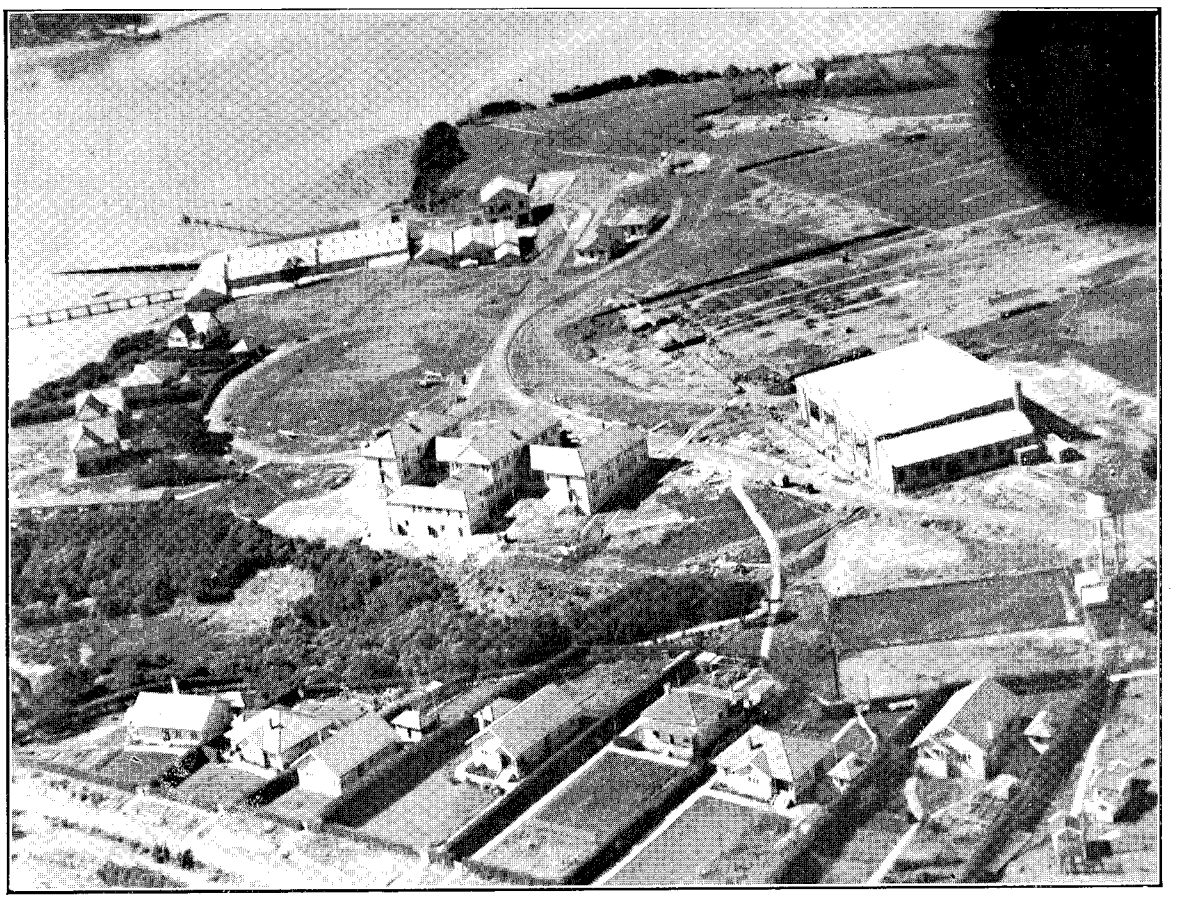


Single Men's Quarters, nearing Completion.



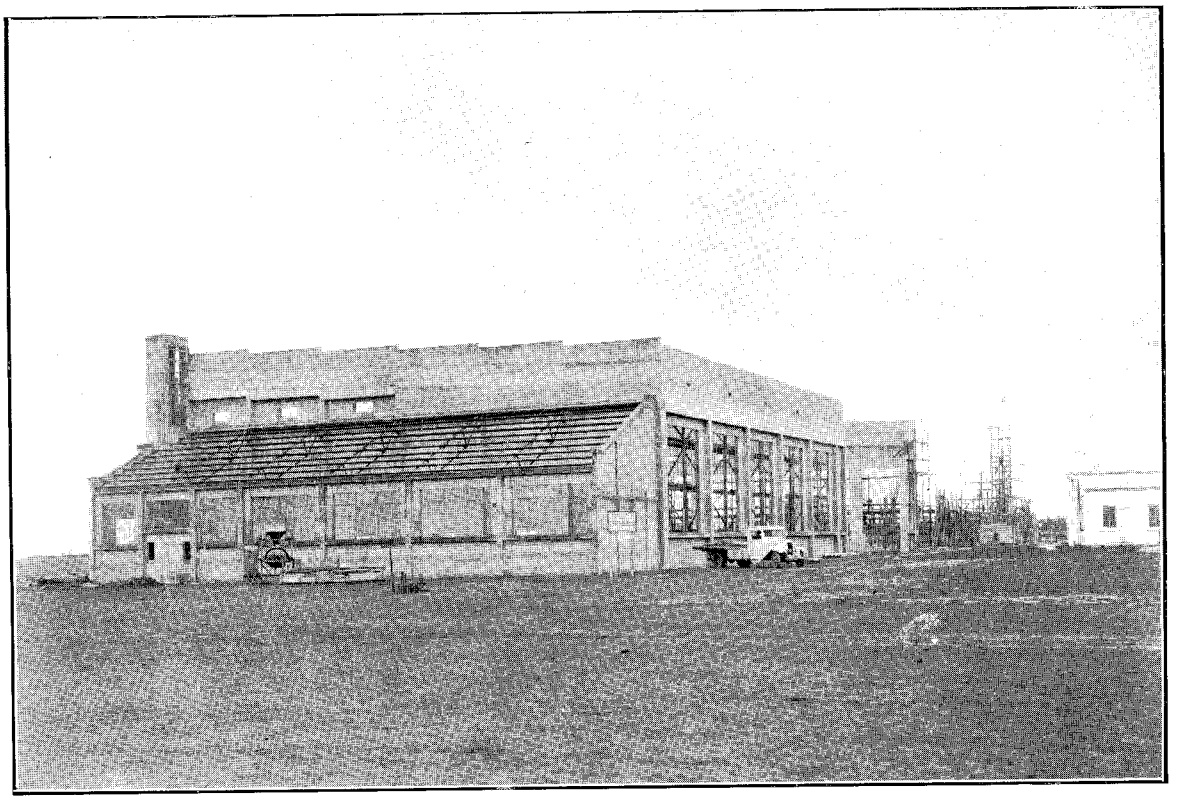
No. 2 Hangar under Construction.

HOBSONVILLE AIR BASE.



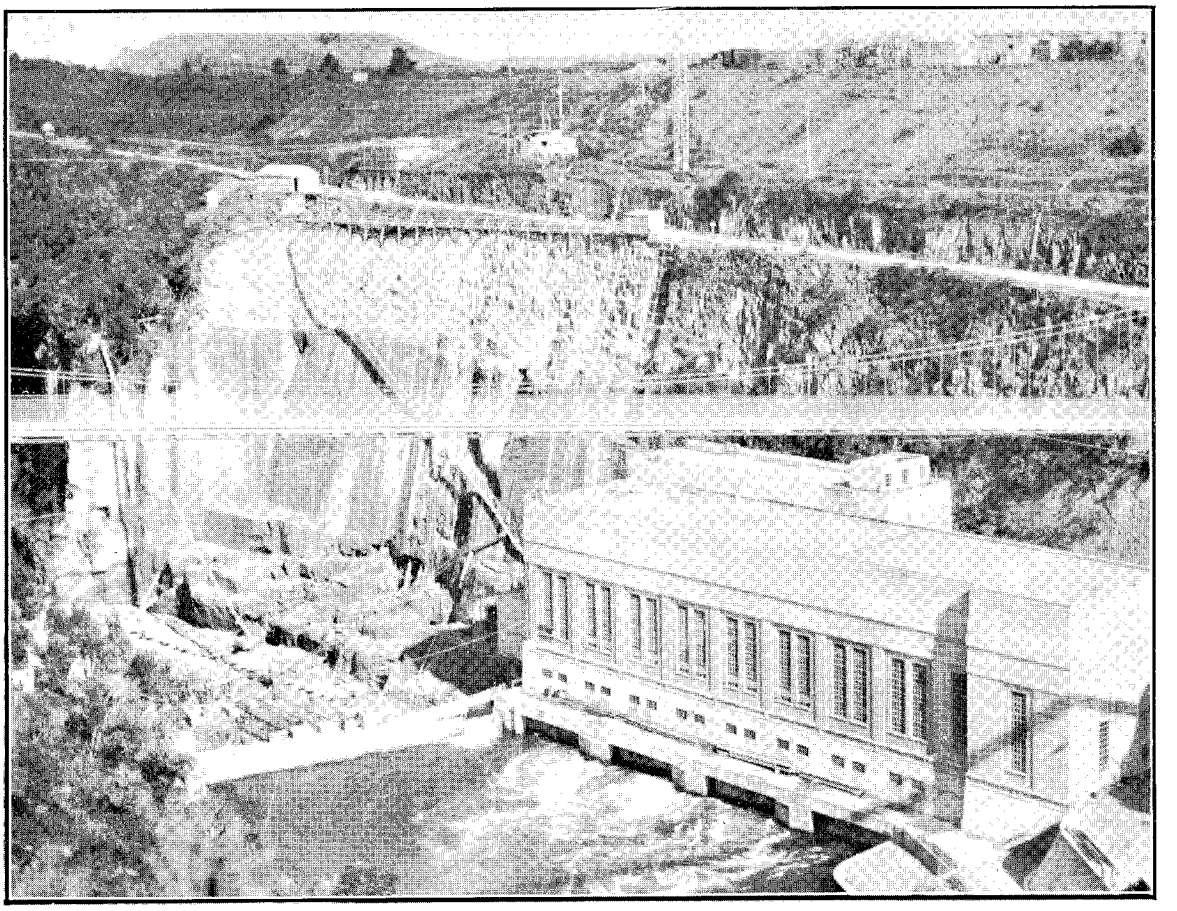
Hangar No. 2, and Single Men's Quarters in Centre.

AERIAL PHOTO OF HOBSONVILLE AIR BASE.



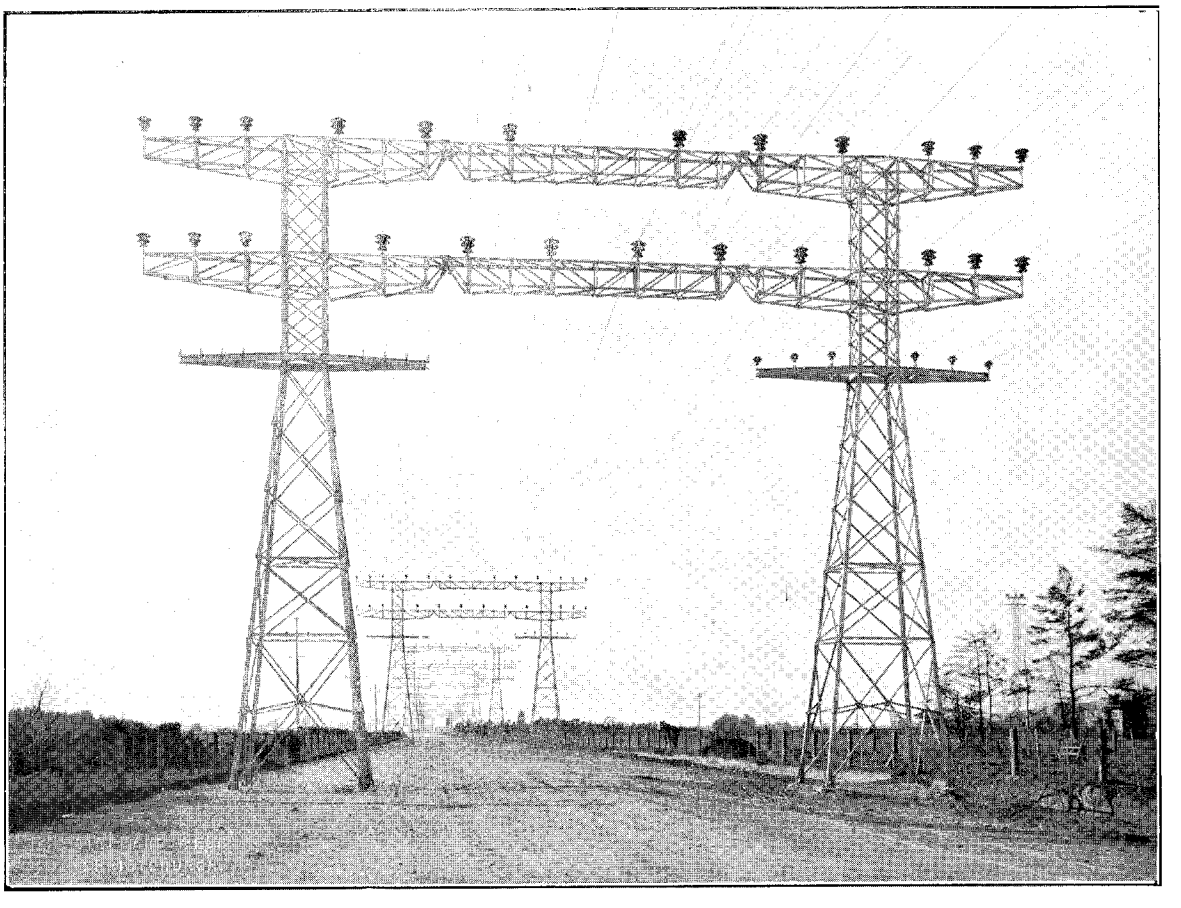
Nos. 1 and 2 Hangars under Construction.

WIGRAM AERODROME.



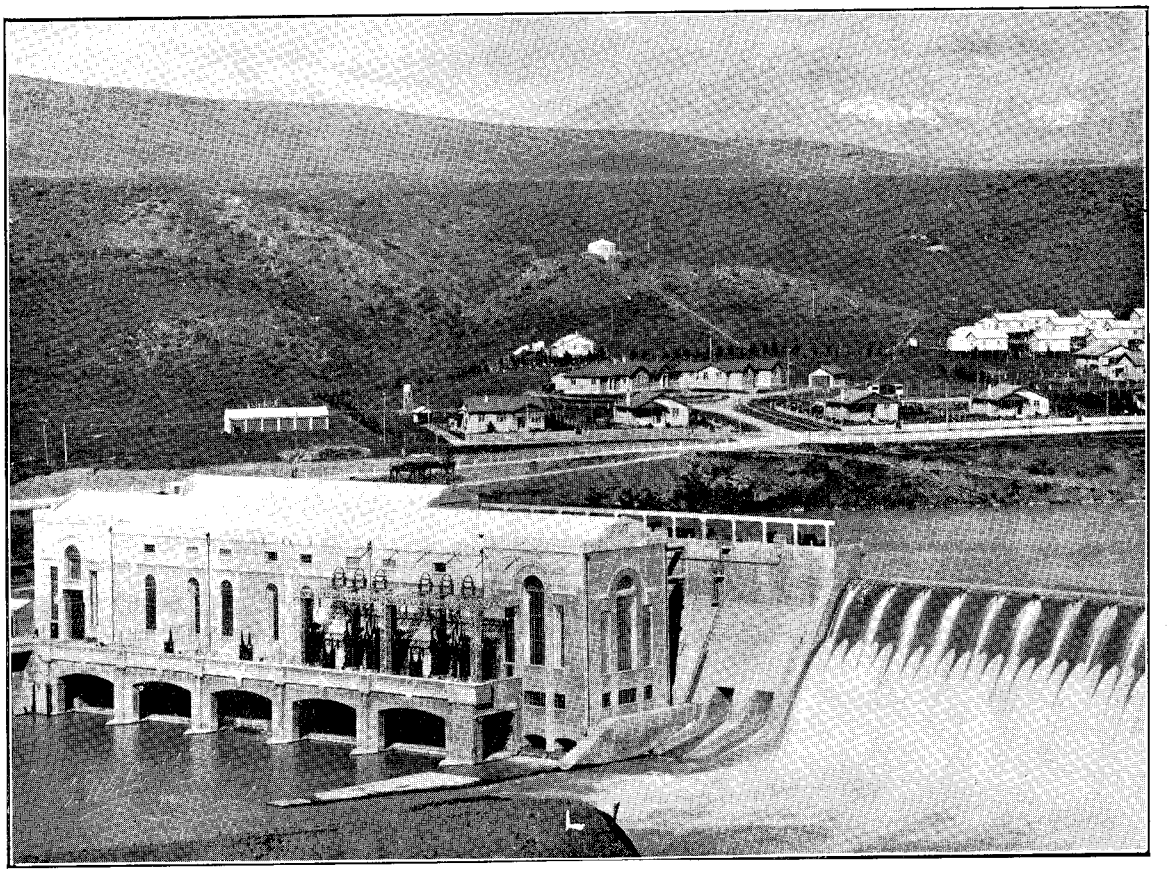
Excavation for Extension of Arapuni Power-house.

ARAPUNI POWER DEVELOPMENT.

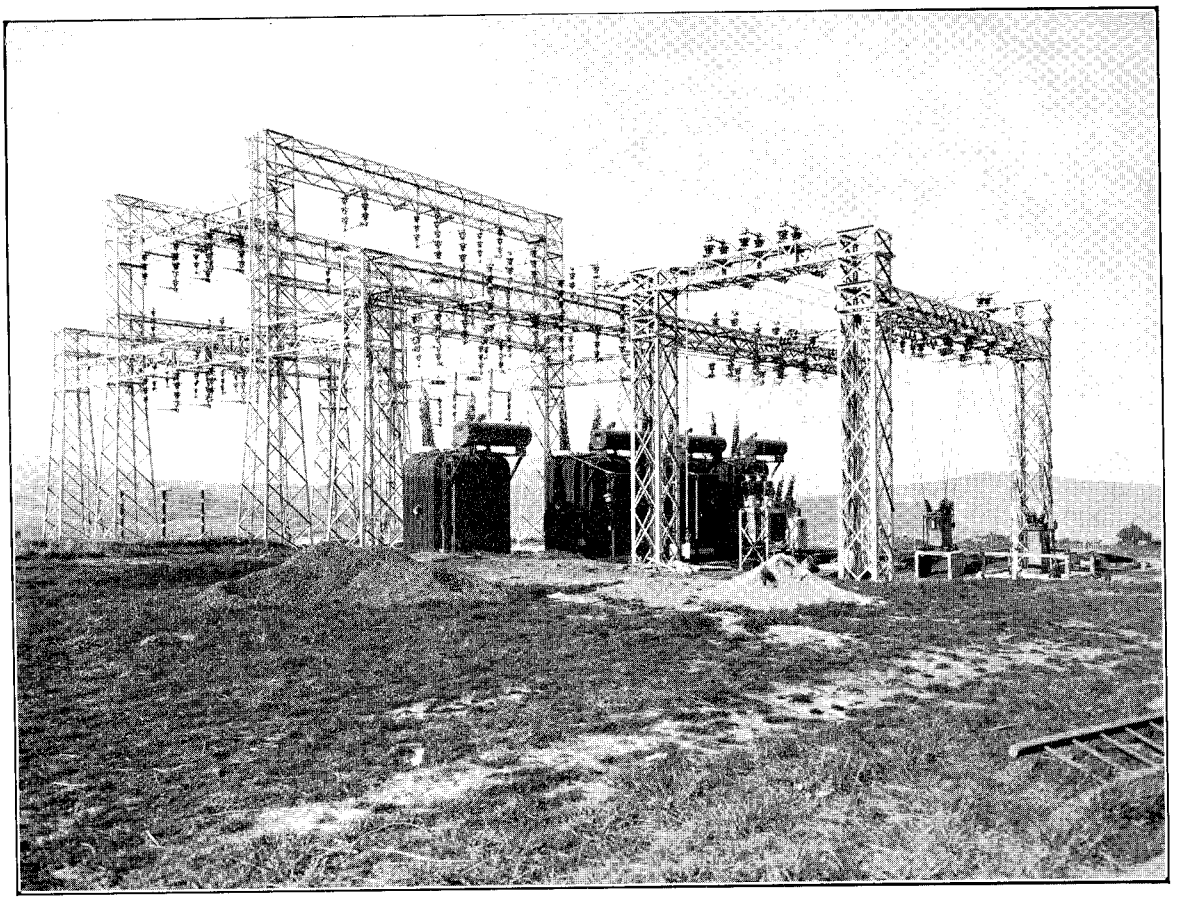


Transmission-line Gantries at Addington.

LAKE COLERIDGE HYDRO-ELECTRIC-POWER DEVELOPMENT.



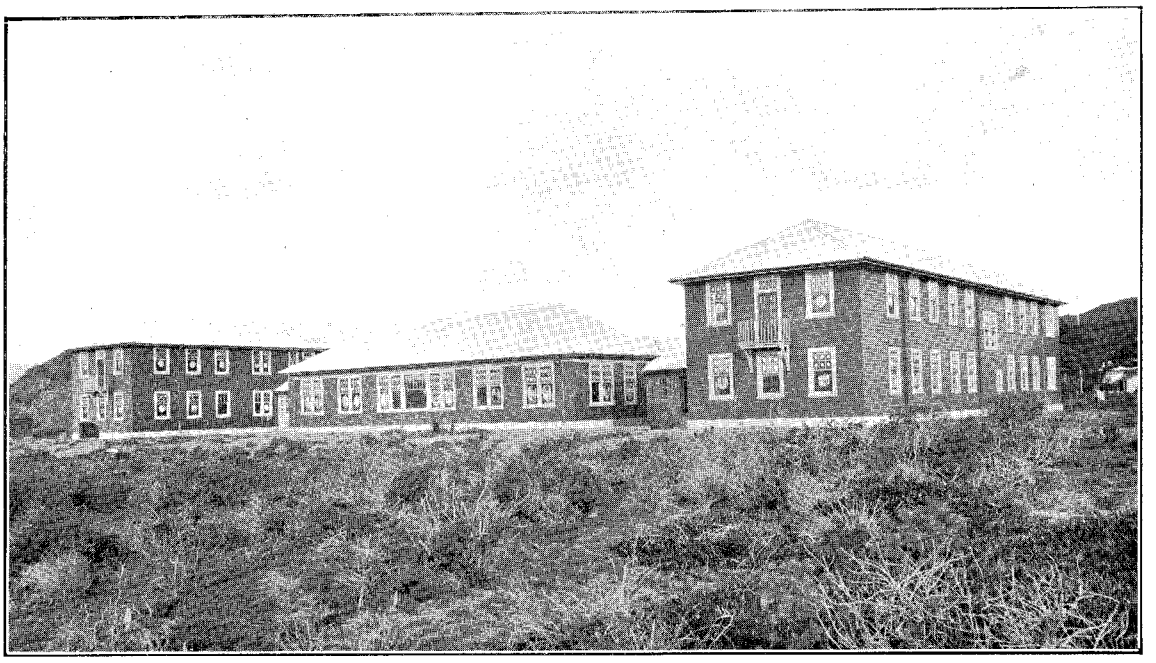
Power-house and Portion of Dam.
WAITAKI POWER DEVELOPMENT.



Half-way Bush Substation, Dunedin.
WAITAKI POWER DEVELOPMENT.

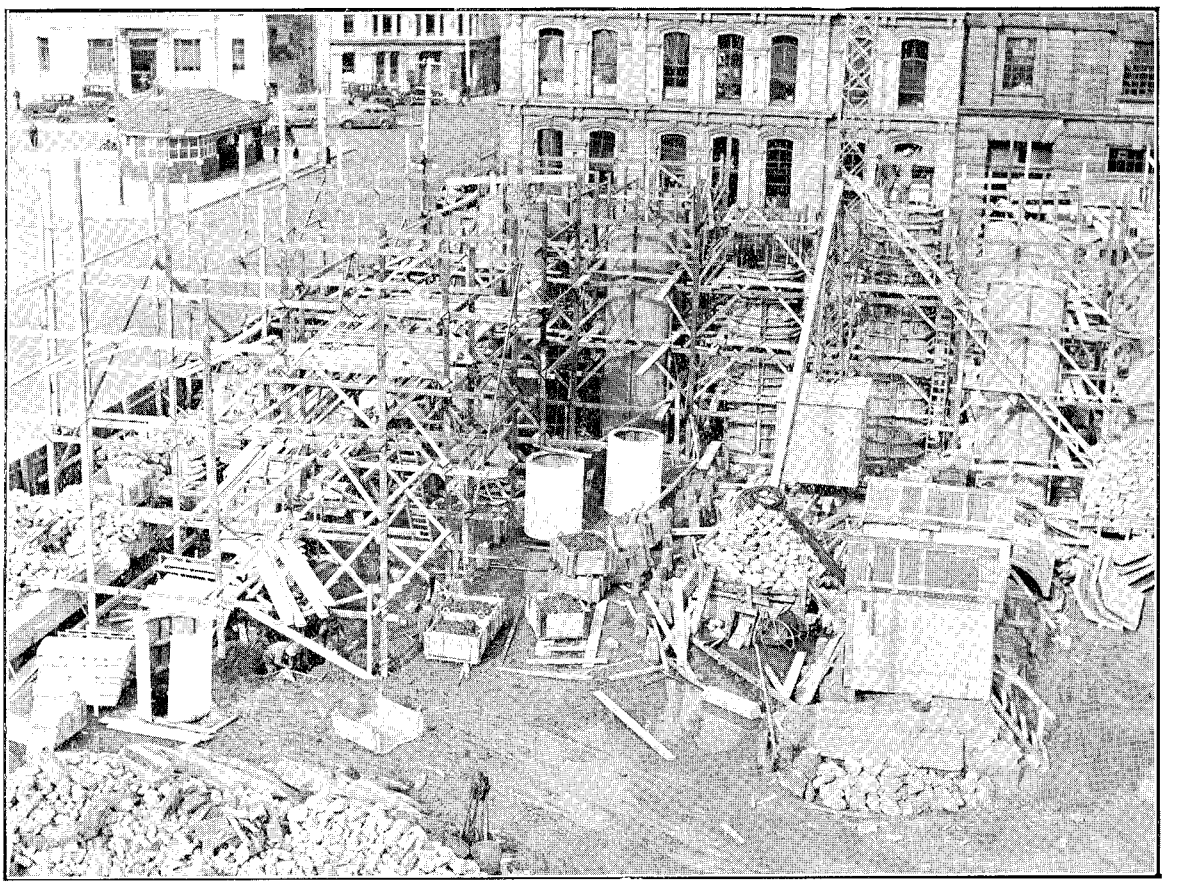
NEW OFFICES AND STORES.

PUBLIC WORKS DEPARTMENT, PALMERSTON NORTH.



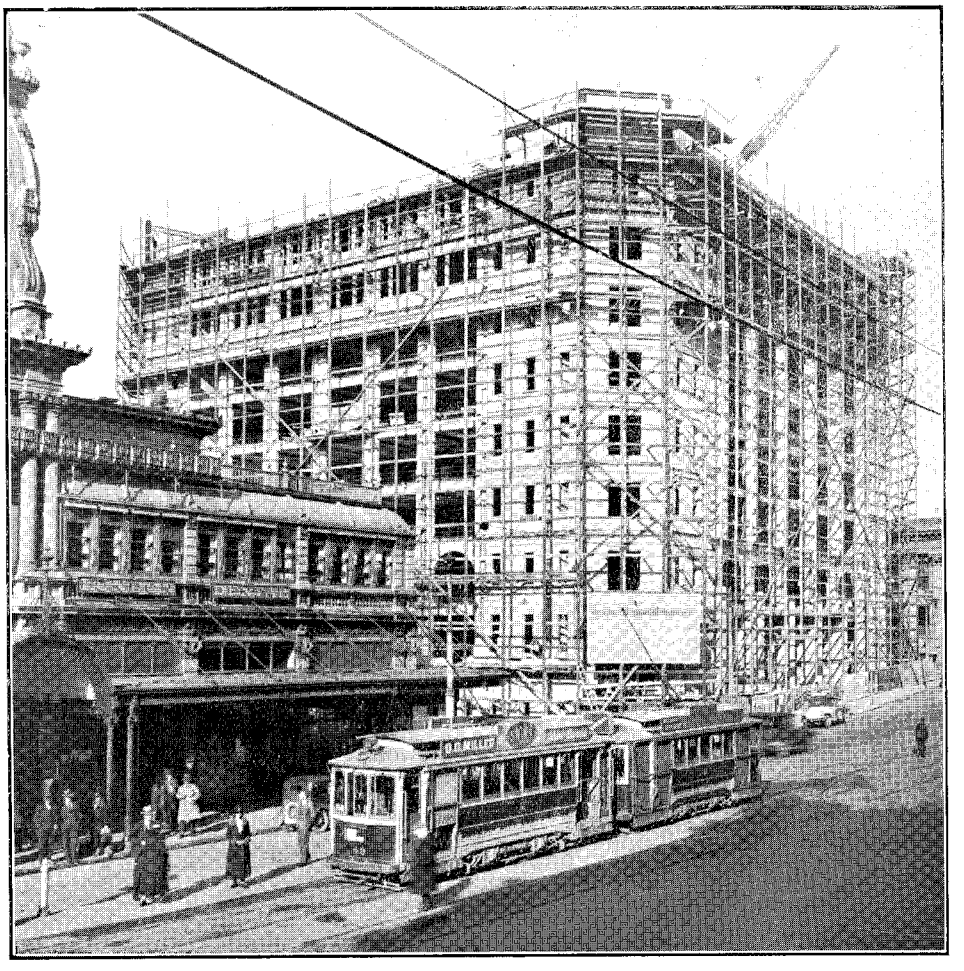
SINGLE MEN'S QUARTERS.

FORT DORSET, WELLINGTON.

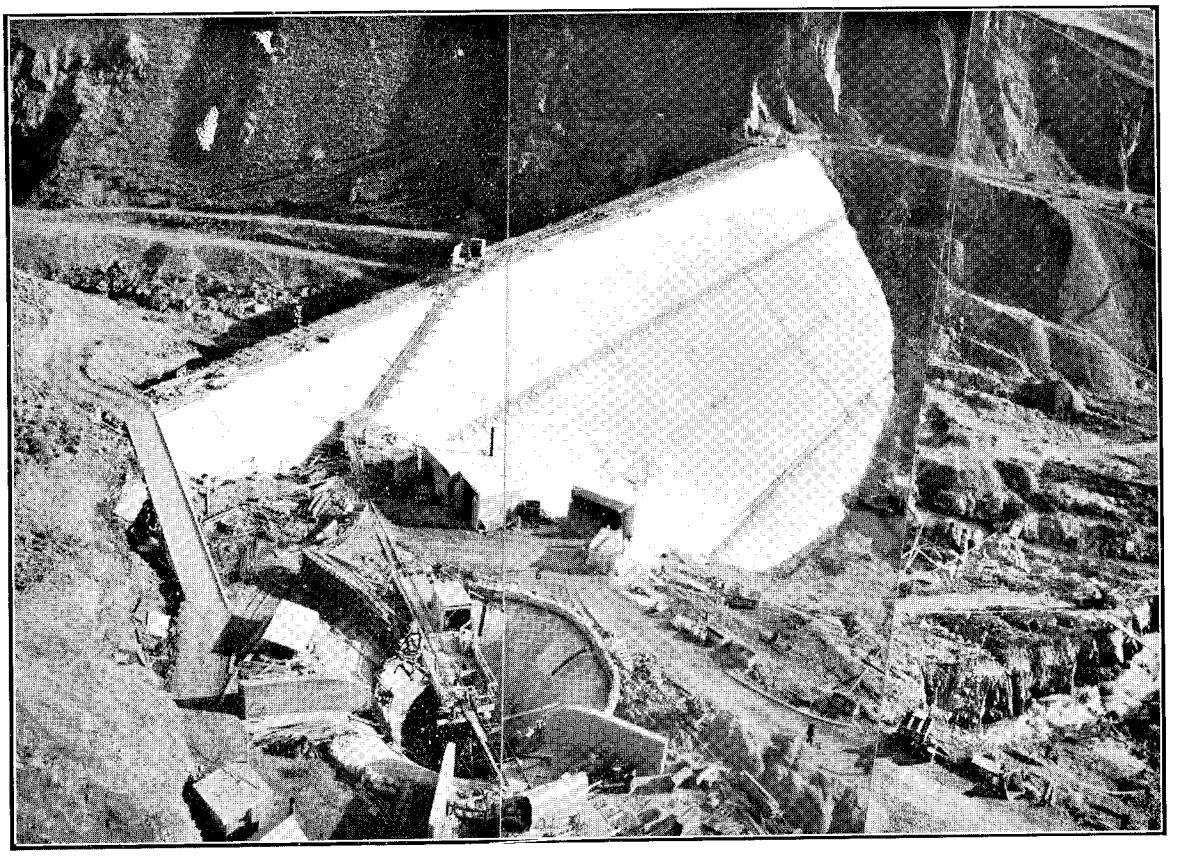


CAISSONS FOR FOUNDATIONS BEING CONSTRUCTED AND SUNK.

GOVERNMENT LIFE INSURANCE BUILDING, WELLINGTON.

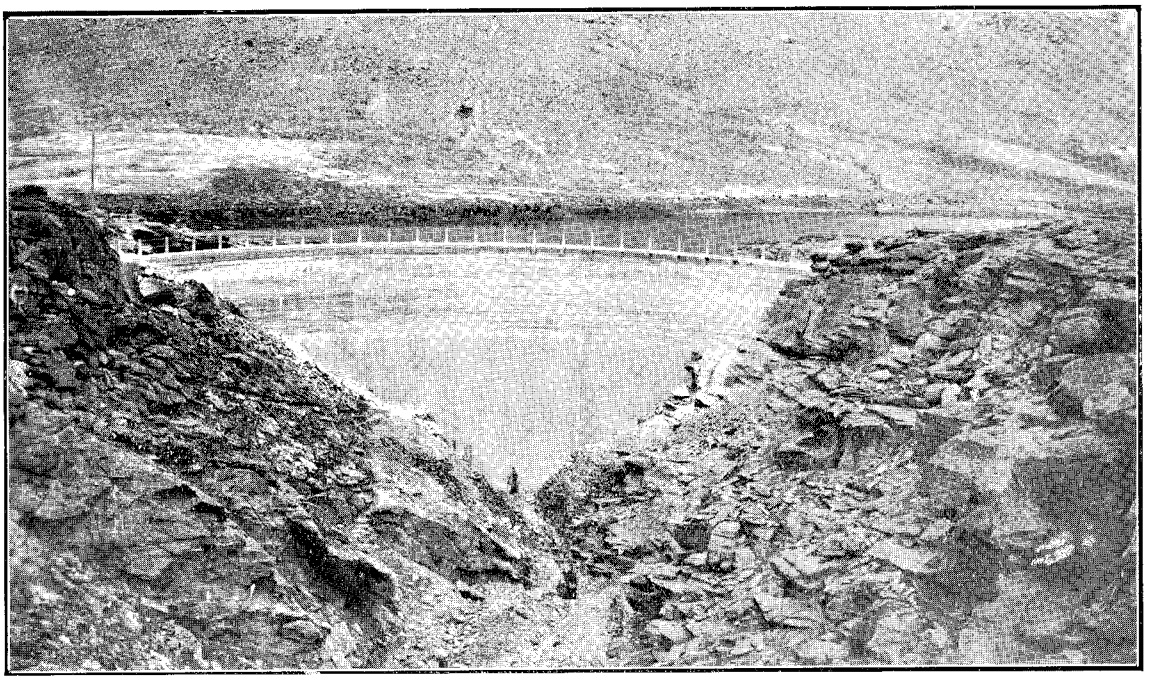


DUNEDIN POST-OFFICE UNDER CONSTRUCTION.

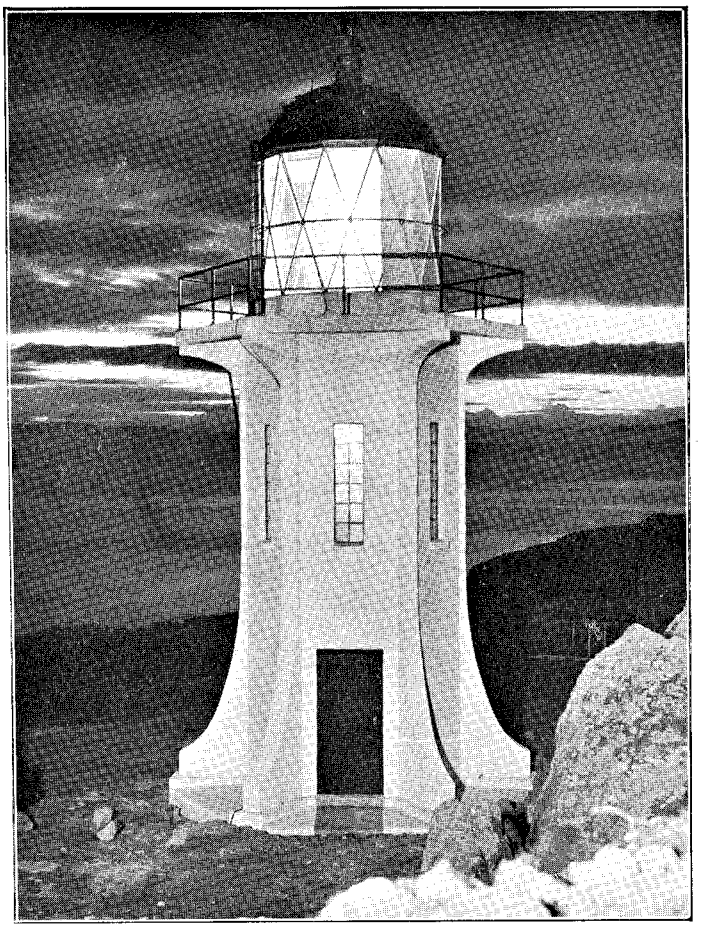


MANUHERIKIA FALLS DAM, NEARING COMPLETION.—SHAFT SPILLWAY IN FOREGROUND.

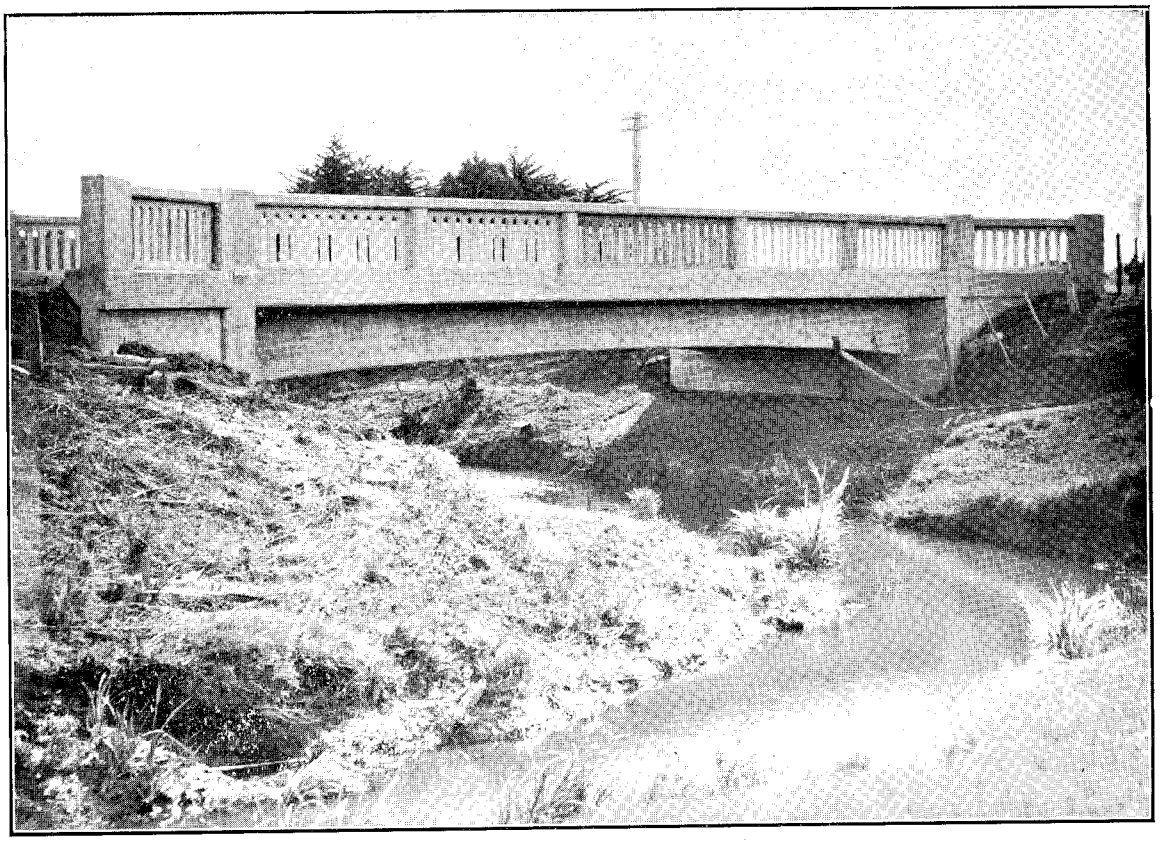
OMAKAU IRRIGATION SCHEME.



EARNSCLEUGH IRRIGATION SCHEME.—CONROY'S CREEK DAM.



BARING HEAD LIGHTHOUSE.



TAUPAKI ROAD BRIDGE.—47 FT. REINFORCED CONCRETE BEAM SPAN.

PUBLIC WORKS STATEMENT, 1935.

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TABLE No. 1.

SUMMARY SHOWING THE TOTAL EXPENDITURE ON PUBLIC WORKS AND OTHER SERVICES OUT OF PUBLIC WORKS FUND (GENERAL PURPOSES ACCOUNT) TO 31ST MARCH, 1935, AND THE LIABILITIES ON THAT DATE.

Number of Table containing Details.	Works.	Total Net Expenditure to 31st March, 1934.	Expenditure during Twelve Months ended 31st March, 1935.	Recoveries on Account of Services of Previous Years.	Total Net Expenditure to 31st March, 1935.	Liabilities on 31st March, 1935.	Total Net Expenditure and Liabilities.	Works.
		£	£	£	£	£	£	
3	Railways*	56,333,421	125,600	..	56,459,021	20,068	56,479,089	Railways.*
..	Roads†	22,171,078	371,573	471	22,542,180	34,746	22,576,926	Roads.†
4	Public buildings‡§	11,770,519	286,968	335,209	11,722,278	28,857	11,751,135	Public buildings.‡§
..	Telegraphs	11,424,605	135,933	..	11,560,538	89,262	11,649,800	Telegraphs.
..	Departmental	2,975,391	76,486	31,154	3,020,723	1,907	3,022,630	Departmental.
..	Charges and expenses of raising loans	3,827,707	600	..	3,828,307	..	3,828,307	Charges and expenses of raising loans.
..	Lighthouses, harbour-works, and harbour-defences	1,312,525	6,602	..	1,319,127	362	1,319,489	Lighthouses, harbour-works, and harbour defences.
..	Irrigation and water-supply‖	1,126,524	91,241	..	1,217,765	9,695	1,227,460	Irrigation and water-supply.‖
..	Lands improvement¶	809,763	82,092	722	891,133	6,269	897,402	Lands improvement.¶
..	Tourist and health resorts	691,298	12,880	705	703,473	238	703,711	Tourist and health resorts.
..	Settlement of unemployed workers	290,831	222,309	..	513,140	1,043	514,183	Settlement of unemployed workers.
..	Plant, material, and services	129,645	*Cr.* 10,513	165	118,967	16,539	135,506	Plant, material, and services.
..	Swamp land drainage	28,470	15,019	231	43,258	1,824	45,082	Swamp land drainage.
..	Native land settlement	179,433	125,790	9,662	295,561	23,846	319,407	Native land settlement.
		113,071,210	1,542,580	378,319	114,235,471	234,656	114,470,127	
	Closed accounts :—							Closed accounts :—
..	Immigration	3,313,791	..	370	3,313,421	..	3,313,421	Immigration.
..	Purchase of Native lands	2,054,024	..	..	2,054,024	..	2,054,024	Purchase of Native lands.
..	Defence	1,401,847	..	..	1,401,847	..	1,401,847	Defence.
..	Development of mining	831,015	..	..	831,015	..	831,015	Development of mining.
11 of 1877	Aiding works on Thames goldfields	50,000	..	..	50,000	..	50,000	Aiding works on Thames goldfields.
..	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.
..	Motor transport services	33,635	..	..	33,635	..	33,635	Motor transport services.
..	Thermal springs	14,600	..	..	14,600	..	14,600	Thermal springs.
10 of 1878	Coal-exploration and mine-development	10,835	..	..	10,835	..	10,835	Coal-exploration and mine-development.
		7,996,919	..	370	7,996,549	..	7,996,549	
..	Transfer to Main Highways Account, Construction Fund	1,226,000	..	..	1,226,000	..	1,226,000	Transfer to Main Highways Account, Construction Fund.
	Totals	122,294,129	1,542,580	378,689	123,458,020	234,656	123,692,676	Totals.

* Does not include expenditure on Hutt Railway and Road Improvement, Wellington-Manawatu Purchase, and Railways Improvement Accounts. Includes £150,000 paid to Midland Railway bondholders. † Includes £4,500 expended under section 16 (1), Native Land Amendment and Native Land Claims Adjustment Act, 1923. ‡ Includes £12,500 expended under Finance Act, 1929, section 32. § Expenditure on workers dwellings totalling £319,918 now transferred to State Advances Account. ‖ 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. ¶ £6,727 previously expended on irrigation under this item now transferred to Irrigation and Water-supply; does not include £300,930 expended and included under Roads Class.

TABLE No. 2.

GENERAL SUMMARY.

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND (GENERAL PURPOSES ACCOUNT), 1913–14 to 1934–35.

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, 1913.	Expenditure.										
		1913–14.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.	1919–20.	1920–21.	1921–22.	1922–23.	1923–24.
	£	£	£	£	£	£	£	£	£	£	£	£
Immigration	2,254,609	33,914	33,219	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*
Public Works, Departmental	784,095	66,650	100,719	111,489	131,701	127,962 *Cr. 2,662*	115,419 *Cr. 4,119*	121,677	143,280 *Cr. 6,280*	128,002 *Cr. 525*	111,367 *Cr. 131*	110,445 *Cr. 69*
Irrigation and Water-supply	29,535	40,329	32,090	29,874	28,754	11,650 *Cr. 18,451*	22,919	34,115	55,345 *Cr. 9,854*	83,313	58,131	95,467
Railways	29,799,218	1,104,897 *Cr. 5,485*	1,146,753 *Cr. 6,022*	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*
Payment to Midland Railway Bondholders	150,000	..	..	..	..	..	..	..	..	..	..	..
Roads :—												
Miscellaneous Roads and Bridges	8,433,806	353,836 *Cr. 515*	484,365	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*
Roads on Goldfields..	973,108	24,143	30,065	24,432	17,099	6,912	4,186	12,465	11,050	11,264	4,850	2,867
Development of Thermal Springs and Natural Scenery ..	16,023	..	..	..	..	..	..	..	..	..	..	..
Lands Improvement Account*	300,930	..	..	..	..	..	..	..	..	..	..	..
Total, Roads	9,723,867	377,464	514,430	424,494	220,845	135,042	225,076	387,959	538,823	563,962	647,762	754,049
Development of Mining	877,802	4,889	2,384 *Cr. 255*	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*
Purchase of Native Lands	1,573,740	*Cr. 857*	*Cr. 1,060*	*Cr. 972*	*Cr. 868*	*Cr. 57*	..	*Cr. 57*	*Cr. 59*	*Cr. 52*	..	..
Native Lands Purchase Account	491,980	..	..	..	..	..	..	..	..	..	..	..
Total, Land Purchases	2,065,720	*Cr. 857*	*Cr. 1,060*	*Cr. 972*	*Cr. 868*	*Cr. 57*	..	*Cr. 57*	*Cr. 59*	*Cr. 52*	..	..
Telegraph Extension	2,277,124	392,648	288,395	249,554	203,311	213,955	198,611	249,379	336,468	590,981	512,657 *Cr. 11,082*	717,409

* Excludes expenditure subsequent to 1900 included under separate class "Lands Improvement."

[*Continued on page 6.*

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing Net Yearly Expenditure out of Public Works Fund (General Purposes Account), 1913-14 to 1934-35—*continued.*

Description of Services.	Total Net Expenditure to 31st March, 1913.	Expenditure.										
		1913-14.	1914-15.	1915-16.	1916-17.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
	£	£	£	£	£	£	£	£	£	£	£	£
Public Buildings :—												
General (including Miscellaneous)	253,545	43,199	52,239	22,050	12,648	11,646 *Cr. 15,067*	43,168	64,207	39,504	87,057	113,553	8,160
Parliamentary	352,288	23,612	31,478	17,133	22,586	37,233	..	..	..	..	..	..
Judicial { Courthouses		9,423	5,171	4,902	299	21	..	868	1,400	4,358	2,018 *Cr. 13*	2,448
Judicial { Prisons	771,847	4,928	14,515	17,786	15,685	13,195	16,299	20,981	30,038 *Cr. 800*	41,740	23,113	26,484 *Cr. 2,568*
Judicial { Police-stations		14,094	19,122	25,484	21,147	18,814	6,157	24,944	36,843	22,544	6,298	12,838
Post and Telegraph	1,045,095	78,815	60,838	35,258	22,744	33,525	26,072	66,543	93,364 *Cr. 560*	112,906 *Cr. 675*	77,211 *Cr. 69*	108,395
Customs	49,441	..	..	..	..	..	..	..	..	..	..	..
Quarantine Stations	6,255	..	..	..	..	..	..	35,490	15,529	4,581	154	171
Mental Hospitals	652,625	26,001	53,996	54,898 *Cr. 15*	44,602	26,502	14,640	18,277	27,368	41,838	13,852	26,541
Public Health	32,754	..	..	..	..	..	..	..	..	..	..	..
Health and Hospital Institutions	137,450	1,435	998	1,426	7,570	4,080	2,332	8,484	4,099	26,131	20,981 *Cr. 1,399*	7,420
School Buildings	2,075,352	121,954	122,940	97,972	70,367	63,082	115,656	195,500	244,722	2,469 *Cr. 9,255*	.. *Cr. 368*	.. *Cr. 1,090*
Agricultural	41,472	4,398	2,428 *Cr. 34*	2,972	3,046	5,685	4,229	7,227	9,345	1,115	514 *Cr. 27*	282 *Cr. 171*
Workers' Dwellings	69,100	41,741	68,275	55,893	35,437	15,505	7,293	26,674	..	..	..	..
Total, Public Buildings	5,487,224	369,600	431,966	335,759	256,131	214,221	235,846	469,195	500,852	334,809	255,818	188,910
Lighthouses, Harbour-works, and Harbour-defences :—												
Lighthouses..	194,444	5,174	3,887	1,415	449	561	1,663	253	758	16,350	3,260	4,473
Harbour-works	362,621	3,346 *Cr. 1,462*	12,563	9,355	2,280	2,359	3,729	3,245	4,080	2,424	6,524	6,334
Harbour-defences	541,142	539 *Cr. 300*	681	2,903	1,038	56	..	..	..	..	.. *Cr. 1,235*	.. *Cr. 16*
Total, Lighthouses, &c.	1,098,207	7,297	17,131	13,673	3,767	2,976	5,392	3,498	4,838	18,774	8,549	10,791
Rates on Native Lands	68,672	..	..	..	..	..	..	..	..	..	..	..

[*Continued on page 7.*

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND (GENERAL PURPOSES ACCOUNT), 1913-14 to 1934-35—*continued.*

Description of Services.	Total Net Expenditure to 31st March, 1913.	Expenditure.										
		1913-14.	1914-15.	1915-16.	1916-17.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
	£	£	£	£	£	£	£	£	£	£	£	£
Contingent Defence	944,208	30,186	15,221	37,619	9,742	6,714	8,809 *Cr. 922*	10,187	8,701	15,586	1,702 *Cr. 463*	4,931 *Cr. 280*
Tourist and Health Resorts	229,539	14,989	8,232 *Cr. 12*	5,167 *Cr. 500*	1,094	931	1,620	6,194	19,041	17,996 *Cr. 110*	5,435	27,264
Lands Improvement*	97,986	16,996 *Cr. 432*	13,810 *Cr. 522*	5,936	*Cr. 2,731*	1,838	*Cr. 4,268*	2,964	2,064	17,478	26,204	18,182
Charges and Expenses of raising Loans	1,243,695	105,449 *Cr. 96,741*	35,495 *Cr. 34,865*	5,037 *Cr. 5,030*	35	1	..	..	184	174,280	62,399	311,905
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 *Cr. 31*	47,682	169,910	122,801	*Cr. 4,983*	*Cr. 49,159* *Cr. 16*
Motor Transport Service	..	..	..	..	..	..	..	..	..	..	22,679	962
Total Ways and Means Credits	..	*105,792*	*42,770*	*11,160*	*5,713*	*43,492*	*11,993*	*112,864*	*19,628*	*11,616*	*20,127*	*9,142*
Grand Total—Net Expenditure	57,375,436	2,461,793	2,597,109	2,363,658	1,488,786	1,193,930	1,195,489	1,907,850	3,121,132	5,449,351	3,892,320	4,056,423

* Expenditure prior to 1901 (totalling £300,930) included under separate class "Roads."

[*Continued on page 8.*

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing Net Yearly Expenditure out of Public Works Fund (General Purposes Account), 1913–14 to 1934–35—*continued.*

Description of Services.	Expenditure.											Total Net Expenditure to 31st March, 1935.
	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	
	£	£	£	£	£	£	£	£	£	£	£	£
Immigration	136,353 *Cr. 16*	107,521 *Cr. 443*	184,918	67,157	50,266 *Cr. 283*	41,756	33,544	5,265 *Cr. 210*	.. *Cr. 583*	.. *Cr. 532*	.. *Cr. 370*	3,313,421
Public Works, Departmental	127,556 *Cr. 19*	126,596 *Cr. 129*	115,866 *Cr. 35,948*	130,951 *Cr. 13,328*	142,252 *Cr. 88,499*	132,783 *Cr. 51,671*	131,816 *Cr. 16,381*	151,377 *Cr. 33,947*	104,904 *Cr. 52,639*	98,703 *Cr. 33,872*	76,486 *Cr. 31,154*	3,020,723
Irrigation and Water-supply*	127,995	56,227 *Cr. 31*	56,937	49,735 *Cr. 2,798*	55,198 *Cr. 8*	69,657	62,614	37,749	53,290 *Cr. 96*	66,838	91,241	1,217,765
Railways	1,878,729 *Cr. 37,924*	1,988,614 *Cr. 16,875*	1,480,807 *Cr. 95,647*	1,141,822 *Cr. 1,699*	1,216,277 *Cr. 2,595*	1,812,521 *Cr. 1,296*	1,987,196 *Cr. 792*	952,388 *Cr. 20,568*	160,853 *Cr. 9,056*	132,111 *Cr. 20*	125,600	56,309,021
Payment to Midland Railway Bondholders	..	..	..	..	..	..	..	..	..	..	..	150,000
Roads:—												
Miscellaneous Roads and Bridges	603,968 *Cr. 231*	564,694 *Cr. 4,810*	575,898 *Cr. 981*	669,833 *Cr. 540*	780,990 *Cr. 330*	1,005,330 *Cr. 415*	1,379,810 *Cr. 472*	1,078,270 *Cr. 564*	396,559 *Cr. 1,171*	359,671 *Cr. 445*	371,573 *Cr. 471*	20,850,545
Roads to give access to Outlying Districts	..	..	..	33,642	51,582	53,693	91,126	3,940	..	..	..	233,983
Roads on Goldfields	2,755	3,934	2,230	2,330 *Cr. 467*	1,005	1,885	4,586	..	..	..	..	1,140,699
Development of Thermal Springs and Natural Scenery	..	..	..	..	..	..	..	..	..	..	..	16,023
Lands Improvement Account	..	..	..	..	..	..	..	..	..	..	..	300,930
Total, Roads	606,492	563,818	577,147	704,798	833,247	1,060,493	1,475,050	1,081,646	395,388	359,226	371,102	22,542,180
Development of Mining	..	..	..	.. *Cr. 1,130*	.. *Cr. 260*	.. *Cr. 260*	.. *Cr. 260*	..	.. *Cr. 50*	..	..	881,015
Purchase of Native Lands	..	..	*Cr. 535*	*Cr. 56*	..	..	..	..	..	*Cr. 7,123*	..	1,562,044
Native Lands Purchase Account	..	..	..	..	..	..	..	..	..	..	..	491,980
Total, Land Purchases	..	..	*Cr. 535*	*Cr. 56*	..	..	..	..	..	*Cr. 7,123*	..	2,054,024
Settlement of Unemployed Workers	..	..	..	..	..	..	..	..	118,722	172,109	222,309	513,140
Telegraph Extension	957,294	931,661	558,042	625,540	624,414	594,383	419,756	249,978 *Cr. 32*	99,999	144,160	135,933	11,560,538

* Includes £6,727 previously included under Lands Improvement class.

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND (GENERAL PURPOSES ACCOUNT), 1913–14 to 1934–35—*continued.*

Description of Services.	Expenditure.											Total Net Expenditure to 31st March, 1935.
	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	
	£	£	£	£	£		£	£	£	£	£	£
Public Buildings :—												
General (including Miscellaneous)	30,791	29,369	119,864	42,553	4,272	14.106*	85,204	33,189	2,107	594	30,713	1,101,706
	Cr. 35	*Cr. 345*	*Cr. 429*	*Cr. 1,065*	*Cr. 420*	*Cr. 3,156*	*Cr. 55*	*Cr. 4,231*	*Cr. 2,067*	*Cr. 1,075*	*Cr. 14,087*	
Parliamentary	..	..	..	..	35	27,142	15,723	37	..	..	..	..
Judicial — Courthouses	5,363	7,209	1,261	7,531	8,387	15,765	19,572	3,513	970	72	533	527,267
	Cr. 19		*Cr. 13*	..	*Cr. 95*	*Cr. 29*	*Cr. 16,403*	*Cr. 529*	*Cr. 222*	*Cr. 255*	*Cr. 93*	
Judicial — Prisons	25,279	24,197	22,812	22,358	12,573	18,814	2,504	2,621	2,026	1,018	1,605	
	Cr. 86		*Cr. 908*	*Cr. 524*	*Cr. 321*	*Cr. 285*	*Cr. 134*	*Cr. 67*	*Cr. 71*			1,494,030
Judicial — Police-stations	18,553	16,594	7,411	5,561	6,925	8,442	8,360	2,535	1,022	74	2,754	
		Cr. 102	*Cr. 13*	*Cr. 970*	*Cr. 605*	*Cr. 319*	*Cr. 54*	*Cr. 91*	*Cr. 80*	*Cr. 79*	*Cr. 240*	
Post and Telegraph	65,917	89,865	86,052	77,194	62,087	104,157	138,671	104,505	2,763	21,078	100,484	2,595,970
	Cr. 210	*Cr. 453*	*Cr. 1,114*	*Cr. 834*	*Cr. 1,980*	*Cr. 197*	*Cr. 1,391*	*Cr. 3,179*	*Cr. 4,823*	*Cr. 1,502*	*Cr. 582*	
Customs	..	..	..	..	..	..	..	..	..	..	..	49,441
Quarantine Stations	284	..	..	..	..	..	..	..	..	..	..	62,464
Mental Hospitals	68,438	77,835	68,635	51,119	96,782	152,096	134,140	45,938	28,756	73,021	98,629	1,891,731
		Cr. 283		*Cr. 3,600*				*Cr. 860*			*Cr. 40*	
Public Health	..	..	..	..	..	..	..	..	..	..	..	32,754
Health and Hospital Institutions	27,951	31,177	15,840	14,361	19,637	16,651	17,338	3,316	301	1,248	656	368,609
		Cr. 300		*Cr. 310*				*Cr. 1*	*Cr. 113*	*Cr. 150*		
School Buildings	..	..	..	..	..	..	..	259,149	52,623	52,239	51,506	3,500,310
	Cr. 905	*Cr. 1,050*	*Cr. 7,953*	..	*Cr. 2,428*		*Cr. 1,110*	*Cr. 40*		*Cr. 805*	*Cr. 217*	
Agricultural	3,242	7,932	4,164	2,863	2,808	2,963	1,509	..	..	48	88	97,996
	Cr. 686	*Cr. 865*	*Cr. 310*		*Cr. 2,395*	*Cr. 1,721*	*Cr. 194*	*Cr. 1,927*	*Cr. 1,535*	*Cr. 437*	*Cr. 32*	
Workers' Dwellings†	..	..	..	..	..	..	..	..	..	..	*Cr. 319,918*	..
Total, Public Buildings	243,877	280,780	315,299	216,237	205,262	354,429	403,680	443,878	81,657	145,089	*Cr. 48,241*	11,722,278
Lighthouses, Harbour-works, and Harbour-defences :—												
Lighthouses	2,850	5,690	5,758	7,979	2,637	4,460	4,103	5,046	688	1,276	4,021	275,945
		Cr. 750				*Cr. 500*						
Harbour-works	423	3,717	13,263	15,891	14,425	10,736	6,742	6,987	*Cr. 5,277*	11,988	2,581	498,374
		Cr. 131	*Cr. 204*	*Cr. 165*								
Harbour-defences	..	..	..	..	..	..	..	..	..	..	..	544,808
Total, Lighthouses, &c.	3,273	8,526	18,817	23,705	17,062	14,696	10,845	12,033	*Cr. 4,589*	13,264	6,602	1,319,127
Rates on Native Lands	..	..	..	..	..	..	..	..	..	..	..	68,672

* Includes £12,500 expended under Finance Act, 1929, section 32. † Now transferred to State Advances Account.

TABLE No. 2—*continued.*

GENERAL SUMMARY—*continued.*

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND (GENERAL PURPOSES ACCOUNT), 1913–14 to 1934–35—*continued.*

Description of Services.	Expenditure.											Total Net Expenditure to 31st March, 1935.
	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.	
	£	£	£	£	£	£	£	£	£	£	£	£
Contingent Defence	27,133 *Cr. 580*	89,670 *Cr. 33*	34,014 *Cr. 751*	39,986 *Cr. 465*	67,652 *Cr. 648*	46,766 *Cr. 1,325*	13,812 *Cr. 586*	.. *Cr. 4,039*	.. *Cr. 624*	.. *Cr. 76*	..	1,401,847
Tourist and Health Resorts	12,343 *Cr. 81*	43,486	31,981	36,673 *Cr. 516*	39,254 *Cr. 440*	20,547 *Cr. 1,213*	60,288 *Cr. 2,494*	87,609 *Cr. 85*	14,454 *Cr. 877*	13,510 *Cr. 21*	12,880 *Cr. 705*	703,473
Lands Improvement*	34,172	70,493 *Cr. 19*	56,267 *Cr. 135*	72,898 *Cr. 2,574*	85,861 *Cr. 87*	79,454 *Cr. 112*	70,534 *Cr. 1,041*	38,899 *Cr. 506*	38,906 *Cr. 248*	71,825 *Cr. 329*	82,092 *Cr. 722*	891,133
Swamp Land Drainage	..	..	..	..	..	..	..	..	14,808	13,959 *Cr. 297*	15,019 *Cr. 231*	43,258
Charges and Expenses of raising Loans	241,930	297,180	155,373	100,297	438,238 *Cr. 3,811*	518,158	164,535	98,098	15,851	14	600	3,828,307
Interest and Sinking Funds	..	..	..	..	..	..	..	..	..	..	..	218,500
Coal-exploration and Mine-development	..	..	..	..	..	..	..	..	..	..	..	10,835
Thermal Springs	..	..	..	..	..	..	..	..	..	..	..	14,600
Plant, Material, and Services	*Cr. 30,956* *Cr. 1*	36,930 *Cr. 855*	*Cr. 9,334* *Cr. 1,992*	*Cr. 17,610* *Cr. 8,985*	*Cr. 6,551* *Cr. 1,224*	*Cr. 35,092* *Cr. 360*	*Cr. 42,824* *Cr. 216*	*Cr. 103,571* *Cr. 1,338*	*Cr. 45,463* *Cr. 161*	1,421 *Cr. 22*	*Cr. 10,513* *Cr. 165*	118,967
Native Land Settlement	..	..	..	..	..	..	..	..	..	179,485 *Cr. 52*	125,790 *Cr. 9,662*	295,561
Motor Transport Service	5,000	4,994	..	..	..	..	..	..	..	..	..	33,635
Transfer to Main Highways Account :— Construction Fund	226,000	..	400,000	200,000	200,000	200,000	..	..	..	..	..	1,226,000
Total Ways and Means Credits	*40,793*	*27,474*	*146,933*	*40,026*	*106,429*	*62,859*	*41,583*	*72,214*	*74,416*	*47,092*	*378,689*	..
Grand Total—Net Expenditure	4,558,570	4,588,111	3,841,126	3,360,638	3,870,577	4,854,314†	4,769,076	2,994,624	984,446	1,369,370	1,163,891	123,458,020

* 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. † Includes £12,500 expended under Finance Act, 1929, section 32.

TABLE No. 3.

Expenditure on Railways to 31st March, 1935.

Lines of Railway.	Mileage opened for Traffic.	Total Expenditure by General Government to 31st March, 1934.	Recoveries on Account of Expenditure of Previous Years.	Expenditure out of Public Works Fund during Year 1934-35: New Works.		Total Expenditure by General Government to 31st March, 1935.	Valuation of Works constructed by Provinces and Midland Railway Company.
				Construction and Surveys.	Railways Improvement and Works on Open Lines.		
	M. ch.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Kaihu Valley	24 32	179,146 14 9	..	..	Cr. 3 0 0	179,143 14 9	..
Opua Wharf to Whangarei and Onerahi	58 06	608,258 15 7	..	..	..	608,258 15 7	..
Otiria to Ngapuhi	13 45	127,370 15 6	..	..	..	127,370 15 6	..
Whangarei Branch (Kioreroa to Waiotira)	19 79	420,483 1 0	..	..	..	420,483 1 0	..
North Auckland Main Trunk—							
Ngapuhi Northwards	11 00	886,343 7 11	..	Cr. 702 11 7	..	885,640 16 4	..
Helensville Northwards	83 39	2,989,296 4 0	..	..	..	2,989,296 4 0	..
North Auckland Main Trunk to Dargaville	..	454,630 3 8	..	681 1 3	..	455,311 4 11	..
Helensville to Te Awamutu	148 67	6,025,674 9 4	..	..	Cr. 212 10 0	6,025,461 19 4	..
Waiuku Branch (Paerata to Waiuku)	12 69	208,909 9 6	..	..	..	208,909 9 6	..
Huntly to Awaroa	8 75	184,379 5 0	..	..	..	184,379 5 0	..
Waikokowai Branch	..	3,442 0 0	..	..	..	3,442 0 0	..
Frankton to Thames	62 58	506,021 3 7	..	..	..	506,021 3 7	..
Cambridge Branch (Ruakura Junction to Cambridge)	12 02	61,831 17 3	..	..	..	61,831 17 3	..
Morrinsville to Rotorua	69 33	434,212 7 1	..	..	Cr. 85 0 0	434,127 7 1	..
Marton to Te Awamutu	209 69	3,123,234 13 5	..	..	Cr. 72 0 0	3,123,162 13 5	..
Waipa Gravel Access Branch	..	114 0 0	..	..	..	114 0 0	..
Raetihi Branch	8 50	89,452 2 1	..	..	..	89,452 2 1	..
Rotorua to Taupo	..	37,862 13 11	..	..	..	37,862 13 11	..
Paeroa to Pokeno	..	22,890 1 8	..	..	..	22,890 1 8	..
Paeroa to Tauranga	50 65	1,250,350 2 9	..	..	13 7 4	1,250,363 10 1	..
Tauranga to Taneatua, including Te Maunga to Maunganui Branch	59 17	1,497,997 4 2	..	..	Cr. 67 0 0	1,497,930 4 2	..
Gisborne to Motu	49 32	625,075 6 9	..	..	..	625,075 6 9	..
Gisborne to Ormond Tramway	..	4,975 1 7	..	..	..	4,975 1 7	..
Napier to Gisborne—							
Gisborne Southwards	11 51	285,930 15 6	..	..	Cr. 384 9 8	285,546 5 10	..
Waikokopu Northwards	..	558,132 4 1	..	Cr. 4,699 6 3	..	553,432 17 10	..
Wairoa Northwards	..	20,681 12 6	..	..	..	20,681 12 6	..
Napier Northwards	38 62	2,389,008 8 11	..	Cr. 4,890 2 8	..	2,384,118 6 3	..
Waikokopu Branch	..	628,567 16 5	..	Cr. 406 9 4	..	628,161 7 1	..
Wellington to Napier—							
Napier to Woodville and Palmerston North	114 06	1,177,672 7 8	..	..	Cr. 838 0 0	1,176,834 7 8	..
Wellington to Woodville, including Te Aro Extension	121 70	3,256,396 1 4	..	..	Cr. 845 0 0	3,255,551 1 4	..
Featherston to Martinborough	..	399 0 0	..	..	..	399 0 0	..
Wellington to Waitara—							
Wellington to Longburn	83 37	3,063,636 8 4	..	..	167,464 19 11	3,230,501 8 3	..
Foxton to Waitara and Moturoa	196 22	2,110,997 18 11	..	..	Cr. 170 0 0	2,110,827 18 11	..
Mount Egmont Branch	6 00	70,536 1 6	..	..	..	70,536 1 6	..
Moturoa to Opunake	..	3,105 0 0	..	..	..	3,105 0 0	..
Opunake Branch (Te Roti to Opunake)	22 63	447,861 18 7	..	..	..	447,861 18 7	..
Manaia Branch (Kapuni to Manaia)	..	9,483 6 0	..	..	..	9,483 6 0	..
Rangitikei River Quarry Line	..	206 0 0	..	..	..	206 0 0	..

TABLE No. 3—*continued.*

Expenditure on Railways to 31st March, 1935—*continued.*

Lines of Railway.	Mileage opened for Traffic.	Total Expenditure by General Government to 31st March, 1934.	Recoveries on Account of Expenditure of Previous Years.	Expenditure out of Public Works Fund during Year 1934–35: New Works.		Total Expenditure by General Government to 31st March, 1935.	Valuation of Works constructed by Provinces and Midland Railway Company.
				Construction and Surveys.	Railways Improvement and Works on Open Lines.		
	M. ch.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Stratford to Okahukura (East End)	33 37	1,464,932 19 8	..	..	204 15 11	1,465,137 15 7	..
Stratford to Okahukura (West End)	55 43	1,617,626 15 6	..	..	*Cr.* 5,004 0 11	1,612,622 14 7	..
Nelson to Greymouth—							
Nelson to Inangahua	64 47	720,155 18 1	..	*Cr.* 1,068 5 6	..	719,087 12 7	78,307 0 0
Stillwater to Inangahua	57 32	226,539 15 11	..	..	54 0 0	226,593 15 11	279,685 0 0
Ngahere to Blackball	3 40	147,881 12 11	..	..	..	147,881 12 11	..
Westport to Ngakawau	19 56	209,904 14 2	..	..	..	209,904 14 2	..
Ngakawau to Mokihinui	7 12	*	..	..	..	..	..
Mokihinui to Colliery Line	3 69	†	..	..	..	..	..
Westport to Cape Foulwind	7 00	‡	..	..	..	..	..
Westport to Inangahua	5 74	638,996 14 10	..	*Cr.* 6,716 4 3	..	632,280 10 7	..
Greymouth to Rewanui	2 44	259,815 10 2	..	..	..	259,815 10 2	..
Point Elizabeth Branch	8 70	74,363 10 11	..	..	..	74,363 10 11	..
Greymouth to Ross and Mikonui	38 68	431,458 2 10	..	..	*Cr.* 19 10 0	431,438 12 10	..
Picton to Waipara—							
Picton Southwards	56 06	957,178 17 7	..	*Cr.* 2,233 13 3	*Cr.* 35 0 0	954,910 4 4	..
Waipara Northwards	44 14	612,388 8 10	..	*Cr.* 3,666 3 9	..	608,722 5 1	..
Christchurch to Greymouth—							
Rolleston to Bealey	73 07	1,012,029 5 11	..	..	..	1,012,029 5 11	61,579 0 0
Whitecliffs Branch	11 38	25,021 0 0	..	..	..	25,021 0 0	..
Greymouth to Bealey	58 12	1,978,643 10 6	..	..	*Cr.* 20 0 0	1,978,623 10 6	263,889 0 0
Hurunui to Waitaki—							
Main Line (Waiau to Waitaki)	219 07	2,701,266 7 5	..	..	*Cr.* 796 0 0	2,700,470 7 5	316,135 0 0
Oxford Branch (Rangiora to Oxford West)	21 76	53,072 8 2	..	..	..	53,072 8 2	..
Eyreton Branch (Kaiapoi to Bennett's)	20 07	44,277 0 0	..	..	..	44,277 0 0	..
Lyttelton Branch	6 26	230,493 18 4	..	..	..	230,493 18 4	340,500 0 0
Southbridge Branch (Hornby to Southbridge)	25 31	92,181 4 8	..	..	..	92,181 4 8	..
Little River Branch (Lincoln to Little River)	22 46	111,940 7 9	..	..	..	111,940 7 9	..
Rakaia to Methven	22 20	77,090 19 2	..	..	..	77,090 19 2	..
Ashburton to Springburn	27 29	64,025 11 3	..	..	..	64,025 11 3	..
Orari to Geraldine	..	321 0 0	..	..	..	321 0 0	..
Fairlie Branch (Washdyke Junction to Fairlie)	36 05	70,606 10 8	..	..	..	70,606 10 8	75,124 0 0
Waimate Branch	12 63	80,862 4 6	..	..	..	80,862 4 6	..
Canterbury Interior Main Line—							
Oxford to Malvern	11 44	46,248 0 0	..	..	..	46,248 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	252 71	4,159,654 3 5	..	..	4,127 8 3	4,163,781 11 8	82,259 0 0
Duntroon Branch (Pukeuri to Kurow)	37 33	86,564 14 6	..	..	..	86,564 14 6	37,500 0 0
Ngapara Branch (Waiareka Junction to Ngapara)	14 76	25,238 2 0	..	..	..	25,238 2 0	58,009 0 0

* The funds for this extension—namely, £35,501 2s. 11d.—were provided by the Westport Harbour Board. † The funds for purchase of this line—namely, £15,745—were provided by the Harbour Board. ‡ The funds for this line—namely, £93,450—were provided by the Westport Harbour Board.

TABLE No. 3—*continued.*

EXPENDITURE ON RAILWAYS TO 31ST MARCH, 1935—*continued.*

Lines of Railway.	Mileage opened for Traffic.	Total Expenditure by General Government to 31st March, 1934.	Recoveries on Account of Expenditure of Previous Years.	Expenditure out of Public Works Fund during Year 1934–35: New Works.		Total Expenditure by General Government to 31st March, 1935.	Valuation of Works constructed by Provinces and Midland Railway Company.
				Construction and Surveys.	Railways Improvement and Works on Open Lines.		
Waitaki to Bluff—*continued.*	M. ch.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Livingstone Branch (Windsor to Tokarahi)	11 75	83,623 4 11	..	..	..	83,623 4 11	..
Waihemo Branch (Palmerston to Dunback)	8 55	32,911 8 11	..	..	*Cr.* 5 0 0	32,906 8 11	..
Fernhill Railway	1 60	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)	8 78	12,051 0 7	..	..	..	12,051 0 7	29,691 0 0
Lawrence Branch	58 67	718,258 17 1	..	..	..	718,258 17 1	..
Balclutha to Tuapeka Mouth	..	2,489 0 0	..	..	..	2,489 0 0	..
Catlin's River Branch (Balclutha to Tahakopa)	42 67	463,909 6 3	..	..	..	463,909 6 3	..
Heriotburn Branch (Waipahi to Edievale)	26 23	124,808 4 5	..	..	..	124,808 4 5	..
Waikaka Branch (McNab to Waikaka)	12 65	68,423 0 0	..	..	..	68,423 0 0	..
Gore to Lumsden	36 39	112,344 3 2	..	..	..	112,344 3 2	..
Edendale to Glenham	9 36	53,593 14 10	..	..	..	53,593 14 10	..
Riversdale to Switzers	13 70	82,285 4 0	..	..	..	82,285 4 0	..
Seaward Bush to Catlin's (Appleby to Tokanui)	32 79	185,229 5 5	..	..	..	185,229 5 5	..
Otago Central (Wingatui to Cromwell)	147 27	1,453,717 10 1	..	..	..	1,453,717 10 1	..
Invercargill to Kingston—							
Main Line	87 04	369,294 14 9	..	..	..	369,294 14 9	91,937 0 0
Mararoa Branch (Lumsden to Mossburn)	10 40	27,508 4 4	..	..	..	27,508 4 4	..
Winton to Heddon Bush	..	140 0 0	..	..	..	140 0 0	..
Makarewa to Orepuki and Waiau	56 34	360,075 18 5	..	..	..	360,075 18 5	37,097 0 0
Thornbury to Wairio	22 15	103,790 15 10	..	..	..	103,790 15 10	23,200 0 0
Forest Hill (Winton to Hedgehope)	12 40	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	..	31,235 10 1	..	..	..	31,235 10 1	..
South Island	..	5,763 0 0	..	..	..	5,763 0 0	..
Rolling-stock	..	11,977,319 17 11	..	..	..	11,977,319 17 11	..
Motor-omnibus Service, Wellington	..	60,571 1 11	..	..	..	60,571 1 11	..
General	..	14,076 12 9	..	..	..	14,076 12 9	..
Depreciation provided for out of Railway Revenue and actually repaid to Public Works Fund	..	*Cr.* 762,612 9 4	..	..	..	*Cr.* 762,612 9 4	..
Stock of Permanent-way Materials	..	4,168 5 8	..	*Cr.* 5 14 0	..	4,162 11 8	..
Totals	3,381 06	67,616,978 1 11*	..	*Cr.* 23,707 9 4	163,308 0 10	67,756,578 13 5	1,787,741 0 0†

* The £10,400,000 accrued depreciation of assets referred to in section 23 (2), Government Railways Amendment Act, 1931, not deducted.

† Includes value for £150,000 paid to debenture-holders under the Midland Railway Petitions Settlement Act Amendment Act, 1903.

TABLE No. 4.

EXPENDITURE ON PUBLIC BUILDINGS OUT OF PUBLIC WORKS FUND TO THE 31ST MARCH, 1935, AND THE LIABILITIES ON THAT DATE.

—	Total Expenditure to 31st March, 1934.	Expenditure for Year ended 31st March, 1935.	Total Expenditure to 31st March, 1935.	Liabilities on Authorities, Contracts, &c., 31st March, 1935.	Total Expenditure and Liabilities.
General—	£	£	£	£	£
Alexandra Depot, Wellington*	8,084	..	8,084	..	8,084
Government House, Wellington (land and new building)	72,645	..	72,645	..	72,645
Offices for public Departments†	933,587	..	933,587	38	933,625
Miscellaneous	70,764	16,626	87,390	..	87,390
Parliament Buildings—					
Old buildings	76,553	..	76,553	..	76,553
New buildings	393,625	..	393,625	..	393,625
Alterations to streets surrounding grounds, and purchase of land	57,089	..	57,089	..	57,089
Judicial‡	1,489,471	4,559	1,494,030	402	1,494,432
Postal and telegraph	2,496,068	99,902	2,595,970	18,574	2,614,544
Customs	49,441	..	49,441	..	49,441
Quarantine-stations	62,464	..	62,464	..	62,464
Mental hospitals	1,793,142	98,589	1,891,731	6,248	1,897,979
Health and Hospital Institutions§	400,707	656	401,363	..	401,363
School buildings	3,449,021	51,289	3,500,310	3,595	3,503,905
Agricultural	97,940	56	97,996	..	97,996
Workers' dwellings‖	319,918	*Cr.* 319,918	..	..	..
Totals	11,770,519	*Cr.* 48,241	11,722,278	28,857	11,751,135

* Expenditure *re* Defence requirements only. Other expenditure included in "Judicial" class. † Includes £12,500 expended under Finance Act, 1929, section 32. ‡ Includes Courthouses, prisons, and police-stations. § Includes £32,754 previously shown under "Public Health." ‖ Now transferred to State Advances Account.

TABLE No. 5.

ELECTRIC SUPPLY ACCOUNT.

STATEMENT OF ACCOUNTS AT THE 31st MARCH, 1935.

GENERAL BALANCE-SHEET AT 31ST MARCH, 1935, COMPARED WITH POSITION AT 31ST MARCH, 1934.

1933–34.	*Liabilities.*	1934–35.		1933–34.	*Assets.*	1934–35.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
	Aid to Water-power Works and Electric Supply Accounts—			8,678,523 19 6	North Island scheme—		
	Debentures Stock issued—			6,053 5 9	Assets as per separate balance-sheet ..	8,818,443 6 6	
360,000 0 0	At 3 per cent. interest	423,665 0 0		576,420 7 11	Investments, Sinking Fund	..	
1,000,000 0 0	At 3½ per cent. interest	1,000,000 0 0			Profit and Loss Account—Loss to date ..	586,848 10 7	
433,155 0 0	At 3¾ per cent. interest	574,555 0 0		9,260,997 13 2			9,405,291 17 1
1,957,790 0 0	At 4 per cent. interest	1,957,890 0 0					
2,623,913 18 0	At 4½ per cent. interest	2,623,413 18 0					
3,670,219 6 10	At 5 per cent. interest	3,670,219 6 10			South Island scheme—		
..	At 5¼ per cent. interest	..		4,149,911 7 8	Assets as per separate balance-sheet ..	4,492,708 16 10	
5,400 0 0	At 5½ per cent. interest	5,400 0 0		102,222 0 9	Investments, Sinking Fund	1,669 5 2	
1,884,642 6 3	At 6 per cent. interest	1,884,642 6 3					4,494,378 2 0
150 0 0	Debentures not yet converted	50 0 0		4,252,133 8 5			
11,935,270 11 1			12,140,335 11 1				
212,500 0 0	Waihi Gold-mining Co., Ltd.— Purchase of Horahora works—Deed of security at 5¼ per cent. interest. (Due 1/11/1934)	..	..				
	Consolidated Fund—						
125,900 8 1	Interest accrued on loans to 31st March, 1935	128,949 3 7					
59 8 6	Sundry creditors for interest unclaimed ..	54 13 6					
125,959 16 7			129,003 17 1				
26,727 9 2	Electric Supply Sinking Fund Account— Amount due under section 23, Finance Act, 1928	..	..				
28,333 3 3	Amount set aside as reserve to cover difference between interest payable on loans raised and interest earned from their temporary investment pending use	..	42,137 8 1	16,161 19 3	Surveys and General	..	15,743 7 4
12,328,791 0 1	Carried forward	..	12,311,476 16 3	13,529,293 0 10	Carried forward	..	13,915,413 6 5

TABLE No. 5—*continued.*

ELECTRIC SUPPLY ACCOUNT—*continued.*

STATEMENT OF ACCOUNTS AT THE 31ST MARCH, 1935—*continued.*

GENERAL BALANCE-SHEET AT 31ST MARCH, 1935, AS COMPARED WITH POSITION AT 31ST MARCH, 1934—*continued.*

1933–34.	*Liabilities.*	1934–35.		1933–34.	*Assets.*	1934–35.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
12,328,791 0 1	Brought forward	..	12,311,476 16 3	13,529,293 0 10	Brought forward	..	13,915,413 6 5
	Sundry Creditors—				Balance in Electric Supply Account at the end of year—		
64,432 11 8	North Island scheme	60,930 17 2					
33,355 13 0	South Island scheme	24,875 12 9		408,606 11 7	Cash in Public Account	330,149 10 10	
121 1 11	Surveys and general	..		7,652 18 9	Imprests outstanding	2,308 5 9	
97,909 7 7			85,806 9 11	416,259 10 4			332,457 16 7
	Depreciation Reserve—						
794,820 12 9	North Island scheme	959,085 16 1					
244,501 16 1	South Island scheme	323,599 14 1					
1,039,322 8 10			1,282,685 10 2		New Zealand Loans Act, 1932, Section 61— Charges and expenses of raising loans—		
				52,425 0 0	Issues in renewal and conversion ..	..	
				17,070 0 0	Premiums on conversion	..	
				69,495 0 0			..
	Sinking Fund Reserve—						
160,110 0 0	Amount utilized for redemption of loans	308,145 0 0					
129,095 17 0	Available for further redemptions ..	18,338 15 3					
289,205 17 0			326,483 15 3				
	Reserve Fund—						
259,838 3 5	Lake Coleridge scheme	..	241,418 11 5	19 5 9	Sundry debtors for interest due but unpaid..	..	..
£14,015,066 16 11	Total	..	£14,247,871 3 0	£14,015,066 16 11	Total	..	£14,247,871 3 0

NOTES.—(*a*) No charge for the cost of exchange on payments made in London is included. (*b*) Owing to the interconnection of the undertakings in the North Island it has not been found practicable to show separately the accounts of the various schemes as required by the State Supply of Electrical Energy Act, 1917.

E. L. GREENSMITH, Accountant, Public Works Department.

I hereby certify that the General Balance-sheet has been duly compared with the relative books and documents submitted for audit, and correctly states the position as disclosed thereby, subject to the departmental notes enfaced thereon.—G. F. C. CAMPBELL, Controller and Auditor-General.

TABLE No. 5—*continued.*

ELECTRIC SUPPLY ACCOUNT—*continued.*

NORTH ISLAND HYDRO-ELECTRIC-POWER SUPPLY.

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 31ST MARCH, 1935, COMPARED WITH YEAR ENDED 31ST MARCH, 1934.

Gross Revenue Account.

1933–34.		1934–35.		1933–34.		1934–35.	
£ s. d.	To Generating-expenses, headworks, and power-house—	£ s. d.	£ s. d.	£ s. d.	By Sales of energy—	£ s. d.	£ s. d.
9,524 11 5	Arapuni	11,659 2 2		673,558 14 10	Wholesale	703,746 17 4	
5,189 12 9	Horahora	5,193 9 4		995 19 4	Retail	1,681 17 1	
8,600 4 7	Mangahao	10,827 12 6		674,554 14 2			705,428 14 5
8,500 5 9	Waikaremoana	8,523 17 5			Rents—		
4,331 10 5	Standby stations	912 5 3		6,176 6 1	Cottages, &c.	6,281 6 10	
36,146 4 11			37,116 6 8	598 4 0	Lines, plant, &c.	679 19 8	
	Transmission-lines—			6,774 10 1			6,961 6 6
20,362 15 6	Patrol, maintenance, &c.	..	27,895 4 4		Miscellaneous—		
	Substations—			264 5 3	Tests and inspection	..	336 18 2
14,865 19 8	Operation and maintenance	..	21,989 14 3	285 12 0	Penalties	..	1 0 0
	Management and general—			..	Interest	..	38 13 6
27,508 19 8	Salaries, office expenses, accident, sick, and holiday pay, testing, &c.	..	33,926 0 8				
98,883 19 9			120,927 5 11				
582,995 1 9	Balance to Net Revenue Account ..	..	591,839 6 8				
£681,879 1 6			£712,766 12 7	£681,879 1 6			£712,766 12 7

Net Revenue Account.

1933–34.		1934–35.	1933–34.		1934–35.
£ s. d.		£ s. d.	£ s. d.		£ s. d.
434,622 19 6	To Interest for year ended 31st March, 1935	414,041 12 3	582,995 1 5	By Balance from Gross Revenue Account	591,839 6 8
78,716 16 11	Depreciation on completed works	150,538 10 5	..	Balance to Profit and Loss Appropriation Account ..	10,428 2 8
38,112 10 5	King's Wharf Station, half capital costs thereon	37,687 6 8			
31,542 14 11	Balance to Profit and Loss Appropriation Account ..	..			
£582,995 1 9		£602,267 9 4	£582,995 1 5		£602,267 9 4

TABLE No. 5—*continued.*

ELECTRIC SUPPLY ACCOUNT—*continued.*

NORTH ISLAND HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

PROFIT AND LOSS APPROPRIATION ACCOUNT FOR YEAR ENDED 31ST MARCH, 1935, COMPARED WITH YEAR ENDED 31ST MARCH, 1934.

1933–34.	——	1934–35.	1933–34.	——	1934–35.
£ s. d.		£ s. d.	£ s. d.		£ s. d.
607,963 2 10	To Balance from previous year	576,420 7 11	31,542 14 11	By Balance from Net Revenue Account	..
..	Balance from Net Revenue Account	10,428 2 8	576,420 7 11	Balance to General Balance-sheet	586,848 10 7
£607,963 2 10		£586,848 10 7	£607,963 2 10		£586,848 10 7

DEPRECIATION RESERVE ACCOUNT.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
15,098 13 2	To Replacements, renewals, &c.	18,066 3 7	703,079 5 7	By Balance at close of previous year	794,820 12 9
794,820 12 9	Balance to General Balance-sheet	959,085 16 1	28,123 3 5	Interest at 4 per cent. per annum	31,792 16 6
			78,716 16 11	Amount set aside as per Net Revenue Account	150,538 10 5
£809,919 5 11		£977,151 19 8	£809,919 5 11		£977,151 19 8

SINKING FUND ACCOUNT.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
6,085 18 9	To Adjustment, amount over-credited previous years ..	..	61,705 7 9	By Balance at close of previous year	55,821 5 9
55,821 5 9	Balance	55,929 15 6	201 16 9	Interest on investments	108 9 9
£61,907 4 6		£55,929 15 6	£61,907 4 6		£55,929 15 6

TABLE No. 5—*continued.*

ELECTRIC SUPPLY ACCOUNT—*continued.*

NORTH ISLAND HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

BALANCE-SHEET AT 31ST MARCH, 1935.

1933–34.	*Liabilities.*	1934–35.		1933–34.	*Assets.*	1934–35.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
794,820 12 9	Depreciation Reserve	..	959,085 16 1	2,087,792 4 2	Headworks, power-house, machinery, &c.—		
				310,264 16 10	Arapuni	2,111,518 6 10	
				1,205,367 2 11	Horahora	310,279 18 1	
	Sinking Fund—			518,526 4 4	Mangahao	1,208,775 12 8	
49,768 0 0	Utilized for redemption of loans ..	55,929 15 6			Waikaremoana	521,820 13 10	
6,053 5 9	Amount available for further redemption ..	..		4,122,130 8 3			4,152,394 11 5
55,821 5 9			55,929 15 6		Auxiliary plants—		
				61,805 15 5	Diesel Station, Penrose	61,801 16 11	
				9,127 9 4	Steam Station Grand Junction	9,125 19 4	
				10,814 1 11	Steam Station, Huntly	10,847 1 11	
							81,774 18 2
64,432 11 8	Sundry creditors	..	60,930 17 2	81,747 6 8			
				1,509,068 4 11	Transmission-lines	..	1,540,374 2 10
8,345,923 3 0	Head Office Account	..	8,329,345 8 4	890,815 9 5	Substations	..	911,832 4 4
				27,693 1 10	Office buildings, land, railway siding, harbour facilities, &c.	..	34,418 16 8
				97,874 9 4	Service buildings, workmen's accommodation, &c.	..	97,977 1 4
				39,241 9 10	Temporary development, Waikaremoana ..	..	39,241 9 10
				416,952 10 5	Salaries and expenses of engineers and others on surveys and during construction	..	428,064 11 9
				234,697 11 10	Cost of raising loans	..	281,992 11 10
				935,641 0 8	Interest during construction	..	937,468 18 3
				8,355,868 13 2			8,505,539 6 5
				28,434 2 5	Plant, motor-vehicles, &c.	..	24,785 17 6
				114,365 15 0	Stocks	..	107,813 0 7
				6,053 5 9	Sinking Fund investments	..	..
				179,862 8 11	Sundry debtors	..	180,305 2 0
				576,420 7 11	Accumulated loss	..	586,848 10 7
£9,260,997 13 2			£9,405,291 17 1	£9,260,997 13 2			£9,405,291 17 1

NOTE.—Owing to the interconnection of the undertakings in the North Island it has not been found practicable to show separately the accounts of the various schemes as required by the State Supply of Electrical Energy Act, 1917.

I hereby certify that the Balance-sheet and accompanying Accounts have been duly examined and compared with the relative books and documents submitted for audit, and correctly state the position as disclosed thereby, subject to the Departmental note enfaced thereon.—G. F. C. CAMPBELL, Controller and Auditor-General.

TABLE No 5—*continued.*

SOUTH ISLAND HYDRO-ELECTRIC-POWER SUPPLY.

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 31ST MARCH, 1935, COMPARED WITH YEAR ENDED 31ST MARCH, 1934.

Gross Revenue Account.

1933–34.		1934–35.		1933–34.		1934–35.	
£ s. d.	To Generating-expenses, headworks, power-houses, and auxiliary plant—	£ s. d.	£ s. d.	£ s. d.	By Sales of energy—	£ s. d.	£ s. d.
				217,303 12 6	Wholesale	225,725 2 10	
8,313 14 3	Lake Coleridge	8,998 6 7		35 8 7	Retail	362 12 3	
..	Waitaki	927 4 5					226,087 15 1
6,831 16 5	Lyttelton diesel station	1,428 6 0		217,339 1 1			
			11,353 17 0				
15,145 10 8				44 8 1	Discounts forfeited	..	32 8 11
					Rents—		
	Transmission and distribution—			1,598 12 9	Land and buildings	1,476 6 5	
5,166 9 7	Primary distribution	4,948 2 8		192 7 0	Electric lines and poles	202 0 6	
2,290 15 8	Secondary distribution	1,549 11 10		203 8 8	Electric plant	192 14 6	
			6,497 14 6				1,871 1 5
7,457 5 3				1,994 8 5			
7,110 15 2	Substations	..	7,638 10 11	114 1 6	Fees for testing and repairing electrical appliances and earnings of motor-vehicles	..	105 5 4
423 10 5	Plant, tools, testing, &c.	..	324 0 9				
58 2 6	Electrical testing	..	59 1 5				
9,152 18 6	Management and general expenses ..	..	9,209 13 6				
39,348 2 6			35,082 18 1				
180,143 16 7	Balance, to Net Revenue Account ..	..	193,013 12 8				
£219,491 19 1			£228,096 10 9	£219,491 19 1			£228,096 10 9

Net Revenue Account.

£ s. d.		£ s. d.	£ s. d.		£ s. d.
11,351 5 5	To Depreciation on completed work	78,551 19 3	180,143 16 7	By Balance from Gross Revenue Account ..	193,013 12 8
83,608 19 5	Interest for year ended 31st March	97,792 3 4			
85,183 11 9	Balance to Profit and Loss Appropriation Account ..	16,669 10 1			
£180,143 16 7		£193,013 12 8	£180,143 16 7		£193,013 12 8

TABLE No. 5—*continued.*

SOUTH ISLAND HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

Profit and Loss Appropriation Account.

1933-34.		1934-35.	1933-34		1934-35.
£ s. d.	To Sinking Fund Reserve Account—	£ s. d.	£ s. d.	By	£ s. d.
20,820 10 6	Amount appropriated under section 12 (1) of the State Supply of Electrical Energy Act, 1917	16,669 10 1	85,183 11 9	Balance from Net Revenue Account	16,669 10 1
..	Amount appropriated under section 23 of the Finance Act, 1928, for year 1933–34	18,419 12 0	..	Adjustment amount over credited to General Reserve in 1933–34	18,419 12 0
64,363 1 3	General Reserve Account	..			
£85,183 11 9		£35,089 2 1	£85,183 11 9		£35,089 2 1

Depreciation Reserve Account.

£ s. d.	To Amounts written off—	£ s. d.	£ s. d.	By	£ s. d.
21,511 0 9	Motor-vehicles, tools, plant, &c.	9,234 2 8	244,866 17 11	Balance from previous year's statement	244,501 16 1
244,501 16 1	Balance	323,599 14 1	9,794 13 6	Interest at 4 per cent. per annum	9,780 1 5
			11,351 5 5	Amount set aside as per Net Revenue Account	78,551 19 3
£266,012 16 10		£332,833 16 9	£266,012 16 10		£332,833 16 9

General Reserve Account.

£ s. d.	To	£ s. d.	£ s. d.	By	£ s. d.
..	Transfer to Profit and Loss Appropriation Account amount over credited, 1933–34	18,419 12 0	195,475 2 2	Balance at close of previous year	259,838 3 5
259,838 3 5	Balance	241,418 11 5	64,363 1 3	Amount set aside as per Profit and Loss Appropriation Account	..
£259,838 3 5		£259,838 3 5	£259,838 3 5		£259,838 3 5

Sinking Fund Reserve Account.

£ s. d.		£ s. d.	£ s. d.	By	£ s. d.
			222,828 1 7	Balance as close of previous year	233,384 11 3
13,437 0 4	Adjustment previous year	..	20,820 10 6	Amount set aside as per Profit and Loss Appropriation Account	35,089 2 1
233,384 11 3	Balance	270,553 19 9	3,172 19 6	Interest	2,080 6 5
£246,821 11 7		£270,553 19 9	£246,821 11 7		£270,553 19 9

TABLE No. 5.—*continued.*

SOUTH ISLAND HYDRO-ELECTRIC-POWER SUPPLY—*continued.*

Balance-sheet at 31st March, 1935.

1933-34.	*Liabilities.*	1934-35.		1933-34.	*Assets.*	1934-35.	
£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
244,501 16 1	Depreciation Reserve	..	323,599 14 1	539,490 13 8	Power stations— Lake Coleridge— Headworks	541,556 10 4	
259,838 3 5	Reserve Fund	..	241,418 11 5	249,446 16 9	Buildings and machinery	250,593 0 7	
				788,937 10 5			792,149 10 11
	Sinking Fund—						
110,342 0 0	Amount utilized for redemption of loans ..	252,215 4 6			Waitaki—		
123,042 11 3	Available for further redemptions ..	18,338 15 3		943,238 7 5	Headworks	1,067,581 15 5	
			270,553 19 9	593,717 5 10	Buildings and machinery	615,746 17 10	
233,384 11 3				1,536,955 13 3			1,683,328 13 3
	Sundry creditors—			88,888 6 1	Lyttelton diesel station	..	89,006 5 1
21,037 4 5	Public Works Department	17,464 7 6			Transmission and distribution—		
1,422 0 4	Other Government Departments	416 7 9		530,564 7 10	Primary	597,133 3 6	
10,896 9 3	Non-departmental	6,994 17 6		79,674 9 1	Secondary	71,110 3 4	
			24,875 12 9				668,243 6 10
33,355 14 0				610,238 16 11			
				357,125 5 6	Substations	..	412,836 13 1
				4,635 4 1	Trunk Telephone System	19,925 8 7	
				87,454 19 8	Exploration and preliminary surveys ..	87,447 19 9	
				47,247 6 2	Salaries and expenses during construction ..	48,197 14 0	
3,481,053 3 8	Head Office Account	..	3,633,930 4 0	375,988 9 2	Interest during construction	453,865 18 1	
				118,727 2 2	Charges and expenses of raising loans ..	142,869 11 0	
				4,016,198 13 5			752,306 11 5
							4,397,871 0 7
				31,819 8 6	Plant, tools, &c.	..	21,591 12 2
				70,945 2 8	Stocks of material	..	43,722 0 6
					Sundry debtors—		
				713 9 2	Public Works Department	1,340 16 7	
				3,413 14 5	Other Government Departments	1,046 12 9	
				26,795 11 6	Non-departmental	27,114 19 8	
				30,922 15 1			29,502 9 0
				25 9 0	Payments in advance	..	21 14 7
				102,222 0 9	Sinking Fund investments..	..	1,669 5 2
£4,252,133 8 5			£4,494,378 2 0	£4,252,133 8 5			£4,494,378 2 0

I certify that the Balance-sheet and accompanying Accounts have been duly examined and compared with the relative books and documents submitted for audit, and correctly state the position as disclosed thereby.—J. H. Fowler, Deputy Controller and Auditor-General.

TABLE No. 6.

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, 1934.	Area commanded (Gross).	Area able to be irrigated at Present.	Works authorized.		Works completed.		Expenditure to 31st March, 1935.	Remarks.
			As per Design.	During 1934–35.					Main Canals.	Distributaries.	Main Canals.	Distributaries.		
Canterbury South—		Cusecs.	Cusecs.	Cusecs.	Inches.	Inches.	Acres.	Acres.	M. ch.	M. ch.	M. ch.	M. ch.	£	
Redcliff ..	Waitaki River ..	3,000	55	..	21·00	21·00	7,000	..	3 69	13 76	3 58	6 9	3,456	Under construction.
Otago North—														
Otekaike ..	Otekaike River ..	9	15	..	21·31 (Duntroon)	21·55	1,500	800	14 37	3 47	14 37	3 47	3,631	Completed. Used only on west side of river.
Steward Settlement	Waitaki River ..	..	110	..	20·31 (Steward Settlement)	21·28	18,000	..	14 60	50 31	14 60	50 31	12,115	Completed.
Otago Central—														
Ardgour ..	Lindis River ..	35	20	19	19·50 (Tarras)	21·28	2,000	1,400	13 0	2 40	13 0	2 40	33,608	Completed.
Arrow River ..	Arrow River ..	40	50	32	27·51 (Arrowtown and Frankton)	30·78	6,536	3,421	..	..	9 18	24 2	142,928	Completed.
Bengerburn ..	Bengerburn ..	1	4	4	..	..	1,000	144	2 6	..	2 6	..	690	Completed.
Earnscleugh (Fraser River)	Fraser River ..	10	47 (all races)	70·25	15·31 (Earnscleugh)	20·24	2,743	2,101	11 30	17 60	11 30	17 60	10,450	Completed.
Hawkdun (formerly Mount Ida)	Tributaries of Manuherikia River and Eweburn Reservoir	..	60	27	24·08 (Naseby and Naseby Plantation)	25·71	10,000	8,242	66 0	101 0	66 0	90 12	70,770	Completed.
Idaburn ..	Idaburn Dam ..	3	8	4·75	23·12 (Moa Creek, Blackstone Hill)	24·54	2,500	615	10 0	0 40	7 26	0 40	6,739	Main scheme completed.
Ida Valley and Galloway—														
Ida Valley ..	Manorburn, Poolburn, Moa Creek, and Totara Creek. (Storage Manorburn Dam)	..	110	79	16·52 (Moa Creek)	19·99	14,000	11,761	73 0	54 0	73 0	29 50	280,829	Completed. Additional storage furnished by Poolburn Dam.
Galloway ..	Manorburn Dam ..	..	30	24	14·24 (Galloway)	15·81	3,450	2,653	10 50	10 7	10 50	10 7		
Lower Manorburn Dam	Manorburn Creek	4	7	7	..	..	..	..	..	2 0	..	2 0	5,131	Dam and race-work completed. Protective works are being carried out below the dam.
Last Chance (Fruitlands and Earnscleugh Tops)	Shingle, Coal Gorge, Butcher's Creek, and Conroy's Creek	8	20	14·5	16·26 (Earnscleugh and Roxburgh East)	20·05	4,300	2,231	22 0	5 70	20 78	5 70	35,623	Completed.
Manuherikia-Alexandra-Clyde No. 1	Manuherikia River	77	100	88	15·01 (Alexandra, Ophir, and Clyde)	16·20	7,000	6,090	23 0	46 20	23 0	46 20	233,915	Completed.
Omakau ..	Manuherikia River	36	65	..	20·29 (Clyde, Ophir, and Blackstone Hill)	20·65	10,800 (irrigable)	..	42 0	50 0	25 00	25 40	194,242	8,000 acres to be supplied from main race and 2,800 acres from Thompson's and adjacent creeks.
	and Storage Dam and Thompson's Creek	7	15											
Tarras	Lindis River ..	35	70	38	19·50 (Tarras)	21·28	6,000	3,952	21 70	17 55	21 70	17 55	136,804	Completed.
Teviot River ..	Teviot River and Lake Onslow Dam	40	80	60	17·22 (Roxburgh East)	19·87	5,300	3,987	20 48	14 57	20 48	14 57	68,034	Completed and serving all land requiring water.
General investigations and surveys, &c.	..	..	..	..	..	..	..	..	..	..	..	..	14,054	
Total: Schemes completed or under construction							102,129	47,397	389 24	391 06	337 55	348 62	1,253,019	

TABLE No. 6—*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, 1934.	Area commanded (Gross).	Length of Main Canal.	Length of Distributaries.	Expenditure to 31st March, 1935.	Remarks.
Canterbury South—		Cusecs.	Cusecs.	Inches.	Inches.	Acres.	Miles.	Miles.	£	
Investigations of proposed schemes	..	..	..	..	..	..	..	..	6,425	Investigations into the feasibility and cost of irrigation in this area have been in hand since January, 1934, and a topographic survey completed over an area of 1,033,400 acres. Investigations include the following phenomena, viz: Soil moisture, mechanical analysis of soil, depth of ground water, evaporation, rainfall, and river-flow
Otago Central—										
Chapman's Gully ..	Conroy's Creek and storage dam	3	..	13·72 (Alexandra)	13·83	580	..	..	..	Portion now served by private races.
Cromwell Flat and Lowburn (Roaring Meg)	Hydro-electric development of Roaring Meg and pumping from Clutha and Kawarau Rivers	29 (Roaring Meg)	..	20·42 (Luggate)	21·29	..	..	..	3,774	Hydro-electric scheme under investigation. Power would be available for pumping irrigation supplies to 8,000 acres in Upper Clutha Valley. Portion of this area could be supplied from Hawera River power and pumping scheme.
Maniototo (Upper Taieri)	Taieri River and storage dam	25	500	16·95 (Waipiata)	16·90	100,000	60	..	13,473	Modified scheme for complete irrigation of 5,000 acres is possible without storage, or for reasonable partial irrigation of 15,000 acres. Surveys practically complete for scheme to irrigate 100,000 acres.
Scandinavian ..	Tributaries of Manuherikia River	..	20	30·60 (St. Bathan's)	33·07	..	..	..	..	For lands about St. Bathan's. To bear £15,000 towards cost of Falls dam, Upper Manuherikia scheme. Irrigable area, 3,000 acres.
Upper Clutha Valley (including Hawea Flats)	Hawea and Clutha Rivers (pumping) with power-station at outlet of Lake Hawea	580 (Hawea R.) 3,000 (Clutha R.)	..	21·67 (Hawea Flat, Luggate, and Tarras)	23·05	..	..	..	..	Investigations have been made for a hydro-electric power development at the outlet of Lake Hawea. Sufficient power would be available to pump water from the Hawea and Clutha Rivers to 13,700 acres in the Upper Clutha Valley.
Upper Manuherikia (extension of Omakau Scheme)	Manuherikia River and storage dam at Manuherikia Falls	36 (at dam-site)	..	20·35 (Clyde, Ophir, and (Blackstone Hill)	21·29	16,000	58	60	6,553	Surveys and investigations have been made for the extension of the Omakau scheme (now under construction) to supply lands between Tiger Hill and Clyde. Irrigable area, 12,000 acres.
Investigation of proposed schemes	..	..	..	..	..	..	..	..	7,535	Includes the reading of river and rain gauges.
Total: Schemes under investigation ..		..	..	..	..	..	..	..	37,760	
Grand total ..		..	..	..	..	..	..	..	1,290,779	

APPENDICES TO THE PUBLIC WORKS STATEMENT, 1935.

APPENDIX A.

AUDITED STATEMENT OF EXPENDITURE ON PUBLIC WORKS OUT OF THE PUBLIC WORKS FUND FOR THE YEAR 1934-35.

Prepared in compliance with Section 8 of the Public Works Act, 1928.

SIR,— Public Works Department, Wellington, 5th July, 1935.

In compliance with the 8th section of the Public Works Act, 1928, 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.,
JOHN BITCHENER,
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 1934-35.

Vote No.	Summary.	Appropriation.	Gross Expenditure.	Credits in Aid.	Net Expenditure.
	General Purposes Account—	£	£ s. d.	£ s. d.	£ s. d.
34	Public Works, Departmental	109,075	216,568 8 5	140,082 11 7	76,485 16 10
35, 36	Railways	232,000	192,290 11 11	66,690 8 9	125,600 3 2
37–44	Public Buildings	438,950	307,367 7 9	20,398 14 0	286,968 13 9
45, 46	Lighthouses and Harbour-works ..	14,000	8,014 15 9	1,412 15 7	6,602 0 2
47	Development of Tourist Resorts ..	15,800	13,409 18 3	529 17 3	12,880 1 0
48	Roads' Bridges, and other Public Works ..	509,500	524,331 12 10	152,758 15 11	371,572 16 11
49	Telegraph Extension	260,000	187,932 1 11	51,999 7 7	135,932 14 4
50	Lands, Miscellaneous	120,000	148,432 14 8	66,341 0 9	82,091 13 11
51	Irrigation, Water-supply, and Drainage ..	84,000	117,554 19 2	26,313 18 9	91,241 0 5
52	Swamp Land Drainage	20,250	25,254 14 10	10,235 10 0	15,019 4 10
53	Plant, Material, and Services	30,000	203,532 13 10	214,046 1 3	*Cr.* 10,513 7 5
54	Settlement of Unemployed Workers ..	375,000	251,440 18 10	29,132 2 9	222,308 16 1
55	Native Land Settlement	140,629	230,272 12 8	104,604 7 10	125,668 4 10
	Unauthorized—Services not provided for ..	..	30,395 0 8	30,272 19 10	122 0 10
	Totals, General Purposes Account ..	2,349,204	2,456,798 11 6	914,818 11 10	1,541,979 19 8
	Electric Supply Account—				
56	Development of Water-power	751,250	589,969 19 9	34,450 19 2	555,519 0 7
	Totals, Public Works Fund	3,100,454	3,046,768 11 3	949,269 11 0	2,097,499 0 3

APPENDIX A—*continued.*

Vote No.	Name of Vote.	Appropriation.	Gross Expenditure.	Credits in Aid.	Net Expenditure.
	PUBLIC WORKS FUND.				
	General Purposes Account—	£	£ s. d.	£ s. d.	£ s. d.
34	Public Works, Departmental	109,075	216,568 8 5	140,082 11 7	76,485 16 10
	Railways—				
35	Railway-construction	5,000	7,675 6 6	37,048 3 2	*Cr.* 29,372 16 8
36	Railways Improvements and Additions to Open Lines	227,000	184,615 5 5	29,642 5 7	154,972 19 10
	Public Buildings—				
37	General	33,500	30,915 3 1	113 10 0	30,801 13 1
38	Courthouses	18,000	532 18 5	..	532 18 5
39	Education Buildings	150,000	62,183 4 7	10,677 6 8	51,505 17 11
40	Prison Buildings and Works	2,600	1,658 15 3	54 0 2	1,604 15 1
41	Police-stations	7,500	2,797 15 1	44 0 0	2,753 15 1
42	Postal and Telegraph	133,000	109,909 14 2	9,425 12 2	100,484 2 0
43	Mental Hospital Buildings	90,000	98,713 17 0	84 5 0	98,629 12 0
44	Health and Hospital Institutions ..	4,350	656 0 2	..	656 0 2
	Lighthouses and Harbour-works—				
45	Lighthouses	8,000	4,020 13 9	..	4,020 13 9
46	Harbour-works	6,000	3,994 2 0	1,412 15 7	2,581 6 5
47	Development of Tourist Resorts ..	15,800	13,409 18 3	529 17 3	12,880 1 0
48	Roads, &c.	509,500	524,331 12 10	152,758 15 11	371,572 16 11
49	Telegraph Extension	260,000	187,932 1 11	51,999 7 7	135,932 14 4
50	Lands, Miscellaneous	120,000	148,432 14 8	66,341 0 9	82,091 13 11
51	Irrigation, Water-supply, and Drainage ..	84,000	117,554 19 2	26,313 18 9	91,241 0 5
52	Swamp Land Drainage	20,250	25,254 14 10	10,235 10 0	15,019 4 10
53	Plant, Material, and Services	30,000	203,532 13 10	214,046 1 3	*Cr.* 10,513 7 5
54	Settlement of Unemployed Workers ..	375,000	251,440 18 10	29,132 2 9	222,308 16 1
55	Native Land Settlement	140,629	230,272 12 8	104,604 7 10	125,668 4 10
	Unauthorized—Services not provided for ..	..	30,395 0 8	30,272 19 10	122 0 10
	Totals, General Purposes Account ..	2,349,204	2,456,798 11 6	914,818 11 10	1,541,979 19 8
	Electric Supply Account—				
56	Development of Water-power	751,250	589,969 19 9	34,450 19 2	555,519 0 7
	Totals, Public Works Fund	3,100,454	3,046,768 11 3	949,269 11 0	2,097,499 0 3

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

E. L. GREENSMITH,
Accountant.

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

Examined and found correct, subject to the foregoing departmental note.—G. F. C. CAMPBELL, Controller and Auditor-General.

APPENDIX B.

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

The Engineer-in-Chief to the Hon. the Minister of Public Works.

Sir,—

I have the honour to submit the following report upon the various works under my control completed and in progress throughout the Dominion during the period from 1st July, 1934, to the 30th June, 1935.

Table No. 3 (pages 9–11) shows the expenditure on Government Railways in New Zealand up to the 31st March, 1935, and also the mileage opened for traffic.

RAILWAYS.

North Auckland Main Trunk Railway.—Okaihau Northwards.

No constructional work has been carried out, but during the year surplus unused stores, plant, buildings, &c., were disposed of as opportunity offered. The fitters' shop was transferred to Whangarei, and is now a workshop for general repairs to plant, &c.

Dargaville Branch Railway.

The passenger and goods service between Tangowahine and Kirikopuni has been satisfactorily maintained. There were 4,876 passengers, 446,600 superficial feet timber, 550 bales of wool, 37,000 head of stock, and 5,000 tons of general goods carried during the year.

Tauraroa Quarry.

This quarry was in operation for the greater portion of the year, the average output per month was 2,750 cubic yards. The total yardage of metal crushed was 27,524. This material was distributed as follows: 7,910 cubic yards to roads and highways metalling, 4,188 cubic yards sold to local bodies, 14,198 cubic yards used on railways, and 1,228 cubic yards were sold to farmers in the adjoining district.

Napier–Gisborne Railway.—Wairoa Section.

No construction work has been done on this section, and maintenance has been confined to patch painting of structural steel bridges and keeping open water-tables and culverts. The Maungaturanga Viaduct painting was completed, and that of Waikare Viaduct and Mohaka Viaduct steel was well in hand when weather conditions brought cessation of this activity.

Surplus material, workmen's accommodation, and plant were disposed of by sale or transfer as opportunity offered.

Waikokopu Branch Railway.

The Wairoa Freezing-works, which were destroyed by fire in February, 1931, resumed operations in November, 1934. In order to handle outward cargoes of frozen meat considerable repairs were carried out on meat-wagons, rolling-stock, railroad, and plant. The extra traffic was successfully handled, and a considerable increase in revenue resulted.

Stratford – Main Trunk Railway.

This railway was handed over to the Railway Department on 3rd September, 1933, for operation. Since that date a large quantity of plant, stores, and workers' accommodation buildings have been transferred to other works or disposed of by sale as opportunity offered.

Westport–Inangahua Railway.—Te Kuha – Cascade Section.

Works during the year has been confined to maintenance of this section and to the care of the plant and buildings remaining from the time the line was under construction.

A washout early in the year was repaired by the Railway Department's staff, a timber trestle of two 20 ft. and one 27 ft. spans being built. This has proved sufficient to maintain a satisfactory service to Cascade Coal Co.'s bins.

IRRIGATION.

CENTRAL OTAGO.

Operation and Maintenance of Irrigation Schemes.

There are now twelve schemes in operation on a trading basis, as enumerated in the table below.

The total area irrigated last season was 38,027 acres, water being supplied to 402 irrigators, as against an area of 36,353 acres and 395 irrigators in the 1933–34 season. The area that should have been supplied with water was 41,886 acres, but owing to non-payment of outstanding rates water was refused to an area of 4,533 acres.

The total area commanded by the distribution races and which could be irrigated is 46,597 acres, but owing to the undoubted inability of some irrigators to carry out their contracts it was deemed advisable to cancel their agreements until such time as the returns from farming improve or the properties concerned change hands. Generally speaking, all the operating schemes were this year carried on successfully, although the summer was an exceedingly dry one.

Schemes operating on storage were not inconvenienced, but some of those depending entirely on stream-flow were somewhat short towards the end of the season. This shortage, however, was not very acute.

Thunderstorms occasioned three breaks in main races, two in the Manuherikia and one in the Tarras scheme. Repairs were carried out without much diminution in the supply.

The completed schemes now in operation are shown in the following table, which also indicates the areas actually irrigated, the area that should have been irrigated if the settlers had paid their arrears of rates, and the number of irrigators in each scheme :—

Scheme.	Area actually irrigated.	Area that could be irrigated.	Number of Irrigators.
	Acres.	Acres.	
Arrow River	2,432	3,421	39
Ardgour	1,322	1,400	12
Bengerburn	114	144	13
Earnscleugh	1,992	2,101	44
Galloway	2,542	2,653	22
Hawkdun	5,918	8,242	50
Idaburn	565	615	8
Ida Valley	10,908	11,761	55
Last Chance	1,432	2,231	21
Manuherikia	4,710	6,090	72
Tarras	2,727	3,952	16
Teviot River	3,365	3,987	50
Totals	38,027	46,597	402

The financial results of the year's operations are as follows : Revenue, £21,385 ; working-expenses, £14,004 ; gross profit on working, £7,831.

As far as possible water rates were collected in advance where irrigators were in arrears with their payments. Since the 31st March, £11,513 has been collected, and for the year under review, £18,144.

Work in connection with stream-gauging, lake-level recording, and meteorological records was carried out as usual.

Schemes under Construction.

Omakau Scheme.—Falls Dam : This is nearing completion, the only work of any magnitude remaining being the completion of the spillway, plugging the river-diversion tunnel, and the installation of the outlet valves. The spillway was excavated and concreted during the year, and the access drive to the valves completed.

About 35,000 cubic yards of stone were required to complete the dam at the end of last year, and this has now been placed, making the total stone-fill 174,000 cubic yards.

The reinforced-concrete slabs on the upstream face of the dam were completed, as well as the concrete in cut-off wall. Grouting underneath the cut-off wall was carried out.

Race-system.—During the year 2½ miles of main race was cut, making a total length of main race of 23¼ miles. Fifteen miles of branch and distributary races were also completed. In addition to the race-cutting, the following lengths and sizes of concrete siphons were built : 54 in. diameter, 1,190 ft. ; 48 in. diameter, 224 ft. ; 45 in. diameter, 433 ft. ; 42 in. diameter, 5,290 ft. ; 36 in. diameter, 838 ft. ; 18 in. diameter, 524 ft. ; 15 in. diameter, 120 ft. ; and steel concrete pipes, 1,260 ft., 36 in. diameter. Fifty-eight road-crossings and race-bridges were constructed. The intake weir for the main race is nearly completed, and the intake-gates and sluiceway are in hand.

The weir for the intake on Thompson's Creek for the Matakanui section was completed. One byewash and one siphon spillway were completed, and another siphon spillway is in hand. Twenty-one concrete drops were installed, in capacity from 70 to 5 cusecs. A small water-drive 151 ft. long was driven. It is expected that water will be supplied next season for this scheme.

Ida Valley Scheme.—Poolburn Drainage: The total length of main drain, improving, straightening, and deepening the Poolburn Stream, now completed, is 3 m. 72 ch., of which 3 m. 12 ch. was cut during the year. This drain is operating successfully, and has made a marked difference to the drainage of the land affected by irrigation water.

Teviot Scheme.—The driving of a tunnel to take the place of the 36 in. pipe-line has been carried on continuously during the year. The whole of the excavation is practically finished, and the concrete lining well on towards completion. The progress for the year was 3,420 ft. of excavation and 2,000 ft. of concrete lining. A concrete stream-diversion weir was constructed on the Teviot Stream, and the tunnel inlet built and control gates installed.

Last Chance Scheme.—Conroy's Creek Dam: As stated in my last report, a dam to improve the supply on this scheme was commenced on Conroy's Stream. This dam, which is an arch of 100 ft. radius and 80 ft. in height, was completed during the year, the total quantity of concrete placed being 1,547 cubic yards. A subsidiary earth dam with concrete-core wall was also completed, and the race-work in connection with this dam is now in hand.

Butcher's Dam.—To further increase water-supplies on this scheme, and to improve the race-system, it was decided to build a dam of almost similar type and size to that of the Conroy's Dam in Butcher's Gully. In connection with this proposal there is also a tunnel of 2,000 ft. length to be driven. At present the housing, plant, and access is installed, and the excavation for the dam well in hand in solid rock; 500 ft. of tunnel has been driven.

Earnscleugh Scheme.—With a view to extending this scheme and improving the existing water-supplies it has been decided to build a concrete dam in the Fraser River for the storage of water. This work cannot be undertaken seriously until the worst of the winter is over, but a start is about to be made on the access road to the dam.

Surveys.

The field-work in connection with the Maniototo Scheme is almost completed. During the year 32 miles of main race on the west side of the Taieri River and 10½ miles on the east side were pegged, and 14 m. 60 ch. on the Gimmerburn section.

Working drawings for this scheme are now in hand.

An aerial survey for a race to supply Hawea Flat from Timaru Creek was made, and sites for diversion dams on Timaru Creek investigated.

A preliminary survey for a tunnel to divert water from the Nevis River into Long Gully near Bannockburn was made.

CANTERBURY.

Schemes under Construction.

Redcliff Irrigation Scheme.—In my last report this scheme, which was then referred to as the Glenavy Scheme, was stated to contain 6,000 acres, but this proposal has been modified and only 4,600 acres will be commanded under the present proposal.

Work on construction was commenced in October last, and about a hundred men have been employed since then.

The cutting of the main race has been completed for 3 miles, and on one of the lateral races for a distance of 5 m. 10 ch. In these two races 41,500 cubic yards were excavated, which is about 63 per cent. of the total earthwork involved. A start has been made on the intake and other structures.

Surveys.

The comprehensive survey of the water resources of Canterbury commenced last year has been continued throughout the present year. A thorough topographic survey of the province has been in hand, the area completed during the year comprising 653,440 acres, made up as follows:—

	Acres.
Levels County	24,960
Geraldine County	144,640
Ashburton County	464,000
Oxford County	10,880
Malvern County	8,960

The flow of twenty-four rivers and streams has been gauged to determine the minimum flow and to obtain rating curves of discharge. Seven gauging cableways were erected, and one automatic level-recorder installed on the Rakaia River.

Approximately 45,500 acres have been tested for depth of ground water by means of weekly readings from 155 stations. The information so obtained will also be of considerable assistance in the design of drainage schemes should these ever be contemplated.

The regular measurements of the amount of soil-moisture at successive depths down to shingle has been continued at fifteen stations in the Ashburton County and at six in the Waimate County. Daily rainfall records have also been kept. At all these stations mechanical soil-analysis was carried out by the International method, and the approximate wilting-points of selected soils were determined.

In order to obtain more accurate information regarding rainfall and run-off phenomena in the foothill streams of Canterbury, an intensive study of a representative catchment area—the North Ashburton River area—has been deemed advisable. The valley has been thoroughly reconnoitred and six specially designed automatic rainfall-recorders established at varying elevations.

During the year surveys of the proposed Mount Hutt stock water-race were carried out, and a report prepared for submission to the Ashburton County. The scheme comprises the augmenting of the stock water-supply to an area of approximately 50,000 acres of farm land in the north-west part of the county.

CONSTRUCTION AND MAINTENANCE OF ROADS AND BRIDGES.

Whangarei District.

Gammon's Road (Bay of Islands County).—The widening and culverting of this road over a distance of 1 m. 50 ch. was completed, and a length of 4 m. 15 ch. was metalled to a width of 9 ft. and a depth of 6 in. All settlers now have metalled access.

Callaghan's Road (Bay of Islands County).—2 m. 32 ch. metalled to a width of 9 ft. and a depth of 6 in., and all settlers concerned now have metalled access to Maromaku Railway-station, whereas before the road was down to swamp level.

Hukerenui to Tapuhi Road (Bay of Islands County).—2 m. 56 ch. was metalled 9 ft. by 6 in., completing all-weather access for the settlers on this road.

Hupara Road (Bay of Islands County).—3½ miles metalled 9 ft. by 6 in., giving all settlers metalled access, and with similar work on the Pakaraka to Whangae Road, undertaken by the Bay of Islands County Council, a complete circuit for transport of cream to the Moerewa Dairy Factory has been provided.

Kaikou to Opahi Road (Bay of Islands County).—The settlers on this road are unfortunate in that with the completion of 1½ miles of metalling this year the whole road was badly damaged by two severe storms. The work of restoration is in hand, and settlers should soon reap the benefit of a through metalled road.

Punakitere Valley Road (Bay of Islands County).—3 m. 4 ch. formed 18 ft. wide and the necessary culverts placed. This road serves many settlers and will open up a big area of country, and also will be an arterial route to the freezing-works at Moerewa. With the exception of the necessary bridges, the formation is now complete.

Opahi to McKenzie's (Bay of Islands County).—This is a new road which will open up a further block, and, with Pokapu and Punakitere Valley Roads, will be an arterial road to the whole district. The work carried out this year consisted of the formation of 1 m. 49 ch. to a width of 18 ft.

Tarahi and Hariru Roads (Bay of Islands County).—These roads total 4 m. 65 ch. in length. Metalling is well advanced, and on completion all settlers in the Remuera Estate, who have been working under considerable difficulties, will have metalled access.

Tautoro to Mataraua Road (Bay of Islands County).—This road, 3 m. 26 ch. long, formed the previous year, was metalled to a width of 9 ft. and a depth of 6 in. As a result a fertile area has been provided with access, and the two main highways at each end have a cross-connection, saving a big detour through Kaikohe.

Heath's Access Road (Hobson County).—With the aid of the settlers concerned a length of 68 ch. was metalled 8 ft. wide by 6 in. deep.

Hood to McCullough Road (Hobson County).—The Hobson County Council metalled this road, which is a very important cross-connection in a district with a wet climate. The work comprised metalling of a length of 3 m. to a width of 9 ft. and a depth of 6 in.

Mangarata to Arapohue Road (Hobson County).—This clay road, which is very narrow and tortuous, serves many settlers and is the outlet to Pukehuia Railway-station from the Arapohue district. It was widened throughout to a width of 16 ft., and a base-course of metal was laid before the weather broke and prevented the completion of the top course.

Parore Station Bridge (Hobson County).—The Kaihu River recently severed connection with the Parore Railway-station, but communication was re-established by the erection of a motor design bridge, 114 ft. long, in rolled-steel joists and mixed Australian hardwoods.

Poutu Road (Hobson County).—A further length of 1½ m. was formed and culverted. The terminal point of the road is now at the boundary of a large block of Native land, which is under consolidation.

Guest's Road (Hokianga County).—A length of 1 m. 68 ch. was formed 16 ft. wide, completing the formation. Metalling was commenced and, despite very bad weather conditions, this work was also nearly completed. With the erection of two bridges the settlers in this area will have an all-weather outlet. Previously they were dependent on launch transport.

Mata Road (Hokianga County).—This road serves Souminen and McKenzie's small-farm scheme and is also a necessary cross-connection between two roads serving the Motukaraka Dairy Factory. Formation over a length of 3 m. and the construction of two bridges, 80 ft. and 30 ft. long, in rolled-steel joists and mixed Australian hardwoods was completed.

Opononi to Omapere Road (Hokianga County).—This road connects the two settlements named and serves numerous settlers. Its construction was put in hand during the year, and 1 m. 30 ch. was completed 18 ft. wide, with culverts.

Waimamaku to Taheke via Wekaweka (Hokianga County).—1 m. 10 ch. was metalled 9 ft. by 6 in., bringing metalled access to the last settler. This is a particularly damp area and the completion of the metal will be of very great benefit.

Wharepunga Bridge, Wharepunga Road (Hokianga County).—The erection of a bridge, 50 ft. long, in rolled-steel joists and reinforced concrete settled the difficulty of negotiating a bad ford which frequently held up traffic. With this work completed, settlers now have all-weather access.

Grayson's and Hansen's Roads (Hokianga County).—These roads, totalling 1 m. 21 ch. in length and serving small farms, were formed 16 ft. wide. Metalling, though nearly finished, had to be suspended on account of bad weather. One 40 ft. bridge, in rolled-steel joists and New Zealand timbers, was also erected.

Ahipara Gumfields Road (Mangonui County).—This area, carrying a population of over six hundred, was served by a clay road, which climbed a steep hill. With the aid of funds supplied by the Unemployment Board and the Public Works Department, this hill and the remainder of the road, totalling 3 m., was metalled with shale, and this has been a considerable help to the large amount of traffic which uses the road.

Awanui to Kaingaroa Road (Mangonui County).—These two settlements, 4½ miles apart, were connected by a road in indifferent order. It has been metalled 12 ft. by 6 in. and the formation brought up to main-highway standard.

Gurr's Road (Mangonui County).—This gives access to Gurr's small-farm scheme and is also a very important cross-connection. Using labour from a single men's camp, a length of 2 m. was formed 14 ft. wide, 60 ch. was metalled 9 ft. by 6 in., and two bridges, one of 80 ft. and the other of 40 ft. in length, were erected in rolled-steel joists and mixed Australian hardwoods.

Kaingaroa to Fairburn's (Mangonui County).—Previous operations had left a 3 m. clay gap in this road. This gap was metalled during the year with a strip 9 ft. wide by 6 in. deep, and all settlers now have metalled access where not so long ago there was little more than a hopeless track.

Lake Ohia to Merita Road (Mangonui County).—With the help of Native labour a length of 3 m. was metalled to a width of 9 ft. and a depth of 6 in. The road is now serviceable in all weathers to within 2 m. of the Maori settlement near Merita Bay.

Waipapakauri to Tangoake (Far North Road), (Mangonui County).—This is the main road leading to the most northern settlement in New Zealand. Re-formation has been in hand now for over two years, the work being confined to periods during which local Natives and gum-diggers are in need of assistance. The expenditure has, roughly, amounted to three or four thousand pounds per annum. Last year the road was pushed forward to the 17 m. peg, a point where it could be left without interfering in any way with existing communications. There can be no doubt about the benefit of such a road to the settlers, and it is hoped to continue the work as funds become available until eventually it reaches Hohoura.

Kaiwaka to Oneriri (Otamatea County).—2 m. 70 ch. metalled 9 ft. by 6 in., bringing the metalling to within 1½ m. from the last settler on the road and giving metalled access to Kaiwaka Railway-station to many settlers who were for years without a road of any sort.

Swamp Bridge, Swamp Road (Otamatea County).—A dangerous wooden structure was replaced by a 40 ft. span structure in rolled-steel joists, hardwood piles, and New Zealand timbers.

Wilson's to Causer's Road (Otamatea County).—The work suspended last year was completed this year by the metalling of 1 m. 4 ch. 9 ft. by 6 in. This gave metalled access to many other settlers and also completed an important through-road, which was of great service when the main highway near Paparoa was blocked by a big slip.

Gunson's Bridge, Gunson's Access Road (Whangarei County).—Property previously without access was served by the erection of a bridge, comprising two 30 ft. spans in rolled-steel joists and New Zealand timbers.

Kaikou Road Bridge, Kaikou Road (Whangarei County).—Four old dilapidated bridges were replaced; three by concrete culverts and one by a 30 ft. span structure in rolled-steel joists and mixed Australian hardwoods.

Kaitara Road (Whangarei County).—A length of 3 m. was metalled 9 ft. by 6 in., completing the metalling of this road. All interested settlers now have access in all weathers and cream-carting costs have been greatly reduced.

McKenzie's Access Road (Whangarei County).—With the metalling of 1 m. 13 ch. to a width of 9 ft. and a depth of 6 in. the settlers on this road now have all-weather access.

Moore's Bridge (Pipiwai), (Whangarei County).—This settler was served by a very bad ford, but his access has been improved by the erection of a 70 ft. bridge in rolled-steel joists and New Zealand timbers, the latter supplied by himself.

Ngunguru Ford Road (Whangarei County).—A further length of 2½ m. was metalled 8 ft. wide by 6 in. deep, and the last settler on the road has now an all-weather outlet.

Okaharau Road (Whangarei County).—A length of 78 ch. was formed 15 ft. wide, 70 ch. widened from 10 ft. to 15 ft.; and 1 m. 66 ch. metalled 9 ft. by 6 in., completing the work. All settlers are now able to use the road in any weather, whereas formerly they were served by a poor 10 ft. clay track.

Parua Bay to Pataua Road (Whangarei County).—This road, 6 m. long, was metalled 9 ft. by 6 in. Metal was procured at a reasonable cost, so that with funds available it was possible to metal a side road 3½ m. long. This area, which had been greatly retarded by a very bad road in winter, has access in all weathers, over twenty settlers being concerned.

Purua to Riponui Road (Whangarei County).—2 m. 54 ch. was metalled 9 ft. by 6 in., and an all-weather route is now available on this important cross-connection.

Waikiekie to Mangapai Road (Whangarei County).—2 m. 56 ch. was metalled 9 ft. by 6 in., completing the metalling of this road and assisting the many settlers to increase production.

Waimatenui Road (Whangarei County).—A further length of 5 m. was widened by men from a single men's camp. The formation work is now finished, but metalling operations, which were retarded by wet weather, are still in hand, with approximately 3 m. to complete.

Waipu to Mangapai Road (Whangarei County).—3 m. 16 ch. was metalled 9 ft. by 6 in., giving an all-weather road instead of a road which was quite impassable in winter on account of the very wet locality.

Waipu to Mangawai Road (Whangarei County).—65 ch. metalled 9 ft. by 6 in., completing an all-weather road by the East Coast. A cloudburst last March, however, completely obliterated the road, and it still remains impassable.

Whananaki Coast Road (Whangarei County).—5 m. were metalled to a width of 8 ft. and a depth of 6 in., giving many settlers metalled access.

Pupuke Bridge (Whangaroa County).—Following an offer by the settlers to contribute certain timbers for the erection of a new bridge, arrangements were finalized, and the erection of a structure, comprising three 40 ft. spans in rolled-steel joists, concrete piles and piers, and New Zealand timbers, was commenced. At the end of the period all piers and abutments were completed and all materials were on the ground.

Taratara Road (Whangaroa County).—The formation of this road, which gives primary access to several settlers, was completed during the year. The length of the newly formed road is 3 m.

AUCKLAND DISTRICT.

Colville to Port Jackson Road (Coromandel County).—A length of 4 m. 22 ch. was formed, mostly through exceptionally heavy country, and 2 m 34 ch. was metalled. In addition, two timber bridges, totalling 75 ft., were erected.

Coromandel to Kennedy Bay (Coromandel County).—All-weather access from the main saddle to Kennedy Bay was provided by the construction of a deviation over 80 ch. in length in heavy country, and the metalling of a total length of 2 m. 18 ch. was completed. An estimate has been prepared for improving the grades and metalling the length on the Coromandel side of the saddle, and it is hoped to proceed with this work next year.

Aka Aka Stream Road (Franklin County).—A length of 1 m. 26 ch. was surfaced, and this completed a metalled connection right through to the Aka Aka Dairy Factory.

Kahawai Road (Franklin County).—This road, which gives access to an area of good land on the shores of the Manukau Harbour, has been surfaced for a distance of 3 m. 24 ch., and there now remains only a short length of 36 ch. to be metalled.

Koheroa Road (Franklin County).—A direct all-weather road between Mangatawhiri and Mercer has been provided by the metalling of 4¼ m. of this road.

Waiau Pa to McKenzies (Franklin County).—The last of the upper course of metal has been spread on this road, thus completing the surfacing over a length of 2 m. 20 ch.

Blind Bay to Kaitoke to Harataonga (Great Barrier Island County).—The metalling of this road, which was in hand last year, has been extended for a further distance of 3 m. 20 ch., bringing the total length surfaced up to 9 m.

North and South Roads (Hauraki Plains County).—A total length of 1 m. 28 ch. of metalling was completed on these roads and, in addition, one small timber bridge, of 15 ft. span, was erected.

Kerepeehi to Awaiti Road (Hauraki Plains County).—Metalling is in hand on this road, and up to the end of the period 3 m. 72 ch. had been surfaced.

Kihi Road (Kawhia County).—Improvements to this road have been effected in the nature of surfacing a section of 3 m. 10 ch. to a width of 9 ft. and a depth of 6 in.

Ardmore to Creighton's Road (Manukau County).—By the metalling of a length of 40 ch. this year four settlers on this road have all-weather access to the Dairy Factory at Papakura.

Ardmore Quarry Road (Manukau County).—Six settlers engaged in dairying have benefited by the metalling of 3 m. 16 ch. of this road, and they now have all-weather access to their commercial centre at Papakura.

Harris Road (Matamata County).—This road has been formed to widths from 16 ft. to 20 ft. over a section of 1 m. 31 ch.

Pakaraka Road (Matamata County).—The work of forming this road was undertaken during the year and a length of 1 m. 10 ch. was completed to widths varying from 16 ft. to 20 ft.

Putaruru to Te Awamutu (Old Road) (Matamata County).—The extension of the metalling of this road, which was commenced last year, was proceeded with. A further length of 3 m. has been completed to connect up the metalling at Huihuitaha Stream Road.

Gerrands Road (Ohinemuri County).—A length of 80 ch. was metalled this year, and all settlers on the road now have all-weather access.

Taiere and Pukewera Roads (Ohinemuri County).—During the period, 2 m. 17 ch. of this road was metalled, and all-weather access was provided to a further number of settlers.

Waimata, Old Tauranga, and Trig Roads (Ohinemuri County).—The metalling of these roads, which was commenced last year, has been extended for a distance of 4 m. 54 ch. to the last settler on the Woodlands Settlement. The settlers now have all-weather access to the Waimata Railway-station.

Pekanui Road (Otorohanga County).—A total length of 3 m. 4 ch. of this road was metalled, thus providing a further number of settlers with all-weather access out to the highway and to the railway at Te Awamutu.

Quine's Road (Piako County).—All-weather access to the Ngatea to Waharoa Main Highway and Morrinsville Borough has been made available for settlers on this road by the formation of 3 m. 8 ch. and the metalling of the whole road over a length of 4 m. 38 ch.

Shaftesbury Bridge, Shaftesbury Road (Piako County).—A new bridge was erected over the Waihou River 135 ft. in length, consisting of hardwood timbers on rolled-steel joists and timber piles.

Craig's Road (Raglan County).—The surfacing of this road was completed during the period by the metalling of the length of 1 m. 23 ch. of new road formed last year.

Hetherington Road (Raglan County).—A short length of 1 m. 10 ch., required to give all-weather access from the Naike district to Huntly, was metalled during the year.

Clark's Road (Raglan County).—A top course was placed over a section of 1 m. 34 ch. of this road during the period.

Denize Road (Raglan County).—This road, which forms a connecting link between Morrison's Road and Clark's Road, was metalled for a distance of 1 m. 40 ch.

Morrison's Road (Raglan County).—In continuation of the improvements commenced on this road last year, 1 m. 14 ch. was formed 14 ft. wide. 1 m. 53 ch. of bottom-course and 2 m. 4 ch. of top-course metalling was completed. Also one 15-ft.-span timber bridge was erected.

Otuiti Road (Raglan County).—This road was formed 14 ft. wide for a distance of 2 m. and metalled 9 ft. by 6 in. over a section of 2 m. 6 ch.

Roose's Road (Raglan County).—36 ch. of this road was formed 14 ft. wide and a bottom-course of metal 9 ft. wide by 6 in. deep was spread over this section. Also 1 m. 61 ch. of top-course metalling was completed during the period.

Ruakiwi to Mangati to Te Akau Road (Raglan County).—In continuation of the work carried out last year to provide improved communication with the wharf at Te Akau a further length of 3 m. 50 ch. of this road was formed 16 ft. wide, 4 m. 17 ch. was metalled, and 46 ft. of bridging was erected during the period.

Ruapuke Mountain Road (Raglan County).—This road, which provides direct access to Raglan Township and Wharf, was re-formed for a length of 3 m. 13 ch., and the metalling, which is in hand, has been completed for a distance of 2 m. 7 ch.

Te Hutewai Road (Raglan County).—The formation and metalling of this road is in hand to enable settlers to reach Raglan by way of the Ruapuke Mountain Road, and up to the close of the period 2 m. 50 ch. had been formed 14 ft. and 16 ft. wide, and 3 m. of metalling, 9 ft. by 6 in., has been completed.

Te Mata to Te Papatapu Road (Raglan County).—This road gives access to the dairy factory at Te Mata, and during the year 71 ch. was formed and 2 m. 50 ch. metalled.

Waikaretu to Bothwells Road (Raglan County).—Further work carried out on this road during the period consisted of 1 m. 74 ch. of metalling and the erection of a rolled-steel-joist bridge, 56 ft. long, on piles and rock abutments.

Waikorea to Waimai Road (Raglan County).—This road, which forms a connecting-link between the Waikorea and Waimai Valleys, has been formed to a width of 14 ft. for a distance of 3 m. 5 ch., and 2 m. 58 ch. has been metalled. In addition, 122 ft. of bridges have been erected.

Waikokowai to Rotongaro Road (Raglan County).—The work on this road giving all-weather access to settlers and at the same time improving the roading facilities for the McDonald Mine, was continued this year. 76 ch. of base-course and 3 m. 40 ch. of top-course metalling was spread.

Waite's Access Road (Raglan County).—2 m. of this road was formed to 12 ft. width during the period.

Whatawhata to Te Puroa Road (Raglan County).—The metalling of this road, which serves a large area of country now being opened up for subdivision, was continued this year, and 1 m. 61 ch. of base-course, 9 ft. by 4 in., and 3 m. 40 ch. of top course, 9 ft. by 3 in., was completed.

Okete Soldiers' Settlement (Raglan County).—The work of providing all-weather access for the settlers of this settlement is in hand, and up to the end of the period 2 m. 33 ch. of metalling had been completed.

Kauri Road (Raglan County).—The metalling of this road will enable settlers to reach Tuakau by an all-weather route. Up to the end of the period 1 m. 60 ch. has been re-formed and metalled 9 ft. by 6 in., and further work is in hand.

Dyer's Road (Rodney County).—During the year this road was widened and metalled over a length of 1 m. 67 ch. Sets of new culverts, totalling 146 lin. ft. were placed. All settlers on the road now have metalled access to Wayby Railway-station and to the butter-factory at Warkworth.

Old School Bridge (Wellsford Valley Road), (Rodney County).—A new 40-ft.-span bridge, consisting of rolled-steel joists on concrete abutments, with 10 ft. 6 in. roadway, was erected on the Wellsford Valley Road to replace an old wooden structure which was in a very advanced state of decay.

Pearman's Bridge (Wellsford Valley Road), (Rodney County).—This bridge, consisting of one 30 ft. and one 40 ft. span, with rolled-steel joists on concrete piers and abutments, and having a 10 ft. 6 in. roadway, was completed during the period. This structure replaces an old wooden bridge which was beyond repair.

Puhoi to Tahekeroa Road (Rodney County).—The work on this road, which had to be closed down last year owing to adverse weather conditions, was resumed this year, and a further length of 1 m. 32 ch. of metal was laid and 324 lin. ft. of culverting placed. This completes the surfacing of the road between Puhoi and Tahekeroa Railway-stations.

Sandspit Wharf Road (Rodney County).—During the year 1 m. 8 ch. of this road was metalled, in addition to re-forming, widening, and culverting the same length. All settlers on this road now have all-weather access to Warkworth, which is their nearest commercial centre.

Tauhoa to Wellsford (Rodney County).—This road provides direct access to the Wellsford Township and the railway, for all settlers in the Tauhoa district, and the metalling this year of 4 m. 16 ch. has proved of great benefit to the settlers and the district generally.

Te Arai Group Roads (Rodney County).—The scheme in hand is the metalling of seven roads in this group, comprising a total length of 8 m. 23 ch., and when completed some twenty-two settlers will be provided with all-weather access to Te Hana Railway-station, also to a butter-factory nearby. Good progress is being made with this work, and up to the end of the period 4 m. of road had been widened and re-formed, 3 m. 50 ch. metalled, 806 lin. ft. of culverts placed, and one 15 ft. bridge erected.

Warkworth to Woodcocks Road (Rodney County).—During the year a top course of shingle was laid over a section of 2 m. 18 ch. of this road. The bottom course of sandstone had been completed the previous year.

Pakiri Block Roads (Rodney County).—The roading of this block, which was continued during the year, was finally completed and handed over to the Rodney County Council for future maintenance. The work carried out comprised 3 m. 27 ch. of formation and 5 m. 55 ch. of metalling. The total roading of the block amounted to 12 m. 11 ch. of formation and metalling, 3 m. 29 ch. of side drains, and 120 ft. of bridging and 1,365 lin. ft. of culverting.

Kauaeranga Valley Road (Thames County).—The last settler on this road has been provided with all-weather access by the completion of 2 m. 42 ch. of metalling this year. Additional work carried out on this road consisted of extensive repairs to the long suspension bridge over the Kauaeranga Stream.

Waihi to Whangamata Road (Thames County).—The metalling of this road was extended this year by a length of 5 m. 32 ch., thus completing the surfacing throughout between Waihi and Whangamata, the total distance being 23½ m.

Hoe-o-Tainui Block Access Road (Waikato County).—The work to be undertaken on this road provides for the formation and metalling of 3 m. 63 ch. extending between the Ohinewai–Tahuna Main Highway and the Tauhei–Morrinsville Road. The work is in hand, and during the period a length of 2 m. 40 ch. was formed to a width of 14 ft.

Matahura to Te Hoe Road (Waikato County).—Improved access has been provided for settlers on this road by the formation and metalling during the year of 3 m. 51 ch., thus giving them an all-weather connection with the Ohinewai–Tahuna Main Highway and thence to Ohinewai Railway-station.

Pukewhau to Lake Road (Waikato County).—The formation of a further length of 1 m. 47 ch. of this road now provides access, enabling the settlers on the eastern side of Lake Waikare to reach the Ohinewai–Tahuna Main Highway and the railway.

Te Miro Soldiers' Settlement Roads (Waikato County).—During the year 3 m. 34 ch. of roads were metalled 9 ft. by 6 in., and most of the settlers in this area now have all-weather access to Cambridge.

Waikato River Bridge (Fairfield), (Waikato County).—A contract was let in July, 1934, to the Roose Shipping Co., for the construction of this bridge, which spans the Waikato River on the north side of the Borough of Hamilton. The structure, which is 457 ft. long, consists of three bowstring trusses and two land-spans, all in reinforced concrete. Work was commenced on the 6th August last year, and at the end of the period pile-driving at all foundations had been completed, both abutments and one pier completed, and the land-span at the east end had the deck connected.

Ellicott's Block (Monckton's, Maru, and Block Roads), (Waipa County).—The roading of this block, which is being carried out with married relief labour in conjunction with the development of the land under the small-farm scheme, is proceeding satisfactorily, and at the end of the period 4 m. 37 ch. had been formed 16 ft. and 18 ft. wide, and 3 m. 70 ch. metalled 9 ft. by 6 in.

Kakepuku Road (Waipa County).—As a result of the metalling of 1 m. 2½ ch. of this road an additional number of settlers will benefit by having all-weather access to the main road.

Horse-shoe Bush Road (Waitemata County).—Upon the completion of the work on this road several settlers will be provided with all-weather access to Auckland. The road is also a connecting link between the Auckland, Maungaturoto, and Kahikatea Flats Main Highways. The work is in hand, and during the period 4 m. 55 ch. was formed 24 ft. wide, 1,324 lin. ft. of culverts were placed, and 5 m. 57 ch. of metalling was completed.

Kakamatua Bridge (Waitemata County).—This new reinforced-concrete bridge, of one 28 ft. span with 20 ft. roadway, was constructed on concrete abutments on the Brookby–Huia Road.

Kanohi to Makarau Road (Waitemata County).—All the settlers on this road have now all-weather access to the main highway and thence to Kaukapakapa as the result of the metalling of 2 m. 30 ch. during the year.

Lonely Track (Waitemata County).—The only unmetalled gap on this road, a length of 1 m. 4 ch., was surfaced during the year.

Makarau to Wainui (Waitemata County).—During the period the work of forming this road was completed, 2 m. 53 ch. having been constructed to 16 ft. width, 1 m. 31 ch. widened to 16 ft., 127 lin. ft. of culverts placed, and two small timber bridges, totalling 36 ft., erected.

McElwain's Road (Waitemata County).—Prior to commencing operations on this road it was little better than a sledge-track and overgrown with scrub. The road has been cleared and widened to 16 ft. over a length of 5 m. 76 ch. Thirty new culverts, totalling 687 lin. ft., have been placed, and 5 m. of metalling has been completed. Upon completion of the work a number of settlers will have all-weather access to the main highway and thence to Auckland.

Nelson's Bridge, Nelson's Road (Waitemata County).—A new reinforced-concrete bridge, 24 ft. long with 20 ft. roadway, was erected on concrete abutments to replace the old wooden structure.

Tarawera, Evans, and Haranui Roads (Waitemata County).—During the year 4 m. 42 ch. of this road was metalled, with the result that a number of settlers are now provided with all-weather access out to South Head Road and thence to Helensville, which is their nearest commercial centre.

Taupaki No. 2 Bridge (Waitemata County).—This bridge, which is situated on the Taupaki to Brigham's Creek Road and consists of a single span of 47 ft. in reinforced concrete with 20 ft. roadway, was erected on concrete abutments this year.

Tauranga District.

Kaharoa Road (Rotorua County).—With the metalling of a length of 3½ m. on the road the benefit of an all-weather outlet has been conferred upon fourteen settlers.

Matai Road (Rotorua County).—Work on this road has been completed, a further distance of 3 m. 32 ch. having been metalled to a width of 10 ft. and a depth of 10 in., the total, inclusive of last year's result, being 5 m. 40 ch. of road in farming country under intensive settlement.

Ngakuru Block No. 1 (Twist's Road), (Rotorua County).—A length of 3 m. was metalled on this road, and with the completion of this work a number of farms recently developed by the Lands Department have been provided with all-weather access.

Belks Road (Tauranga County).—This gives access to a number of settlers and also opens up Crown lands. 5 m. 29 ch. has been surfaced with pumice spread 10 ft. wide and reinforced on the hilly portions for 52 ch. of the distance with 3 in. of broken metal.

No. 3 Road Te Puke (Tauranga County).—The road serves a number of Crown settlers. This year's activities resulted in the completion of 2 m. 36 ch. of metalling, providing all the settlers on the road with a metalled outlet.

Pongakawa to Lake Rotoehu (Tauranga County).—This year 3 m. 77 ch. was surfaced with pumice, thereby completing a total length of 5¼ m. giving access to the Pongakawa Tobacco Settlement, on which the Crown has established forty settlers from the ranks of the unemployed.

Works Road, Whatakau Block (Tauranga County).—This is an important access road to recently opened Crown land. It has been completely metalled over its distance of 4 m. 8 ch., 228 ch. of which represented the current year's programme.

Wright's Road, Whatakau Block (Tauranga County).—The road gives all-weather access to Crown sections over its entire length of 5 m. 16 ch. A length of 45 ch. of new formation to a width of 14 ft. represented this year's activities and the completion of the work.

Awakeri to Te Teko Road (Whakatane County).—A reasonably good surface has been provided for the settlers on this road by the surfacing with pumice of a length of 4 m. to a width of 14 ft. by 6 in. deep.

Murupara to Te Whaiti Road (Whakatane County).—Operations in hand last year have been continued to completion, a further length of 2 m. 52 ch. having been metalled 10 ft. wide by 9 in. deep. The road is not only an access for the settlers in the Galatea Settlement, but is portion of the through-road to Waikaremoana.

Eastern Drain Road (Whakatane County).—Improvements on this road comprised raising, widening, and surfacing with metal for a distance of 1½ m.

Halletts Road (Whakatane County).—1 m. 42 ch. of metalling has been completed.

Stanley Road (Whakatane County).—Stanley Road serves a farming district that is being more intensively settled. During the year 2 m. 70 ch. was metalled 10 ft. wide by 6 in. deep, and further metalling is in progress.

Waiawa Bridge, Waiawa Block Access Road (Opotiki County).—A low-level bridge of three 27 ft. spans has been erected complete with approaches. This bridge will be a boon to the settlers in removing the difficulties under which they laboured at times when the river was in flood.

Gisborne District.

Hangaroa Junction to Waikaremoana Road (Cook County).—This work has been continued as a relief work for married men working full time. 3 m. 21 ch. of metalling was completed to a width of 9 ft. and a depth of 7 in. A further section to the eastwards of the Hangaroa River Bridge was constructed, and on this 30 ch. of metal was placed.

Manutuke to Wairoa via Mangapoike Road (Cook County).—Mangapoike Valley Section: 47 ch. of top-course metalling was completed.

Manutuke to Reay Bridge Section: 2 m. 40 chains of heavy resurfacing with crushed stone improved conditions on this road. This length of road is now fully prepared for a bitumen seal coat, which the County Council intends to apply next season.

Tahunga to Taumata Road (Cook County).—This is a road serving some dairying land and a number of grazing-runs in the Waikohu County, all suffering from indifferent access. 73 ch. of metalling, 9 ft. wide by 6 in. deep, was done, bringing the work to completion except for final rolling.

Main East Coast Road (Matakaoa County).—Potaka Junction to Whangaparaoa section: Formation was completed on the length of 147 ch. immediately east of Whangaparaoa River. This was commenced the previous year as a Native relief work under control of the Native Department. The formation of this length makes a properly formed road available round the peninsula from Gisborne to Opotiki.

Whangaparaoa to Opotiki County Boundary: A small amount of top-course metalling remaining over from last year was completed, making a total length of 3 m. 43 ch. of gravelled surface immediately eastwards of the Opotiki County boundary and giving Cape Runaway Township an all-weather surface to Opotiki. At the Wharaumoa Stream a reinforced-concrete culvert, 60 ft. long, 6 ft. wide, and 6 ft. deep, with 21 ft. of outlet-flume, was completed, together with a substantial embankment. This length of 3 m. 43 ch. was subsequently declared a main highway as part of the Gisborne–Opotiki via Coast route.

Delta Road (Uawa County).—16 ch. of formation was done during the year, completing 51 ch. of embankment across a swamp section at the western end of this road. 19 ch. of bottom-course metal was placed at this end, in addition to 7½ ch. of full metalling at the eastern end.

Kaiaua Road (Uawa County).—A length of 82 ch. of this road was re-formed and metalled, giving a winter outlet to some half-dozen dairy-farmers, besides some Native farmers.

Kiore Road (Uawa County).—Relief works for married men, financed from settlers' contributions, the Public Works Fund, and Unemployment Board's funds, were commenced last year and continued throughout the last season. The weather conditions were very bad, especially towards the end of summer. Consequently less progress was made than was expected. The remaining 52 ch. of a 63 ch. deviation was formed. About 3,000 cub. yd. of spawls were got out of the Pakarae Stream and tributaries. 1,116 yd. were carted to the road, and these were laid and broken over a length of 80 ch.

Mangatokerau Road (Uawa County).—86 chains of this road was metalled, making a continuous metalled surface through the greater part of the Mangatokerau Gorge.

Tauwhareparae Road (Caldwell's to Huanui Junction), (Uawa County).—43 ch. of metalling was done on this section, completing the relief-work scheme commenced by the Department several years ago. A much-improved outlet is now available for some twenty settlers, who are scattered over a very large area of high back-country.

Tolaga to Arakihi Road (Uawa County).—16 ch. of metalling left over from last season's relief-works metalling-scheme on this road, was completed. This terminates the present programme, and the results are much appreciated by the settlers.

Poroporo Bridge, Rangitukia Road (Waiapu County).—All piles have been made for this bridge, rolled-steel-joist spans have been delivered, and a contract has been let for erection.

Tokomaru to Mata Road (Waiapu County).—A commencement was made on a scheme of reconstruction and metalling for the unmetalled portion of this road, some 14 m. in length. This is one of the most important roads in the Waiapu County, serving a large number of settlers and a very big area of good land. Although always well maintained, the rainfall is so heavy in the locality that the road has been impassable every winter to vehicular traffic for a good many months. This year, regrading and realignment work only was undertaken. Four contracts were let for a total length of 6 m. of this work, and 4 m. 25 ch. was completed.

Wairongomai Stream Bridge, Tapuwaeroa Road (Waiapu County).—Plans and specifications have been finalized for this bridge in readiness for the calling of tenders.

Makaretu Road (Waikohu County).—This is a road in high country with a wet winter climate. It serves a Crown settlement, as well as a number of other settlers. The season's metalling proposals, totalling 160 ch., were completed, and these have been very beneficial to the district.

Mutuera Stream Bridge, Matawai Hangaroa Road (Waikohu County).—Plans and specifications were drawn for this bridge and a contract let, but the work was held up owing to delay in the arrival of some of the timber from Australia.

Waihora Stream Bridge (Bruce's Road), (Waikohu County).—Plans and specifications were completed for this bridge and a contract let for erection. Work has been held up, however, pending the arrival of some of the timber from Australia.

Taumarunui District.

Ohura to Mokau Road (Ohura County).—2 m. 43 ch. of this road was surfaced with a base-course, and thereon 2 m. 40 ch. of top-course metalling was completed.

Tokirima Settlement Roads (Ohura County).—The re-formation of a section of 5 m. 30 ch. of this road has improved access to the settlers in this settlement.

Tongaporutu to Mangaroa Road (Ohura County).—Settlers previously labouring under difficulties because of inadequate access have had their position improved by the re-formation of 2 m. 24 ch. of their access road and the metalling of a section 2 m. long.

Waihuka Road (Ohura County).—Improvements on this road during the year amounted to re-formation and metalling of a section 2 m. long. The work will benefit several settlers who previously had to contend with poor clay-road access.

Punga Punga Stream Bridge (Taumarunui County).—This bridge, 60 ft. in length, built on driven-pile piers, rolled-steel joists with totara superstructure, was completed.

Te Maire to Mangaohutu Road (Taumarunui County).—The season's operations consisted of the maintenance of a section 6½ m. long and the metalling of 1 m. 11 ch. This latter work provides several more settlers with all-weather access.

Mokauiti to Aria Road (Waitomo County).—Carrying on with last year's programme the remaining gap of 40 ch. was metalled. The whole length of 9 m. 40 ch. received a top course of fine metal, and the improved road thus provided is of great benefit to the district.

Ohura to Mokau Road (Waitomo County).—The completion of 3 m. of metalling on this road gives all-weather access from the Aria district to the railway at Matiere.

Paraheka Road (Waitomo County).—Five settlers on this road were given partial all-weather access by the metalling of 1 m 40 ch.

Ngatamahine Block Settlement (Waitomo County).—The roading in this block is being carried out for the development of a small-farm settlement. The formation work, comprising 158 ch., was completed, and of this, 146 ch. was metalled.

Ngatarawa Road (Waitomo County).—The reconstruction and metalling of this road was commenced during the year, and good progress was made until the approach of winter necessitated closing down the job. 3 m. of re-formation and 2 m. 20 ch. of metalling represents the work completed prior to the cessation of activities.

Pururu Block Roading (Waitomo County).—This roading has been carried out by single men under a small-farm-settlement scheme. 160 ch. of access road has been completed, giving access to seven settlers. In addition, a length of 50 ch. of the newly formed road was metalled.

Road Access, J. W. Lee (Waitomo County).—This road also gives access to a small-farm settlement of four sections. The work consisted of the formation and metalling of 80 ch. of road, and it was completed before the end of the season.

Stratford District.

Mangahia Road (Clifton County).—2 m. 13 ch. of road was surveyed and formed, and thereafter the metalling of the new formation was put in hand, a length of 1 m. 16 ch. being completed at the end of the year. The work was then proceeding. With the completion of the metalling the settlers on the road will be provided with an opportunity to increase production, and this, in turn, should enable them to deal more effectively with their difficult sections.

Mangaonga Road (Clifton County).—By the formation of 4 m. 22 ch., and the metalling of 60 ch. of the new formation, the settlers on this road have been provided with some relief, and when the metalling is completed good progress should be made with the development of the land served by the road.

Moki Road (Clifton County).—The settlers served by this road have had a difficult time owing to the indifferent access formerly available. Considerable formation improvements have been made over a length of 2 m. 8 ch., and the metalling of a section 2 m. 56 ch. long has further improved access conditions in this area.

Tongaporutu River Bridge, Burton and Howell's (Clifton County).—All the material, including fabricated steelwork, is on the site, and the foundations for the bridge are almost completed.

Wiremu Road Group (Egmont County).—As the name implies, the work under this item consisted of the improvement of a group of roads in a settlement which has not made particularly good progress owing to poor access conditions. By forming a length of 1 m. 30 ch. the settlers' difficulties have been alleviated, and when the full programme of work has been completed production should increase and enhance the prospects for the successful development of the area.

Maben Road Bridge (Hawera County).—At the beginning of the year it was expected that good progress would be made with this work. However, nature intervened, and a series of floods caused considerable delay. At the end of the year the materials for the bridge had been delivered on the site, but the work of erection had not been commenced. As soon as weather conditions permit it is proposed to get on with the job.

Suffolk Road (Inglewood County).—80 ch. of road was formed, new formation was metalled, and culverts totalling 300 lin. ft. were laid.

Suffolk Road Bridge (Inglewood County).—Access for the settlers served by this road was greatly improved by the construction of a bridge over the Maketehinu Stream. The bridge consisted of a railway truss of 81 ft. span, together with land-spans of 30 ft. and 15 ft.

Makakaho Road (Patea County).—The metalling of this road has been in progress during the last two or three years, and with the metalling of a length of 1 m. 56 ch. during the season metalled access has been provided to nearly all the settlers. The road taps a backblocks area, and the settlers are deeply grateful for the reason that they have been delivered from isolation during the winter months.

Carrington Road Group (Taranaki County).—Work commenced last year on this group of roads was continued this year, a further 60 ch. being metalled. The work done so far has been of great assistance to the settlers, who previously had to contend with poor clay-road access.

Mangapurua Valley Road (Waimarino County).—This road gives access to a soldier settlement in the Mangapurua Valley. The settlers were having considerable difficulty owing to the fact that in early spring, late autumn, and winter they were unable to transport heavy farm requisites to their properties. The Government's decision to provide metalled access met with instant approval, and the work that has been done has been very beneficial. This year's programme accounted for a length of 5 m. 10 ch. and gave a number of settlers a metalled road to Raetihi.

Waipapa Valley Road (Waimarino County).—This is a connecting road between the Murumuru–Mangatiti, and Mangapurua Valley Roads. The formation is on a sidling and has been very difficult to negotiate, particularly during the rainy season. Three settlers are served, and the road is also used as a through-connection. With the metalling of 3 m. 41 ch. improved access to these settlers has been provided, and Mangapurua settlers will have an alternative route to Raetihi.

Awakau Road (Waitomo County).—This is another backblocks road, and the settlers served were in difficulties owing to poor clay-road access. Conditions have been improved by the re-formation of 57 ch. and the metalling of 1 m. 37 ch.

Kauarapaoa Road (Waitotara County).—At the top end of this road a number of settlers are engaged in mixed-farming activities, and owing to the distance from a commercial centre they were considerably hampered by the poor type of access which existed. Their outlook on life is much brighter as the result of a metalling programme recently inaugurated and which has accounted for a length of 3 m. 20 ch. of lower-course metalling and 74 ch. of top-course surfacing.

Otikoki Road (Waitotara County).—On this backblock settlement road over a mile of bush was cleared from off the road-line, and 36 ch. of new formation was completed.

Murumotu to Watershed Road (Rangitikei County).—The proposals for the metalling of the whole length of this road were approved during the year and the work was got under way. The road is used by a considerable number of backblocks settlers, who will obtain relief when these proposals are completed. 2 m. 28 ch. of metal was placed during the year, and a number of the settlers are already much better off. The metalling gang is still at work.

Kohuratahi and Whitianga Bridges (Kohuratahi Road), (Whangamomona County).—Improved access to the settlers on this road has been provided by the construction of the Whitianga Stream Bridge, consisting of a 60 ft. railway-truss span. A commencement has also been made with the construction of the Kohuratahi Stream Bridge.

Mauku Road (Whangamomona County).—52 ch. of this road was formed, and a length of 2 m. 34 ch. was metalled during the year.

Putikituna Road (Whangamomona County).—This road gives access to several backblocks farms, and the prospects for development and closer settlement have been considerably enhanced as the result of a formation and metalling programme commenced near the beginning of the metalling season. Formation was completed over a length of 4 m. and metalling over a length of 3 m. 64 ch.

Napier District.

Mangapuaka Road (Dannevirke County).—156 ch. of this road was re-formed and metalled with rotten rock, 8 ft. wide, 10 cub. yd. to the chain. The work was carried out by contract under the Dannevirke County, and a much improved surface is now available for the use of the settlers.

Cook's Tooth Road (Patangata County).—Before the commencement of a re-formation and metalling programme on this road the road-surface was particularly rough, and in places slips had taken off most of the metal. With the assistance of a grant provided by the Government, the Patangata County was enabled to resurface a length of 7 m. and in doing so have used, roughly, 1,211 cub. yd. of shale and 1,050 cub. yd. of crushed metal.

Glenbrook Road (Wairoa County).—This settlement access road was in urgent need of improvement, and to provide more reasonable facilities for the settlers a camp was established on the road and

the men were engaged in a programme of reconstruction and metalling. The work was really not under way at the close of the financial year and the result may appear trivial. However, the camp is now well established and good work is being done.

Kopuawhara to Mahia Road (Wairoa County).—A contract was let by the Wairoa County Council for the supply and delivery of 2,550 cub. yd. of beach shingle for the metalling of this road. At the end of the season only 1,059 cub. yd. had been spread, over a distance of 2 m. 53 ch., this being the first coat applied at the rate of 5 cub. yd. per chain. Owing to the bad weather conditions the balance of the work had to be held over until next summer.

Mangapoike Valley Road, Frasertown to Tukemokihi (Wairoa County).—The Wairoa County Council let a contract for carting 1,964 cub. yd. of metal, and this was all supplied and spread on the road at the rate of 12 cub. yd. per chain over a length of 2 m. 4 ch.

Makaretu Bridge (Wairoa County).—A reinforced-concrete bridge, 131 ft. 5 in. long, with an arch span of 79 ft. 6 in. and 10 ft. roadway, was constructed at this site.

Birch Road East (Weber County).—This item also covers Franklin's Road, which is a continuation of Birch Road East, or *vice versa*. 3 m. of Franklin Road East was metalled with rotten rock, and 27 ch. of access road to the quarry was formed and metalled. The work is still in progress.

Waikaremoana to Lake House to Ruatahuna Road (Wairoa County).—Up to November, 1934, the whole of this road was maintained by seven surfacemen paid by the Unemployment Board, with a small contribution from the Public Works Department. The length is approximately 28 m. 28 ch. In November the section Lake House to Hopuruahine, 13 m. 18 ch., including an unmetalled length of 6 m., was declared a main highway. The balance of the road is still being maintained under departmental supervision, and with the limited funds available it has been possible to maintain a reasonable travelling surface.

Wellington District.

Crooked Creek Bridge, Glenora Road (Akitio County).—The construction of a reinforced-concrete bridge of one 30 ft. span was commenced and pile-driving was completed before the end of the year. The work is still in progress.

Grassendale Bridge (Castlepoint County).—A reinforced-concrete bridge, of two 27 ft. and one 38 ft. spans, has been constructed.

Waingawa Camp Road Bridge (Masterton County).—A reinforced-concrete bridge, of one 35 ft. span with 20 ft. roadway, has been completed.

Awhea River Bridge No. 3 (Featherston County).—This bridge had been completed. It has four spans of 46 ft. rolled-steel joists on iron-bark piles and an 8 ft. 9 in. roadway.

Palliser Bay Road (Featherston County).—A portion of this road was in imminent danger of being washed away by the sea and it became necessary to construct a deviation farther inland to avoid a recurrence of the trouble. The deviation has been completed, and the road is available for traffic.

Mangaone Stream Bridge, Boness Road (Manawatu County).—A bridge of two 25 ft. stringer spans has been constructed.

Mangatainoka River Bridge (Pahiatua County).—A reinforced-concrete bridge, of one 60 ft. and two 46 ft. spans, has been erected.

Checkley's Bridge (Pahiatua County).—A bridge, of one 60 ft. reinforced-concrete arch span, has been constructed.

Orua River Bridge (Te Awa), (Pohangina County).—This bridge, of two 48 ft. and two 42 ft. spans, which was commenced in the previous period, has been completed.

Glenburn Road (Wairarapa South County).—The formation and metalling of a length of 188 ch. has been completed, and a further length of 68 ch. is in hand.

Horokiwi Road (Hutt County).—As a relief work for unemployed and to provide better access to the district, this steep hillside road has been widened for a further 65 ch., and the whole length of 1 m. 65 ch. has been metalled and handed over to the County Council for future maintenance and control.

Khandallah to Johnsonville Road (Makara County).—This road will eventually provide an alternative to the Ngahauranga Gorge as an outlet from Wellington. During the period work has been carried on under Relief Scheme No. 5 with men from Wellington. A further 25 ch. of formation and a first course of metalling has been completed. An extension of 15 ch. has been commenced.

Wainui Hill Road (Hutt County).—Widening and metalling on the Wainui side of the hill was continued during the period under the No. 5 Relief Scheme. The widening has been completed, and 30 ch. of metalling remains to be done.

Western Hutt Road (Hutt County).—This was started during the year as a relief work for Hutt Valley employees, and 400 men are now engaged for their respective allocation periods per week. This will serve as an alternative to the Taita Gorge Road when the new bridge over the Hutt River, which is included in the present scheme, is complete. Widening of the existing road is in hand for 3 m. and formation of the new road for 1½ m. 30 ch. of this has been completed.

Nelson District.

Access to Pastoral Run 121 (Bluff), Inner Clarence (Awatere County).—2 m. 20 ch. of widening and improvements to the track giving access to this run have been completed. The work is of considerable benefit to this backblocks district and will help with the development of a difficult tract of country.

Wairoa River to Mangarakau Road (Collingwood County).—The engineering survey of this section, covering a distance of 5 m. 26 ch., has been completed. Construction work is now in hand. 3 m. 78 ch. of formation has been completed, 15 timber culverts of a total length of 410 ft. and eight concrete pipe culverts with a total length of 306 ft. have been installed, and a bridge consisting of two 25 ft. spans has been erected. An extension of the work northwards towards White Pine Creek was approved

during the year, and on this section 3 m. of engineering survey and 60 ch. of formation have been completed. On completion of this road greatly improved access will be provided to a large area of good grazing-land in the Patarau district, where considerable development in mining and sawmilling is also anticipated.

Wairau River Bridge (Timm's), (North Bank Road), (Marlborough County).—A contract has been let by the Marlborough County Council for the erection of this bridge, comprising seven 25 ft. hardwood-stringer spans, 8 ft. roadway on ironbark pile piers, and abutments, with 7½ ch. of approach formation and metalling. The bridge, which is nearing completion, serves a large area of Crown land under settlement.

Esler's (Tutaki) Road Deviation (Murchison County).—This work, comprising the formation, gravelling, culverting, and fencing of 1 m. 26 ch. of road deviation and the erection of two small bridges in local timber, has been completed. The deviation eliminates two bad fords and provides all-weather access to settlers in the Upper Tutaki and Matakitaki Settlement areas.

Longford to O'Sullivan's Road (Access to Dymock's), (Murchison County).—The completion of this road opens up for vehicular traffic a section of road which was damaged by the 1929 earthquake. 2 m. 67 ch. of formation, metalling, and improvements were completed, and the road was handed over to the County Council for future maintenance.

Maggie's Creek Road: Access to Goldfields (Murchison County).—Vehicular access to the Howard gold-mining area was provided by the construction of this road. The work comprised 1 m. 18 ch. of formation and metalling.

Big Pokororo River Bridge (Motueka River Road, Left Bank), (Waimea County).—This bridge, comprising one 60 ft. steel-plate-girder span, 10 ft. 6 in. roadway, concrete deck and abutments, was completed, together with 6½ ch. of approaches. It eliminated a bad ford and will be of considerable benefit to the settlers affected.

Bosselman's Creek Bridge, Rosedale Road (Waimea County).—Previous to the erection of this bridge through traffic between the Motueka Valley and the Lower Moutere was subject to interference during floods. The bridge consists of one 40 ft. rolled-steel-joist span with concrete deck.

Riwaka to Sandy Bay Road (Waimea County).—The balance of this metalling contract, covering a length of 53 ch., has been completed. The total length of the work is 3 m. 11 ch., and represents a marked improvement in settlement access facilities.

Greymouth District.

Access to Arapito Settlement (Buller County).—Construction of this road, a deviation to reinstate access to settlement on the south bank of the Karamea River, destroyed by the 1929 earthquake, was completed as a special relief work. 42 ch. of formation 13 ft. wide, with metal 10 ft., was completed. 96 lin. ft. of culverts were placed, 6 ch. of stop-bank built, and 3½ acres planted with willows as a protection against river eroding and flooding.

Granite Creek Road (Buller County).—The raising of the old road, which sank below flood-level during the 1929 earthquake, was completed. A stop-bank 5 chains long was constructed to prevent further flooding, and 5 ch. of river-bank was planted with willows.

Elford's Creek Bridge (Buller County).—This bridge, which was inadequate to deal with the quantities of debris brought down after the 1929 earthquake, was lengthened by the addition of two 25 ft. timber spans. The work was carried out by the Buller County Council.

Kongahu Inland Road (Buller County).—The restoration of 100 ch. of this road, which was destroyed by the earthquake, was completed, to restore access to one settler. The work included redecking three small bridges, totalling 54 ft. in length, and placing of 100 lin. ft. of culverts.

Kirby's Road (Buller County).—Construction of this road, to provide access to a backblocks settler, is in hand by the Buller County Council. 35 ch. of road has been formed 13 ft. wide, and metalling is proceeding.

Tauranga Bay to Okari Road (Buller County).—1 m. of this road has been metalled by the Buller County Council to improve access to the interested settlers.

Big River Bridge, Big River to Rough River Road (Grey County).—The construction of this bridge, of six 50 ft. spans, 7 ft. 6 in. deck, rolled-steel joists on hardwood piles, was completed by the Grey County Council. 20 ch. of approach road was formed and metalled. This bridge provides much-needed access to a large farming area on the west bank of the Grey River. The piers have been constructed of sufficient width for the bridge to be widened to a 10 ft. 6 in. roadway if required in the future.

Craigieburn Creek Bridge, Big River to Rough River Road (Grey County).—Construction of this road to provide access to a farming area on the west bank of the Grey River is in hand by the Grey County. Formation of approach banks is nearing completion, and piles, timber, &c., have been ordered.

Haupiri Road to Upper Ahaura Valley (Access to Draytons), (Grey County).—This road has been completed and metalled to 2 m. east of the Waikiti River and now provides access to all the occupied land in the district. Work completed during the year includes 1 m. 78 ch. of formation 14 ft. wide, metalled 10 ft. wide, the construction of a small bridge of 30 ft. span, and placing of 380 lin. ft. of timber culverts.

Hodgkinson's Road (Grey County).—This road, which has been under construction by the Grey County for some years, was completed during the year. The road provides access to several isolated settlers. 17 ch. of formation and 79 ch. of metalling 10 ft. wide were completed during the year.

Slaty Creek Suspension Footbridge (Big River Road), (Grey County).—A suspension footbridge of 120 ft. span was erected by the Grey County to provide access to backblocks settlers. This bridge will provide a reliable outlet over a bad ford, which was frequently impassable.

Blackball to Brunner Road (Grey County).—The improvements on this road, as a special relief work and to provide an alternative road on the west side of the Grey River between Brunner and Blackball,

were commenced during the year. A detailed survey of the road is in hand, and a start has been made with formation and metalling at the Blackball end. 19 ch. has been formed 10 ft. wide, and 42 lin. ft. of culverts have been placed.

Mair's Road (Inangahua County).—This road, 3 m. 16 ch. long, is nearing completion. 121 lin. ft. of concrete-pipe culverts, 218 lin. ft. timber culverts, and two small bridges, each of 10 ft. span have been completed, in addition to 3 m. of formation and metalling. The road provides access to a number of settlers on the west bank of the Maruia River.

Mair's Bridge (Inangahua County).—This bridge gives access to Mair's Road on the west bank of the Maruia River. The bridge, of ten 45 ft. rolled-steel-joist spans on hardwood piles, with 7 ft. 6 in. deck, has been completed. The piers have been built wide enough to increase the width of deck to 10 ft. 6 in. if required.

Mirfin's Bridge Protection (Mirfin Road), (Inangahua County).—Erosion of the west bank of the Mawhera-iti River undermined the abutment of this bridge. The bridge was lengthened by the Inangahua County by the addition of a 40 ft. span on rolled-steel joists and the bank well protected with stone cratework. 2 ch. of approach road was regraded and metalled.

Reefton to Big River Road (Inangahua County).—Remetalling and improvements to this road are in hand over a length of 13 m. 460 cub. yd. of metal were placed during the year, and 42 lin. ft. of timber culverts were constructed.

Somerville's Bridge (Inangahua County).—The construction of this bridge, of two 40 ft. spans rolled-steel joists on hardwood piles, with 7 ch. of approaches, has been completed.

Busch Road (Westland County).—46 ch. of road has been formed 12 ft. wide and metalled 9 ft. wide. 44 lin. ft. of culverts and two small bridges, of 25 ft. and 12 ft. spans, have been constructed.

Dry Creek Bridge, Poerua Settlement Road (Westland County).—Protection works and formation of approaches for this bridge have been completed. The bridge, when erected, will eliminate a very bad ford.

Education Endowment Road (Westland County).—This road has been formed 12 ft. wide and metalled 8 ft. wide for a length of 42 ch. 80 lin. ft. of concrete-pipe culverts and a timber bridge of 12 ft. span have been constructed.

Hapuka River Bridge (Westland County).—All material for this bridge is on the site, and a co-operative contract has been arranged for the supply of piles and erection of the bridge.

Malfroy's Bridge Protection (Westland County).—The protection of the north bank of the Arahura River above Malfroy's Bridge was put in hand by the Westland County. Before the work was completed a severe flood destroyed part of the bridge. The reconstruction of the bridge and completion of the protection work has been put in hand by the Department. Two 60 ft. truss spans have been purchased from the Railway Department and landed on the site, and gear has been assembled for pile-driving. Temporary access across the river is provided by a suspension footbridge erected by the Westland County.

Waitaha South Bank Road (Westland County).—The final 1 m. 30 ch. of metalling on this road was completed during the year and the completed road handed over to the Westland County.

Christchurch District.

Lewis Pass Road (Amuri County).—The Lands and Survey Department has finalized the legalization survey plans. This roadwork has been carried out under relief labour conditions, the single men's camp being financed wholly by the Unemployment Board up to 30th April, 1935, and as a mixed relief work financed out of Public Works loan funds and Unemployment Board funds since that date. The importance of this connecting-link between Canterbury and Westland is well known to all, and work is now being continued with renewed vigour. During the year work completed was as follows: 3½ m. of light formation, 24 ft. wide, with additional widening on curves; 4 m. lightly metalled; 70 ch. of heavy sidelings and block-cut formation also to a width of 24 ft. This length has been fully metalled. At 5 m. 60 ch., in the vicinity of the large groyne, the stop-banks in the rear of the groynes were considerably strengthened and extended. Approximately 2,000 willow-trees were planted where required. Work is already in hand for the erection of a temporary bridge over the Hope River.

Summit Road (Mount Herbert County).—Work has been proceeding steadily on this scenic road, the financial arrangements being entirely in the hands of the Unemployment Board. During the year an average of 950 men has been maintained and 6 m. of the road has been formed.

Lake Sumner Runs Road (Amuri County).—This access road has been continued under the single men's camp scheme, and during the year a length of 2 m. has been improved, thus completing the present proposals.

Dunedin District.

Clifton Settlement Road (Clutha County).—Metalled access for a number of settlers on this road has been provided, this year's programme accounting for a length of 215½ ch. Formerly settlers had considerable difficulty during the wet season in transporting produce and materials to and from their farms, and with the advent of a metalled road their efforts to increase production in response to the Government's appeal should be greatly assisted.

Clinton to Wyndham Road (Clutha County).—Here also a number of settlers have been provided with a metalled outlet, enabling them to cart produce and materials in all weathers. In this way the prospects for the more successful development of the area have been enhanced, and a greater return of farm-produce should be available when these development proposals are in full swing.

Tahakopa River Bridge (Clutha County).—This work entailed the erection of a bridge over the Tahakopa River to improve access to settlers, the length of this structure being 85 ft. and consisting of one 20 ft., one 25 ft., and one 40 ft. rolled-steel-joist spans on concrete piers. The bridge is now available for traffic.

Hina Hina Stream Road (Clutha County).—On a length of 57 ch. of this road the formation has been widened to 14 ft., and on a length of 139 ch. metalling has been completed to a width of 9 ft. and a depth of 6 in. This completes the work, which was commenced during the previous year and closed down owing to bad weather conditions during the winter months.

Blackstone Hill to Coal Pit Road (Maniototo County).—By metalling 140 ch. of this road improved access has been provided to a local coal-pit and to a number of settlers. The road is also used in conjunction with the Upper Maniototo Irrigation Scheme, and metalling has assisted the Department in the transport of materials, &c., for this work.

Oturehua to Blackstone Hill (Maniototo County).—This road also serves a farming district, and the settlers will benefit considerably by the metalling of a length of 240 ch., which work was completed during the year.

Kingston to Queenstown Road (Lake County).—The construction of this road was resumed from the Kingston end during the year and good progress has been made. Formation has been practically completed to the Staircase Creek, a length of 7½ m. A number of parties are now concentrated on a heavy rock section at the Staircase Bluff. Culverts have been constructed and a contract let for gravelling the completed formation. Approximately 1½ m. of half-coat gravelling was also completed during the year.

Papanui Small Farm Settlement Access Roads (Peninsula County).—A camp was established during the year for roading and fencing this small-farm settlement. 118 ch. of road was formed 16 ft. wide and metalled at the rate of 11 cub. yd. per chain. In addition, some 90 acres of bush were felled and 540 ch. of boundary fences erected.

Otakou to Harrington Point (Peninsula County).—The sea was eroding a section of this road where a break had been made in an old hand-packed stone wall. To make a satisfactory job, a wall, approximately 4½ ch. long, had to be constructed, the materials used being stone from off the foreshore hand-packed and tied down to prevent displacement by wave action.

Pukerangi Road (Taieri County).—A single men's camp was established at Pukerangi during the year to carry out extensive metalling work on this road. The gang had a personnel of thirty men and they accomplished the metalling of a length of 580 ch. during the financial period under review. Transport for men and materials was provided by the Taieri County Council.

Dunrobin Road (Tuapeka County).—To improve access conditions for the settlers on this road a metalling programme was inaugurated early in the metalling season and 176 ch. of the road was surfaced with gravel to a width of 9 ft. and a depth of 6 in. An additional length of 110 ch. received a base-course of schist rock and surfaced with gravel, the latter at the rate of 5 cub. yd. per chain.

Lake Onslow Road (Tuapeka County).—This gives access to some farming land and to the lake, after which the road is called. To provide reasonable access light formation on a length of approximately 10 m. was required, and this work was completed during the year.

Hokonui School Road (Southland County).—The gravelling of a section of 1 m. 10 ch. along this road gave all-weather access to a number of settlers who formerly had considerable difficulty in reaching a commercial centre during wet weather.

Holtz Road (Southland County).—This is a new access road and provides an outlet to some good farm land. 2 m. 10 ch. of the road was formed to a width of 18 ft., and this length is open to traffic.

Mataura to Clinton Road (Southland County).—25 ch. of formation over 18 ft. wide and 75 ch. of metalling was completed during the year.

Key to Redcliffs Road (Wallace County).—This road will eventually provide alternative access for the Southland district generally to the Cold Lakes district. In the meantime the provision of such alternative access is not particularly urgent, but improvements to the northern section of the road are essential, as on this section there are several settlers engaged in sheep-farming and who contribute heavily to the wool output of the district. By forming and metalling a length of 4 m. in this area much improved access is now available for these settlers.

Pourakino Road (Wallace County).—This road serves several settlers who had much difficulty in the past in reaching their nearest commercial centre. To improve access facilities a metalling programme was commenced during the season, and by the end of the financial period under review 1 m. 35 ch. of gravelled road was open for traffic.

Caroline to Josephville Road (Wallace County).—The construction of this road was put in hand during the year, registered unemployed workmen being engaged under the co-operative system. 57 ch. of formation 20 ft. wide was completed, and 70 ch. of formation 20 ft. wide, though not complete, is well forward. 605 lin. ft. of culverts were also placed. The work is still in hand, and when completed will give a shorter connection between Caroline and the Josephville Road.

Te Anau to Milford Sound Road (Wallace County).—This work has been actively prosecuted during the year, an average of approximately two hundred men having been continuously employed on the co-operative contract system, with assistance from the Unemployment Board. The following shows the works completed from the 1st July, 1934, to the 30th June, 1935, with the total works since the commencement shown in parentheses :—

Formation	1 m. 32 ch. (55 m. 53 ch.).
Gravelling	Nil (54 m.).
Culverting	492 lin. ft. (15,399 lin. ft.).
Bridges	182 lin. ft. (1,670 lin. ft.).
Bushwork completed to	59 m. 5 ch.

At the 30th June, 220 men were employed over a length of 3 m. 33 ch., a considerable portion of which was then near completion. It is anticipated that work on the Homer Tunnel will be commenced towards the end of September, and in the meantime the access track is being pushed onwards.

LANDS IMPROVEMENTS.

The net capital expenditure under this vote was £82,092, as against £71,825 for the previous year. The following are the particulars of the works completed or in hand at the end of the period :—

Whangarei District.

Tidal Flat Reclamation Work.—In the Hokianga Harbour the stop-bank systems enclosing the areas being reclaimed at Kelly's, Tullock's, Motutoa, and Omanaia were completed, and tidal waters are now excluded. Twenty-seven and a half miles of narrow drains 3 ft. deep were made to facilitate the leaching-out of salt from the soil. One and three-quarter miles of access road to Tullock's area have been also formed and metalled. On the Whangaroa Harbour, work on the Waikoura area is complete. Two 36 in. flood-gated culverts were built, and 11¾ miles of the foregoing type of drain were made.

Motutangi and Big Flat Swamps.—Road-formation was continued, and 3¾ miles of drain were made.

Ruakaka Block.—Two and a quarter miles of road metalling were done, and drainage-work completed. Drainage was also carried out in the Ureteti area.

Sand-dune Reclamation Work.—At Ruakaka 150 acres of sand were planted with marram-grass. At Te Kopuru 418 acres were planted with marram, lupin-seed was planted over 480 acres, and 7,900 *Pinus insignis* trees were planted out.

On the area to the west of Kaitaia and Waipapakauri, the work of the previous years was fully maintained, areas damaged were replanted, and marram and lupin planting again extended, the areas thus consolidated being 1,000 acres.

Auckland District.

Taupiri Drainage Scheme.—This important work, which is being undertaken with married registered unemployed men, was continued and good progress made during the year. The scheme embraces drainage improvements over an area of flat land totalling approximately 146 square miles, the watershed having a total area of approximately 234 square miles. The main channels, Mangawara River and Tauhei and Komokorau Streams, totalling 41 m. 15 ch., and fourteen subsidiary drains totalling 62 m. 65 ch., are being opened up to serve this area. The completed scheme is estimated to cost £150,000, and up to the end of the period more than half the work had been completed. Approximately 1,000,000 cubic yards of earth has been excavated, the greater part being moved with hand labour under the co-operative contract system. Excavation work, which is unsuitable for hand labour, is being carried out with a drag-line machine. The work already undertaken in the main channel has reduced flooding to a marked extent in several areas, while subsidiary drains are tapping several undeveloped peat areas in addition to other lands.

The average number of men employed over the period totalled 175.

Te Kawa Drainage Scheme.—The work under this scheme, which is being carried out with single registered unemployed men, has been continued throughout the year, and the deepening, widening, and clearing of further lengths of drains, totalling 7½ miles, were completed to widths varying from 4 ft. to 20 ft.

Akaaka Swamp Drainage.—In continuation of the work carried out last year an additional length of 1¾ miles of drains has been widened, deepened, and cleared, bringing the total length of drains treated up to 10 miles. In addition, all necessary road and access bridges have been built or extended.

Waihou River and Waitoa Stream.—A considerable amount of willow-clearing work has been carried out by the single men's camps. On the Upper Waihou River, where two log-haulers have been operating, a length of 3 m. 33 ch. has been cleared of heavy willows on both banks, and heavy snags have been removed from the waterway. All timber and debris have been stacked and burned.

On the Waitoa Stream heavy timber growth was cleared over a length of 2 m. 71 ch., and 4 m. 44 ch. of drains were excavated to an average depth of 7 ft. and bottom widths varying from 6 ft. to 16 ft.

Waihou and Ohinemuri Rivers Improvement (Maintenance).—In addition to the ordinary maintenance-work which has been attended to, heavy clearing work was carried out on the Ohinemuri River between Mackytown and Ngahina, and 4 m. 11 ch. of tidal stop-banks were heavily topped up on the Upper and Lower Waihou River.

Sand-dune Reclamation Works.

The work of previous years was continued this period, and further areas have been successfully reclaimed. Every attention was given to the reclaimed areas during the summer months, and, considering the exceptionally hot weather and the caterpillar pests experienced during January and February, the improvements carried out were generally very satisfactorily maintained.

South Kaipara Heads.—During the period a further 650 acres were planted in marram, and 1,000 lb. of lupin-seed was collected and sown. Attention was given to the consolidation of the area planted in preference to undertaking any extensive new work.

Woodhill-Muriwai-Helensville.—The additional area planted in marram this year amounts to 1,980 acres, making the total to date 7,660 acres. In addition, 4½ tons of lupin-seed was gathered and sown in sheltered places and 2 miles of standard fencing was erected. A nursery was established at Woodhill at the edge of the sand area during the year, and approximately 150,000 shelter-trees have been raised from seed and are making satisfactory progress. The whole of the improved areas have been well maintained.

North Waikato Heads.—The total area planted in marram is approximately 2,850 acres, and of this about 1,520 acres were planted during this period. Over two tons of lupin-seed was collected and planted during this period in suitable positions, and, in addition, approximately 7,000 shelter-trees, which were raised in a nursery close to the sand area, have been planted out and are making good progress. Adverse weather conditions similar to those in other districts were experienced in this area during the months of January and February, but, generally speaking, the planted areas are making good progress under careful maintenance.

Tauranga District.

Tarawera River Stop-banking.—Substantial work was done on this stop-bank to make good damage done by flood.

Gisborne District.

Land Improvement.—A large volume of productive land-improvement work managed by the Public Works Department has again been carried out in the various groups throughout the district by unemployment relief workers. The cost of this work has been shared by the settler and the Unemployment Board. The work has all been done by co-operative contract, employees being mostly single men.

A summary of the total quantities of the various classes of work done during the year is as follows: Bushfelling, 36 acres; scrub-clearing, 12,325 acres; rush-clearing, 150 acres; fencing, 54 m. 59½ ch.; drain-digging, 4 m. 14½ ch.; forming farm roads and tracks, 3 m. 37 ch.; creek-clearing (Waikura Stream), 1 m. 69 ch.

Waipaoa River Willow-clearing.—This rather urgent work was continued again throughout the willow-killing season. Married workers were transported from Gisborne daily, the work being carried out on co-operative contract basis, wages being found by the Unemployment Board. During the year 572 chains of river-bank were cleared. The beneficial result of the work so far done is marked.

Taruheru Creek Clearing.—This work is being managed similarly to the Waipaoa River work, and during the year 157 chains of the stream were completely cleared of large willows.

Napier District.

Kumeti Drain.—A moderate amount of maintenance-work was carried out.

Water-supplies.—The Department investigated on behalf of the Lands Department schemes for farm water-supplies to five different areas. In two cases small works were arranged for and carried out.

Tutaekuri River Diversion.—This work, which was started in March, 1934, was carried on in a vigorous manner throughout the whole year. The work is controlled by the Hawke's Bay Rivers Board, under the supervision of the Public Works Department, finance being found by the Public Works Fund, the several local authorities, and the Unemployment Board. During the year approximately 420,000 cubic yards of earthwork were built into the stop-banks, 11 miles of permanent fencing were erected, and 4 miles of protection belts planted.

Arrangements are in train for the erection of Brookfields Bridge to span the full width of diversion channel, and the Main Highways Board has let a contract for the Washout Main Highway Bridge in reinforced concrete, length 800 ft., roadway 24 ft. wide, situated near new outlet of river to sea.

Taumarunui District.

Mokau River Willow-clearing.—The special single men's camp, with an average establishment of thirty-two men, continued this work of felling, poisoning, removal, and burning the willows obstructing the stream. Nine miles of river-bank have been so treated, and maintenance-work has been done on 3 miles of stream previously treated.

Mokauiti Willow-clearing.—A commencement was made on similar work on the Mokauiti River, 205 chains of river-bank being so treated.

Mangapu Drainage District, Willow-removal.—The same class of work has also been continued on various streams in this area under the management of the Mangapu Drainage Board under Government financial assistance.

Stratford District.

Stumping, Land-clearing, and Drainage, Taranaki Area.—The work of improvement of farm lands, commenced during the previous year, was continued throughout the whole of the year covered by this report. No. 5 Scheme labour has been used on full-time employment, co-operative contract basis, and good work has been done. During the year 1,365 acres have been stumped and cleared ready for pasture, and 11¼ miles of drains have been dug.

Wellington District.

Eastbourne Water and Sewerage Scheme.—This installation has been built by the Department on behalf of the Eastbourne Borough Council. During the year No. 3 pumping-station and the remainder of the sewers were completed, and the whole scheme put into operation and handed over to the Borough Council.

Eastbourne Foreshore Protection.—This work is being financed in conjunction with the Unemployment Board and the Eastbourne Borough Council. The protection will consist of a stone wall and apron and a system of timber groynes over a length of 25 chains of foreshore. A contract has been let for quarrying and delivering stone, and a start has been made with building the wall and groynes.

Sand-dune Reclamation between Manawatu River and Ohau River.—A nursery was established in August, 1934, and planted with seeds of suitable trees for protection and breakwinds. This season 10,000 seedling trees have already been transplanted out, and it is expected that about 50 acres of trees will be planted this season. Forty acres of marram-grass have also been planted, as well as sowing of lupin-seeds, construction of windbreak fences, &c.

Makowhai Stream Improvement.—The work of straightening, widening, and deepening of the Makowhai Stream and drain system was continued during the period, 25,734 cubic yards of earth being shifted.

Land-clearing, Te Horo.—The single men's camp on this work was closed down towards the end of the period. During the time it was in existence 104,391 cubic yards of boulders were removed from 1,590 acres, and river-protection works were also carried out.

Paraparaumu Land Drainage and Clearing.—Work was continued from three single men's camps in this district. A great deal of useful work in the nature of draining, clearing, stumping, &c., was carried out.

Turanganui River Diversion.—This work, carried out from a single men's camp, was completed. During the period 13,360 cubic yards were placed in the stop-banks, besides willow-planting, protective groynes, and other work.

No. 5 Scheme, Hutt Valley.—Clearing gorse and reclaiming low swampy Crown lands in this area was carried out as a relief work under this scheme during the period.

NELSON DISTRICT.

Cutting Hawthorn Hedges.—This work, for fireblight prevention, was continued throughout the year by a single men's camp. The work at Lower Moutere was completed in August and the camp transferred to Wakapuaka. 12 m. 37 ch. of hedges have been cut or eradicated during the year, in addition to isolated clumps. The camp is now being transferred to Brightwater.

Pelorus River Protective Works.—This work was completed under arrangement with the Unemployment Board for the protection of a large area of valuable farm land in the vicinity of Canvastown. Willow-planting and strengthening of the permeable groynes has been carried out.

Wairoa River Protective Works at Brightwater.—The first section of this work, consisting of 11½ chains of stop-bank, 19 chains of pilot cut, and five groynes, was completed during December and the work was closed down. The camp was re-established in April of this year, and the construction of an additional pilot cut, groynes, and stop-bank is in hand.

Wairoa River Protective Works above Brightwater.—A survey of the river, covering a distance of 1¾ miles from the Wairoa Gorge to the Railway Bridge, has been completed and plans and proposals prepared.

GREYMOUTH DISTRICT.

Taramakau River Protection at Inchbonnie.—Construction work to protect against the threat of the Taramakau River to break into the Orangipuku River was carried out by the Department, the work consisting of stop-bank and groynes.

Waitangi-Taona River Protection Work.—This work was completed during the year, and included the placing of 700 cubic yards of filling and the construction of a strong cratework head to the stop-bank.

Inangahua River Protection Work, Sections 3, 143–5, Block IX, Reefton Survey District.—Three timber-and-stone groynes were constructed to protect valuable Crown property.

In addition to the above works the Buller County Council carried out, under the Department's supervision, drainage-work in connection with the Birchfield Swamp drainage, and the Grey County Council carried out river-groyne protection work at the Seven-mile Creek, Rapahoe Township.

CHRISTCHURCH DISTRICT.

Ashley River Control Scheme.—This work, started during the previous year, has been carried on continuously, using No. 5 Scheme labour, and during the year 17 groynes with stone gabion heads were erected, together with 8½ miles of stop-banks. The quantities in these works being as follows: Groynes, 72,400 cubic yards; stone gabions, 7,500 cubic yards; stop-banks, 36,400 cubic yards. Forty-two acres were also planted with willows for protection purposes.

Kennaway Estate.—River-protection work was carried out with funds provided by the Unemployment Board, and 65 chains of stop-bank were constructed on the Heathcote River at Woolston.

INVERCARGILL DISTRICT.

Waimatua Drainage Scheme.—This work has been carried on in a vigorous manner, using No. 5 Scheme labour, the number of men employed varying between one hundred and five and two hundred. The work consists of widening, deepening, and strengthening the existing creek and of the construction of an elaborate system of similar outfall drains. The work carried out includes the cutting of 1¼ miles of main channel and the digging of 40 miles of outfall channel, the width varying from 18 ft. on the bottom to 2 ft. on the bottom.

Kapuka Drainage Scheme.—This work continued using labour from a special single men's camp up to the date on which the camp was closed down. The work includes 5¼ miles of main channel, and 55 chains of ditching.

SMALL-FARMS-SCHEME WORKS.

These works are being carried out by the Department on behalf of the Small Farms Board, the labour itself being supplied by the Unemployment Board. Work has been done during the year ended 30th June as follows:—

WHANGAREI DISTRICT.

Taipuha Small-farm Block (McCarroll's).—Work done for the year included fencing, 12½ miles; scrub-cutting and surface clearing, 276 acres; and a substantial amount of cultivation, top-dressing, and draining. Six farm cottages and six milking-sheds were erected, and one of each renovated.

Onekura Small-farm Block (Vaughan's).—Work for the year included erection of 12¼ miles of fencing, scrub-cutting 130 acres, and top-dressing 240 acres. Ten farm cottages, twelve milking-sheds, and four pigsties were erected. A complete water-supply has been installed, the water being brought in by gravity from an intake some miles distant from the block.

Newman's Block.—The erection of eight cottages, eight milking-sheds, and five pigsties, which commenced in the previous year, was completed. Eight miles of fencing was done, and a substantial amount of fern-clearing, logging, and cultivating was carried out.

Mata North Block (Souminen and McKenzie's).—Nine miles of fencing and a small amount of clearing were carried out. Four farm cottages and five milking-sheds were erected. Roading is in hand as part of the development-work, and is included in roads report.

Gurr's Block.—The greater part of work consists of roading access, described in roads report. Seventy-four chains of fencing and some clearing and cultivation work were carried out, and one cottage was erected, one renovated, and two milking-sheds erected.

Tutamoe Small-farm Scheme.—Here land-clearing work is being done on settlers' lands in consideration of areas surrendered to the Crown for small-farm purposes; 679 acres heavily encumbered with timber have been logged up, 562 acres have been surface-spaded, and 548 acres of scrub-cutting done.

Auckland District.

Church Mission Block.—Development-work, which is still in hand, comprised during the year the following items: Six farm cottages, eight milking-sheds, 333 acres laid down in grass, and 9 miles of boundary and internal fencing.

Lots 1 and 2 of Section 10, Block XII, Pirongia Survey District.—Work for the year comprised 150 acres stumped and cleared, 141 acres ploughed and grassed, 44 chains of drain excavation, clearing 160 chains of fence-line, and erection of one store-shed.

Sections 7, 8, and 10, Block III, Wharepapa Survey District.—Practically the whole of the work to be done on this block has been completed and comprises the erection of 240 chains of fencing, 72 acres clearing scrub, &c., and the treatment of 41 acres of ragwort.

Section 8, Block VII, Wharepapa Survey District.—The following work has been carried out on this property during the year: 22½ acres of heavy stumping, 10 acres manuka and light-bush clearing, 15 acres ploughed and sown in turnips, and 90 chains of boundary fences have been reconditioned.

Ellicott's Block, Blocks V, VI, and IX, Maungatautari Survey District.—Good progress has been made with the development of this property—452 acres have been cleared of scrub and fern, 243 acres ploughed and sown in grass, 260 chains farm tracks formed 6 ft. to 10 ft. wide. In addition, a considerable amount of new fencing has been erected, existing fences reconditioned, drains excavated, and ragwort areas treated with sodium chlorate.

Block XVI, Waihou Survey District (Mrs. Simmond's Property).—The clearing and improving of this property was completed during the year, 109 acres having been cleared, stumped, burnt, and ploughed, 250 chains drains excavated, one 41 ft. span bridge constructed, and 25 chains of fencing erected.

Section 12, Block X, Mangaorongo Survey District (Cruickshank's Property).—Good progress has been made with the development of this property, which includes the clearing of fence-line and erecting 300 chains fencing, 80 acres scrub-clearing, 70 acres ragwort treated, 42 acres top-dressed. In addition, a water-supply, including engine and pump, was installed, and one farm cottage was erected.

Section 13, Block X, Mangaorongo Survey District (C. W. Larsens).—The work on this property was commenced this year, and to date 165 acres of ragwort have been treated, 27½ acres stumped and cleared, 12 acres ploughed and grassed, 3 acres sown in swedes, 80 acres harrowed and top-dressed, 287 chains of fencing erected, and two small farm cottages erected.

Late R. P. Hill's Property, Block IV, Orahiri Survey District.—During the period work was commenced on this property, and the following improvements were carried out up to the end of the year: 74 acres scrub cut and burned, 85 acres ragwort treated, 30 acres ploughed and sown, 100 acres harrowed and top-dressed, and 152 chains fencing erected. In addition, extensive repairs were carried out to two existing houses, and a water-supply, with ram, was installed.

Late W. L. Foss's Property, Tautari Settlement, Rotongata.—The following work has been carried out on this property: 75 acres heavy scrub and 52 acres lighter scrub cleared, 30 acres ragwort cut and burned, and 38 acres ploughed.

Late L. S. Langdon's Property, Rotongata.—Good progress has been made with the development of this property, the following work having been carried out during the year: 23 acres ragwort cut and burned, 56 acres heavy scrub and 80 acres lighter scrub cleared, 132 acres ploughed, and 64 acres disced.

Tauranga District.

Wainui South Block.—Good progress has been made with the development-work which had begun during the previous year. Work done during the year covered by this report comprised erection of seven farm cottages and seven milking-sheds, erection 435 chains of fencing, clearing 158 acres (scrub-cutting); ploughing, cultivating, and laying down in pasture, 157 acres.

Napier District.

Ahuriri Lagoon Reclamation.—The reclamation of the Ahuriri Lagoon was decided upon subsequent to the 1931 earthquake, which changed the lagoon from an excellent fishing and yachting ground into a desolate expanse of mud bank and shallow brackish water.

The work, which was undertaken as one of unemployment relief and small-farm development, provides for the dewatering and draining of this area, comprising approximately 7,600 acres, and is being carried out by the Public Works Department on behalf of the bodies interested—namely, the Napier Harbour Board, the Unemployment Board, and the Small Farms Board, which will finally settle unemployed workmen and their families on the reclaimed land.

The work was commenced in May of 1934, and at the end of June last the following work had been done: The tide had been excluded from the lagoon by means of a stop-bank and flood-gate at the Westshore Bridge. At the southern end of the lagoon the main gravity drain has been practically

completed, and the drainage of approximately 700 acres of land has also been completed. The main dewatering drain for the southern pumped area is in hand, and good progress is being made with the contour channel stop-banks.

A summary of work done includes 82 chains of stop-banks, 148 chains of main drains, 632 chains of subsidiary drains, 3,020 chains of lateral drains, 352 ft. of pipe culverts. From a hundred to a hundred and fifty registered married unemployed men have been engaged during the year.

Taumarunui District.

Pururu Block.—Fourteen sections are being developed. Three hundred and fourteen acres have been put into permanent pasture and 89 acres in crops. Two miles of road-formation were completed and 50 chains metalled; 10 m. 70 ch. of road, boundary, and subdivision fences, and also three cow-bails were erected.

Ngatamahine Block.—Eleven farm cottages, three cow-bails, and two manure-sheds were erected. Single men have carried out 158 chains of road-formation, of which 146 chains have been metalled; 327 chains of fencing erected. The areas on which cultivation work has been carried out total as follows: 197 acres cleared and stumped, 101 acres ploughed, 111 acres sown in grass, &c. Eleven thousand four hundred battens have been split for fences by the prospective settlers.

Waitanguru Block.—Seven cottages have now been erected for prospective settlers and two cow-sheds erected. Forty-four chains of road-formation were carried out. Five hundred and forty-eight chains of road fencing, 327 chains of boundary subdivision, and repairs to fences carried out. Cleared and stumped 105 acres, 69½ chains of drains. In addition, 124 acres have been cleared for farmers, and also 31 chains of fencing erected. A lime-crushing plant has been set up, and is in operation, for the purpose of supplying agricultural lime to this block and to adjoining settlers.

Metcalfe's Estate.—Settlement work is still being carried out on this 335-acre block. The settlers have erected 336 chains of fencing; 251 chains of drains cut; 155 acres have been cleared and stumped; 115 acres grassed; and 32 chains of road-formation completed. One thousand five hundred trees have been planted for shelter-belts.

Lee's Property.—Development-work has been continued. Work carried out is as follows: 439 chains of fencing completed; 76 acres ploughed and sown in grass; 66 chains of drains cut; 161 acres scrub-cutting, stumping, and clearing completed; 54 acres sown in crops; 63 acres of pasture top-dressed; and 138 acres treated for ragwort.

Stratford District.

Ohakune Land-clearing.—Heavy stumping and logging operations have been continued to prepare Crown lands adjoining Ohakune Station Yard for small-farm operations. No. 5 Scheme labour on full-time employment is used. Two hundred and six acres were stumped and logged up, and 57 chains of access road were formed.

Raetihi Land-clearing.—Similar work is being carried out on Crown lands some 3 miles to the east of Raetihi. During the year, 276 acres were stumped and logged up, and in addition 1½ miles of drains were excavated.

Dunedin District.

Papanui Small-farm Settlement.—An unemployment-relief camp was established during the year for further development-work in this settlement. One hundred and eighteen chains of road were formed and metalled; 540 chains of boundary fences were erected, and 90 acres of bush felled.

HYDRO-ELECTRIC DEVELOPMENT.

Arapuni Scheme.

Late in August, 1934, a commencement was made with the work of preparing for the extension of the Arapuni Power-house, the programme being to complete the power-house for ultimate development, and to install units Nos. 7 and 8, for which penstock tunnels have already been built.

The first work was the assembling and installing of the necessary construction services. A 4-ton overhead cableway was erected over the site of the proposed power-house extension, being ready for operation late in September, when excavation work on the site commenced. Excavation work at the site of the proposed outdoor-station extension proceeded simultaneously to completion, 2,260 cubic yards of excavation being handled.

The power-house excavation proceeded on three shifts, and to the end of June, 1935, approximately 27,000 cubic yards of rock had been broken out and removed.

A needle dam of heavy steel beams, with timber waterproof face on concrete piers was erected across the existing tail-race at the south end of the present power-house. Powerful dewatering pumps were then installed above this dam and after the needle dam had been fairly effectively sealed, water-level at the site of the new tail-race was lowered at the end of March to 2 ft. below the required tail-race floor-level.

Excavation for the tail-race was then begun, and at the end of June 6,400 cubic yards had been removed.

A complete concreting plant had in the meantime been installed, and was first put into operation during March, pouring the first part of the power-house foundations, and by the end of June further small quantities of concrete had been placed as progress of excavation allowed.

Road access right into the site of the new work had been provided by the construction of a suitable platform along the front of the existing power-house building.

Reinforcing steel for the power-house building is arriving and is being bent in readiness for placing. Structural steel sections for the steel moveable scaffold are also coming to hand, and a commencement has been made on the assembly and fabrication. Crushed metal and sand for concrete purposes are being supplied under contract.

A contract was let during the year for the erection, including water-supply and sewerage, of ten cottages for staff-accommodation purposes. These cottages are complete.

The average number of men employed on this work apart from contractors' employees was 102.

Waikaremoana Headworks and Lake-level Control.

At Onepoto, the outlet to Lake Waikaremoana, work has started in connection with the control of lake-level, and of leakage or outflow from the lake as a preliminary to the next stage of development.

An access road to Onepoto Bay has been constructed, and preparations are being made for the establishment of a camp there. An 11 kv. line was built from Tuai to supply power for the construction plant.

Waitaki River Scheme.

At the date of my last annual report, the construction of the dam was approaching completion, and all major items of concreting and construction of the power-house were also completed. Work done during the year just ended is summarized as follows:—

Work of building the dam to crest-level was continued and finally completed on 21st August, 1934. Removal of temporary trestling, and other construction gear at once followed. Simultaneously with this work, concreting proceeded of the apron on the Canterbury side of the wing dam between the power-house and the Otago abutment, and of further apron work for protection against scour at the toe of the dam, and was completed during September.

In July, 1934, the river flow had fallen sufficiently to enable the work of closing the eleven temporary sluices through the dam structure to proceed. Each was to be closed by a gate at the up-stream end, under the protection of which the sluice could be concreted up. Eight of these were successfully closed in turn, filled with concrete, and finally sealed by grouting.

At three of the sluices, however, the gates overran their positions and could not be restored under the pressures due to the large volume of water flowing. It was then decided to endeavour to seal these openings by placing mass filling against the face of the dam at these sluices. This has been largely successful in staunching the flow, and operations to dewater and seal the sluices are continuing during the present low winter stage of the river.

The closing of the sluices involved the filling of the lake above the dam. The filling took two days, and the water then flowing over the crest at once refilled the down-stream channel and the site of the tail-water excavation.

The completion of excavation on the down-stream side of the dam was hastened during the early months of the year, and by the time of the formation of the lake on 28th September, 1934, this portion of the work was done. The following gives the total yardage of concrete in the dam and power-house and in the excavation for the whole works as at the end of September, 1934, when the work was complete:—

	Cubic Yards.
Total excavation	737,108
Total concrete in dam, including wing dam..	225,839
Total concrete in power-house and foundations	48,320
Total concrete in south retaining wall	1,482

At the power-house various finishing works were carried out during the year. A temporary floor was built over the pits that will later be occupied by future generating-units. Screen guides were grouted in, and screens placed in position for units Nos. 1 and 2. The draft-tube stop-logs were tried in all the draft-tubes. Miscellaneous joinery, timber-work, steel-work, and various items of equipment were fitted as required. Painting and decorative work was carried out over the power-house generally. The south retaining-wall was completed and lamps placed in position.

Various finishing works were carried out at outdoor structures. Concrete garages and blacksmiths' shop at the south end of power-house were completed throughout. A non-climable fence was built round the outdoor station. A fish ladder was completed and water turned on so that it was available for last season's salmon run.

Much cleaning up and disposal of plant work was required, and that is in hand. Considerable progress has been made.

The filling of the lake enabled a test of the permanent sluices to be made, and also observations in the elaborate gallery-system for the watertightness of construction and expansion joints. These features were found to be quite satisfactory.

The power-house was put on commercial load on the 1st January, 1935.

The number of men employed at the beginning of the year was 702, and by the end of the year it had gradually diminished to 129.

HARBOUR-WORKS.

Westport Harbour.—No further construction work has been carried out on this harbour during the year. The average working depth on the bar at high water was 21 ft., an increase of 1 ft. 5 in. on that of the previous year. The steady progressive improvement in bar conditions was most noticeable during the first six months of the year. Gradual retrogression took place after September, when bad weather conditions and easterly sets resulted in general shoaling over the bar area. There was, however, an improvement again toward the end of the year.

Dredging operations were confined solely to the suction dredge "Eileen Ward." The bucket dredge "Maui" and the suction dredge "Rubi Seddon" were out of commission. The "Eileen Ward" dredged on 187 days of the year, the material lifted being dropped at sea. The total quantity of material taken from the bar was 449,766 cubic yards; from the lower river, 134,939 cubic yards; from berthages, 34,152 cubic yards; and from the floating basin, 12,496 cubic yards—making a total yardage shifted of 631,353 cubic yards.

The rainfall recorded on the harbour gauge for the year was 79·57 in., which fell on 169 days. For the three preceding years the figures were—

	Inches.	Days.
1933–34	81·27	174
1932–33	66·99	179
1931–32	114·55	178

Seas on the bar were rough on forty-eight days, the bar being unworkable to shipping on sixteen full days and five half-days.

The use of the tug "Mana" was necessary on two occasions for towing vessels outward from the port.

The willow plantations along the river have been kept in good order.

Running repairs to the "Eileen Ward" and other working plant has kept the workshops fully employed. Cranes on the western breakwater and at the Cape Foulwind Quarry were chipped, scraped, and painted. The pilot launch "Kaiuranga" was placed on the "grid," painted, and tail-shaft drawn.

The signal station, beacons, and harbour lights are in good order, and diving-gear and rocket apparatus have also been overhauled and are ready for use when required.

Shipping at this port showed a slight improvement on that of last year, the total tonnage entering port being 253,041, an increase of 12,909 tons. Coal shipped from the port was 291,685 tons, against 280,080 tons in 1933–34.

Sixteen large overseas vessels worked the port.

Karamea Harbour.—Owing to the aggradation of the river by debris from earthquake slips, Karamea has ceased to be a port. The river now finds its way to sea through the Otumahana Lagoon, and no definite channel exists.

The harbour has not been worked since November, 1931, and all shipping to the district has been diverted to Little Wanganui.

Little Wanganui Harbour.—The port has been worked fairly regularly at spring tides by the a.s. "Fairburn." At times the channel has shoaled, due to lack of freshes, which are relied on to maintain a fairly straight channel over the bar, but shipping was not at any time unduly delayed.

The shed at the wharf was overhauled and painted, and access road formed to the back of the shed so that merchandise can be handled more expeditiously. The tram-line on the wharf was taken up and relaid with new sleepers.

A railway-iron beacon was concreted into the rock on the south side at the entrance.

Waikokopu.—Operation of the port has been carried out by the Wairoa Harbour Board on behalf of the Public Works Department. During the year seventy-nine coastal vessels worked the port and handled 3,509 tons of general cargo, 247 bales of wool, and 8,666 sheep. In addition, and consequent on the reopening of the freezing-works at Wairoa, five overseas vessels were worked at the roadstead by lighters, handling frozen meat, wool, tallow, and skins. Minor repairs have been carried out to the wharf and buildings as required.

Early in the year 56 tons of concrete were placed in the breakwater to repair storm damage, and at the close of the year preparations were in train for more work of a similar nature.

Soundings taken during the year revealed no appreciable change in depths either at the wharf or in the roadstead.

Pitt Island Jetty, Chatham Islands.—This jetty was completed under contract during the year. It is a 29 ft. by 22 ft. structure, built of mixed Australian hardwood timbers on piles at approximately 6 ft. centres. On the jetty is a cattle-race 3 ft. wide, 15 ft. long, with a 31 ft. approach race to same on shore. A 2 ton crane has also been erected on the jetty.

Great Barrier Island.—Tryphena Wharf and approaches, Site No. 1: A stone-walled approach, extending 120 ft. from high-water mark, has been constructed. The wharf at this site is to be built by the settlers without Government subsidy.

At No. 3 site a stone-walled approach is constructed 4 ft. above high-water spring-tide and extending to 55 ft. from high-water mark. From that point a jetty of turpentine piles and mixed Australian hardwood superstructure is built 80 ft. long by 10 ft. wide. A crane has also been erected. The depth of the water at the end of the jetty is 10 ft. at low-water spring-tide.

Great Barrier Island, Whangapara Wharf.—Plans have been approved and a contract let for the construction of the stone-walled approach.

Elmslie Bay Wharf, French Pass.—Proposals for the erection of a new structure have been approved and plans and specifications are being prepared.

Waikawa Bay Wharf (near French Pass).—Surveys and tentative plans for a new structure have been completed.

Portage Wharf, Kenepuru Sound.—Minor repairs to steps and decking were carried out during the year.

Tiritiri Fog Signal.—The necessary machinery for this plant, including air-receiver, two Diesel-driven compressor sets, shafting, piping, and diaphone signal, have been delivered on the island and placed in position. The pipework on the engine and compressor cooling systems, also pipes to receiver and diaphone, are now being laid out and erected. The job is in a fairly advanced state.

LIGHTHOUSES.

Baring Head.—A contract for the erection of the concrete tower and two cottages for the accommodation of the keepers has been completed, and, in addition, the power-house for machinery for generating the electric energy has been completed. The lantern-house has been placed in position, and everything was in readiness for the electrical equipment. The power is generated at the station by means of Diesel-driven generating-sets and fed through a battery of accumulators to the light itself. All parts are in duplicate, and every precaution has been taken to safeguard any possibility of failure through a breakdown of the power-supply, damage to the light source, or any other contingency.

A considerable amount of tree-planting and breakwind-construction has been carried out on the reserve.

The light was actually installed on 18th June, 1935, when Pencarrow light, which had been in use for years, ceased operations.

Castlepoint.—A cast-iron cleaning-path around the lantern-house was erected in order that the cleaning of the lantern could be carried out with greater safety.

Cape Saunders Lighthouse.—Painting and repairs to the lighthouse and repairs to the two cottages and other buildings were undertaken during the period.

Centre Island Lighthouse.—In November, 1933, a quantity of ruby glass for replacement of ruby screens was purchased, and this is held in store at the island pending the visit of the Marine Department's expert to place same in position.

GENERAL.

A number of applications have been received from local bodies and private individuals for approval of works involving marine interests. Among the various applications were the following:—

Foreshore Licenses.—Onekaka River Wharf; Kawakawa Landing-stage (Bay of Islands); Brown's Island (Hauraki Gulf—wharf); Mangarakau River (Westhaven—wharf); Taieri Mouth—wharf; Picton (Harbour—boat slip); Queenstown—jetty; Wairupe Stream (Motukaraka Wharf), Hokianga; Tangowahine, Kaipara; Lucas Creek, Auckland; Waikawa Bay, Queen Charlotte Sound; Brown's Bay, Waiheke Island—wharf; New Brighton, Hauraki Gulf; Ngaruawahia, Waikato River; Motukaraka, Hokianga; Picton.

Wharves and Jetties.—Kohimarama, Auckland; Holmes' Wharf, Oamaru; Tryphena Harbour, Great Barrier Island; Mangarakau River, Westhaven; Imlay Extension, Wanganui; Grader Wharf extension, Patea; Motukaraka, Hokianga Harbour; Lyttelton No. 1 reconstruction; Wellington Harbour.

Boat Sheds and Skids.—Picton foreshore (Picton—footbridge); Evans Bay, Wellington; Kawakawa, Bay of Islands; Port Nelson; Bastion Point, Auckland; Herne Bay, Auckland; Oaklands Road, Papakura.

Bridges.—Puhoi River, Rodney County; Maungaroa Creek, Manukau County; Orewa River, Waitemata; Waikawau Stream, Thames; Paremata River, Porirua Harbour; Limeburner's Creek, Whangaroa.

Retaining-walls.—Monck's Bay, Sumner; Motueka Harbour; Breakwater extension, Oamaru; groynes, Tauranga Harbour; Hokitika River.

Reclamations.—Point Howard, Wellington Harbour; Wairau Estuary, Takapuna.

Outfalls.—Septic tank, N.Z. Air Forces, Hobsonville; Evans Bay, Wellington; Karori Sewerage, Cook Strait.

ESTABLISHMENT OF AERODROMES.

During the year ending 30th June, 1935, in conjunction with the Royal New Zealand Air Force, the Civil Aviation Branch of the Defence Department, and the Unemployment Board, this Department has very considerably extended the development of this work. In addition to the Royal New Zealand Air Force Base at Hobsonville, and the Royal New Zealand Flying Training School at Wigram, investigations have been carried out on 112 grounds in both Islands. Of these, forty-three have been surveyed with a view to construction, and construction actually undertaken on thirty.

By far the greater proportion of the cost of construction is being met by the utilization of unemployed labour, which would otherwise, in many cases, be employed on work of little permanent value. The expenditure on materials and transport that is necessary to enable the work to be carried out, and advantage taken of the labour available, is a very small proportion of the total cost, and it is anticipated that by the utilization of what would otherwise be labour of little value a very considerable capital expenditure in future years will thus be avoided and a very sound asset created for the Dominion.

Without the very large measure of assistance that has been given by the Unemployment Board by providing labour for this work it is doubtful if the present comprehensive scheme of aerodrome and emergency landing-ground development could be undertaken for many years, with the resultant retardation of the application of air transport to the Dominion.

In addition to the aerodrome work involving actual preparation of the flying field, this Department is also supervising and actually preparing the designs for the laying-out of buildings, roading, sewerage, drainage, water and power supply, in connection with many civil aerodromes throughout the country, and in all cases is providing advice on the best design that an aerodrome should take to suit not only aviation requirements, but the transport needs of any given locality.

Strip Maps.—In conjunction with the Lands Department, arrangements have been made for the preparation of aviation strip maps covering the entire country. These maps will embody the best features of aviation maps published anywhere in the world, and the first sections should be available towards the end of the present year or early in 1936.

New Zealand Air Pilot.—Arrangements are also in hand, in conjunction with the Civil Aviation Branch of the Defence Department, for the early issue of a New Zealand Air Pilot on similar lines to the Air Pilot of Great Britain. The aerodrome section of this is at present in course of compilation, and it is anticipated that the first issue will be available towards the end of the present year.

Details of the aerodrome works at present in hand in the various Public Works districts are as follows:—

Royal New Zealand Air Force.

Auckland District: Hobsonville Aerodrome.—During the year construction work has been commenced on the enlargement and improvement of the flying-field to enable it to accommodate the increased use of land planes at this station; regrading operations have covered some 16 acres, involving the shifting of 47,070 cubic yards of spoil. Cottages for ten married airmen and residences for three married officers have also been commenced during the period.

Towards the end of the year single men's quarters capable of accommodating sixty airmen were commenced, and are now nearing completion.

The new land plane hangar 120 ft. by 85 ft., with a clear door opening 20 ft. by 120 ft., is now nearing completion.

In addition to the above structures, extensive sewerage, water-supply, and electrical reticulation schemes have been commenced. A detailed survey showing the exact location of all buildings and services has also been put in hand. The total number of men employed as at the 30th June was 174.

Christchurch District: Wigram Aerodrome.—During the year the regrading of the flying-field has been completed, and the area available, combined with the standard of gradients and drainage adopted, make this the finest flying-field of any aerodrome in the Dominion. The regrading, roading, and tree-planting in the residential area to the west of Washbourne Road have also been completed, and the sites for sixteen married officers' residences and twenty-five married airmen's cottages have been laid out and planted. A site has also been prepared for a barracks for single airmen, and the design of water-supply, sewerage, and electrical reticulation schemes to serve these buildings is in hand.

Plans for the single airmen's quarters and a new residence for the O.C. of the Station have been completed.

In the technical block, to the east of Washbourne Road, two new land plane hangars 180 ft. by 90 ft., with a clear door opening 180 ft. by 25 ft., have been put in hand, and are approximately half completed. Plans have also been prepared for a new workshop block.

Civil Aerodromes and Emergency Landing-fields.

Whangarei District.—Surveys have been carried out at Whangarei, Waipapakauri, and Waitangi. Construction work has been authorized at Waipapakauri.

Auckland District.—Surveys have been carried out at Mangere, Thames, and Great Barrier Island. Construction work at Mangere has been authorized. A survey covering the new aerodrome at Rukuhia (Hamilton) has also been completed.

Tauranga - Bay of Plenty District.—Surveys have been carried out at Taupo, Rotorua, and Tauranga. Construction work at Taupo is complete, and the aerodrome has been licensed.

At Tauranga a commencement has been made on the improvement work, but owing to lack of finance the work is at present held up.

Rotorua Aerodrome: Using unemployed labour, the diversion of Alum Stream has been completed for a total length of 45 chains, and, in addition to the clearing of the site, 4,852 cubic yards of earthwork have been moved in the regrading operations.

Taumarunui - King Country District.—Surveys have been carried out at Chateau Tongariro, Manunui, and Te Kuiti. Construction work involving extensive drainage at Te Kuiti is in hand.

Stratford - Taranaki District.—Surveys have been carried out at Hawera, New Plymouth, and Stratford.

Very extensive improvements, covering approximately 42 acres, have been completed on the Bell Block Aerodrome at New Plymouth. During the period, an average of 175 men have been employed.

Surveys for suggested sites at Hawera have been undertaken. A site has now been selected and authority for the construction approved.

Extensive drainage and regrading work has been undertaken at Stratford Aerodrome. Approximately forty men are now engaged, and the work is well in hand.

Gisborne - Poverty Bay District.—Surveys have been carried out at Gisborne and for an emergency ground in the vicinity of Motuhora. So far no construction work has been undertaken at Gisborne, although ample unemployed labour is available for the work.

Napier - Hawke's Bay District.—Surveys have been completed at Napier, Hastings, and Dannevirke, and construction work put in hand at the two latter places.

To establish a satisfactory turf, the work at Hastings has involved the transportation of some 8,000 cubic yards of black soil from various parts of the adjoining district to enable sufficient soil to be placed on the raw pumice sand, of which the aerodrome is composed. The work is well in hand, a total of thirty-five men being employed on co-operative contract.

Steady progress in the regrading of the Dannevirke Aerodrome is being made, an average of thirty-nine men being employed.

Wellington District.—Surveys have been undertaken at Masterton, Feilding, and Palmerston North.

At Masterton construction work is well forward with the regrading and levelling of the field, approximately one hundred men being employed.

At Feilding preliminary construction work, involving the clearing of the site and ring-draining of the area, is in hand.

At Palmerston North preliminary construction work in connection with drainage is in hand.

Nelson District.—Surveys have been carried out at Stoke and Tahunanui for aerodromes to serve the Town of Nelson.

In addition, survey work has been completed at Motueka and construction work authorized.

At Blenheim the survey and preparation of the preliminary scheme is in hand.

Improvements to the existing Aero Club's aerodrome at Stoke have been carried out to enable commercial machines to operate from this ground until such time as the permanent airport at Tahunanui can be made available.

Christchurch - Canterbury District.—Surveys have been carried out for aerodromes at Timaru and the Hermitage, Mount Cook. Construction work on the latter was undertaken, approximately 12 square chains being completed, but with the advance of severe winter weather work had to be suspended.

Greymouth - Westland District.—Surveys have been carried out at Mahitahi River, Mahitahi Post-office, Bruce Bay, Waiho, Haast, Upper Okuru, Mussel Point, Inchbonnie, Westport, and Hokitika.

Construction work is in hand at Inchbonnie, Haast, Upper Okuru, Mussel Point, Westport, Waiho, Weheka, and Hokitika, but at the latter place, owing to the scarcity of unemployed labour, progress is very slow.

In conjunction with this Department, a survey has been carried out by the Greymouth Borough Council for an aerodrome-site at Greymouth.

Dunedin - Otago District.—Surveys have been carried out in this district at Balclutha and Mosgiel.

During the period, construction work was put in hand at Balclutha by the Borough Council, and this ground is now licensed.

Invercargill - Southland District.—Surveys have been carried out at Invercargill, Te Anau, and Gore.

Construction work has been put in hand at Invercargill, and a certain amount of progress has been made.

The total number of men employed at the end of the period was 1,062.

PLANT AND MECHANICAL EQUIPMENT.

Plant in use.—Available construction plant representing an original capital cost of approximately £417,500 was used during the year upon the major public works in hand throughout the Dominion, and upon Main Highway Board's work, the use of available plant costing approximately £27,500 was involved.

Works upon which Plant was used.—The major works upon which plant was used during the year are as follows: Ahuriri Lagoon Reclamation; Arapuni Power-house extensions; Falls Dam and other irrigation works in Otago Central; swamp drainage and clearing of willows, Taupiri district; land-clearing and stumping in Stratford and Taumarunui districts; land-development and roading generally in all districts; stone-quarries for road-metal in districts scattered throughout New Zealand; Waitaki Hydro Works; Upper Waikaremoana Power-development Scheme; Te Anau–Milford Road; bitumen-sealing and road-maintenance work upon main highways in all districts throughout the Dominion.

Plant not in Service.—There is still a quantity of plant released from the closed railway-construction works available for sale, or transfer, as occasion demands, and this has been kept painted and protected from the weather and laid up in a satisfactory manner.

Plant disposed of.—A total of 163 plant items was disposed of during the year, 113 items being sold for a total sum of £7,822; thirty-nine items were transferred to other Government Departments, and eleven worn-out items were written off and disposed of as scrap metal.

New Plant purchased.—Seventy-five new plant items were purchased for the Department's use during the year at a total cost of £16,686, and these comprised 30 motor-cars, 29 motor-trucks, 2 outboard marine motors, 6 tractors, 1 barge, 1 bitumen boiler, 1 grab, and 5 road-planers.

The cars and trucks, which latter include light runabout vehicles for survey and transmission-line work, were required mostly as replacements for vehicles worn out in service.

Motor-vehicle Operation.—Owing to a large increase in the number of the works carried out, and also due to the scattered locations of these works, a big increase in mileage was necessary, with a corresponding increase in the number of vehicles and also in mileage allowances paid to officers using privately-owned vehicles.

A general summary of the position is as follows :—

PUBLIC WORKS DEPARTMENT'S MOTOR-VEHICLES.

—	1934–35.				
	At 1st July, 1933.	At 1st July, 1934.	Purchased.	Sold.	At 30th June, 1935.
Cars	124	138	30	27	141
Light delivery trucks (10 cwt.) ..	93	101	19	8	112
Trucks (1 ton and over)	80	69	10	7	72
Total	297	308	59	42	325

The forty-two vehicles shown above as sold were in all cases well over five years in service and not economical to run further.

They were disposed of for a total sum of £1,051 2s. 10d. to the highest bidders, after tenders were called in the public press in every case.

The cost of operating the Public Works Department's motor-vehicle fleet for the past year is shown below, together with the costs for the two previous years as a comparison. These costs comprise :—

Running-charges : Tires, tubes, petrol, oil, grease, repairs, and maintenance.

Standing-charges : Interest at 5 per cent. per annum and depreciation ranging from 20 per cent. to 40 per cent. per annum on the capital cost. Garage rent, £13 per annum. Registration and annual license fees.

Vehicles.	Total Cost.	Total Mileage.	Cost per Mile.
	£		d.
Year 1932–33.			
Cars and light delivery combined (10 cwt. to 15 cwt.)	36,430	2,262,130	3·87
Trucks (1 ton and over)	16,800	557,400	7·23
All vehicles	53,230	2,819,530	4·53
Year 1933–34.			
Cars and light delivery combined (10 cwt. to 15 cwt.)	32,086	2,278,834	3·38
Trucks (1 ton and over)	15,599	594,925	6·29
All vehicles	47,685	2,873,759	3·98
Year 1934–35.			
Cars and light delivery combined (10 cwt. to 15 cwt.)	36,430	2,728,110	3·20
Trucks (1 ton and over)	14,563	621,413	5·63
All vehicles	50,993	3,349,523	3·65

The total amount paid to officers of the Department for the use of their own cars upon departmental work during the year, together with the amounts paid during the two previous years, is shown in the table as follows :—

Year.	Total Allowance. £ s. d.
1932–33	1,612 16 10
1933–34	803 3 0
1934–35	1,571 10 2

The allowances paid during the year comprise a large number of comparatively small sums paid at standard rates for mileages that did not warrant the transfer or purchase of a departmental vehicle.

Plant Repair Depots.—Plant repair depots, with skeleton staffs, established at Whangarei, Rotorua, and Wellington, have operated economically during the year and have handled the plant running-repairs for several Government Departments, principally by utilizing private enterprise on best quote for all major overhauls.

The Department has a few odd mechanics operating singly under supervision of various District Officers providing similar satisfactory plant repair service during the year in the principal Public Works districts.

Inspection of Passenger-carrying Motor-vehicles.—During the year the Public Works Department carried out, on behalf of the Transport Department, the mechanical and structural inspections necessary for the granting of certificates of fitness preliminary to the issue of licenses to operate.

A summary of the number of certificates of fitness, or permits to run, that were issued during the year is as follows:—

No. and District.	Omni-buses.	Service Cars.	Service Coaches.	Passenger Trucks.	Total.
1. Whangarei	10	59	7	63	139
2. Auckland and Tauranga	204	157	20	21	402
4. Gisborne and Napier	64	142	8	32	246
5. Stratford and Taumarunui	17	89	2	26	134
6. Wellington	115	136	7	19	277
7. Nelson and Westland	22	109	..	36	167
8. Christchurch	51*	44	9	12	116
9. Dunedin	48	89	4	13	154
10. Invercargill	22	74	3	8	107
Totals	553	899	60	230	1,742

* Includes 11 electric trackless trams.

Vehicles condemned, total 22. Vehicles withdrawn voluntarily, 66.

General.—A considerable amount of work of a mechanical nature has been done for other Government Departments during the year, principally concerning the preparation of contract specifications, arranging and supervising contracts, and making payments.

The major work in this connection related to the following Departments, viz:—

Agriculture Department	Repair and purchase of tractors.
Cook Islands Department	Purchase of plant.
Defence Department	Steam services and cooking equipment, new barracks.
External Affairs Department ..	Purchase of plant.
Forestry Department	Purchase of plant.
Health Department	Installation of new boiler, Waikato District Hospital.
Industries and Commerce Department	Tourist and Health, heating hostels.
Justice Department	Heating courthouses.
Lands and Survey Department ..	Installation of pumping-plant.
Marine Department	Inspection of lighthouses.
	Installation of lighthouse plant at Baring Head and Tiritiri.
Mental Hospitals Department ..	Laundry equipment and water-supply, various institutions.
	Installation of plant at Auckland and Ngawhatu Mental Hospital.
Mines Department	Manufacture and repair of alluvial drills.
	Purchase of plant.
Native Department	Purchase of plant.
Navy Department	Purchase of plant for Naval Dockyard, Auckland.

After preparation of suitable specifications and advertising contracts, numerous items of road-making plant were purchased through the Main Highways Board for sale to local bodies on hire-purchase system. These comprised nine power-graders, being one each for the following counties: Grey, Wallace, Waimarino, Maniototo, Selwyn, Masterton, Waimate, Bay of Islands, and Vincent.

One tractor and planer was purchased for the Opotiki County.

One stone-crusher and elevator for Clifton County. Two motor-lorries for Grey County and one motor-lorry each for Maniototo County, Tauranga County, and MacKenzie County.

TRAMWAYS.

Auckland.—During the year under review the Auckland Transport Board constructed one new car, which was tested and put into service. Twenty-one cars were damaged as the result of accidents; sixteen were repaired, inspected, and returned to service. One car was damaged beyond repair by fire, the superstructure was reconstructed on a stream-line basis.

Four fatal accidents occurred, two of which were the outcome of passengers attempting to alight whilst cars were in motion, the other two resulted from tram-cars coming into collision with pedestrians. In all cases the Auckland Transport Board was absolved from all blame.

New Plymouth.—Progress is being made with the bonding of rails by welding. Two miles of trolley wire and fittings have been renewed. A hot-water system was installed in the tramway-sheds for the convenience of employees.

Wanganui.—A short length of track 20½ chains long has been laid in Dublin Street. The whole of the track over Dublin Street Bridge has been renewed with 74 lb. and 63 lb. rails. Two miles of copper trolley wires have been renewed. One old tram has been converted into a one-man tram, tested, and put into service.

Wellington.—Three new cars were inspected and passed for service. An extension of loop track 320 ft. in Richmond Avenue, Karori, has been inspected.

Christchurch.—The Christchurch Tramways Board has constructed a new balloon loop in Clyde Road to allow for operation of one-man cars. A loop was also constructed on the same route at Yaldhurst Road to provide for passing of cars. Six cars were converted to one-man-car type. The construction of four new trolley-buses was completed.

Dunedin.—During the year the tram-line in St. Clair route was altered. A distance of 52 chains of double track was relaid. Two fatal accidents occurred, and in both cases the tram-cars were examined and brakes tested and each was found to be in good running-order. There were no alterations to tracks or cars in Invercargill.

PUBLIC BUILDINGS.—MAINTENANCE.

The maintenance of public buildings has been carried out by the District Engineers and their staffs in accordance with proposals and reports prepared in district offices. Maintenance-work is, for more ready reference, included with public-building work reported on by the Government Architect.

PUBLIC-BUILDING WORKS AND ELECTRICAL OPERATIONS.

For details of the public-building works and of the operations of hydro-electric enterprises, please see separate reports by the Government Architect and the Chief Electrical Engineer.

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

APPENDIX C.

ANNUAL REPORT OF 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 for the year ended 30th June, 1935.

During the period plans were prepared for twenty-five buildings of an estimated total value of £831,000, of which six contracts, totalling £311,067, have been let. Six other contracts to the value of £27,544 for buildings designed prior to 30th June, 1934, have also been let, making the total contracts let during the year £338,611.

The largest contract was that of the new Government Life Insurance Building, Wellington, at £293,000, an eight-storied earthquake and fire resisting building embodying most modern construction features, notably reinforced-concrete caisson foundations, lattice steel columns, and sound-absorbing floors and ceilings.

A considerable amount of work has been done in the preparation of full size details for Dunedin Post-office, the construction of which is well advanced, and numerous plans and specifications submitted to the Local Bodies Loans Board have been examined and reported upon.

Building prices, particularly for timber structures, have hardened recently, but keen competition has resulted in satisfactory contracts being let, and the quality of workmanship has been well maintained. Except where unavoidable, none but British or New Zealand materials and manufactures have been used, and local producers have shown a commendable willingness to meet the requirements of specifications with regard to quality and finish.

The utmost economy, consistent with the importance of the buildings and the factor of maintenance, has been observed, and it is a tribute to the loyalty and efficiency of the staff that "extras" have been negligible, though designs have been prepared at high pressure.

The increase in Government building activity has necessitated the engagement of additional staff, but difficulty has been experienced in securing sufficient structural engineers with experience in earthquake-resisting design to expeditiously cope with the volume of work.

Appended is a schedule of works which includes maintenance work and minor contracts prepared in the various district offices:—

Vice-Regal Residences.

Auckland.—Renovations and repairs were carried out.

Wellington.—A new laundry was erected and fairly extensive renovations and repairs were effected. Some old furniture was condemned and destroyed, and new furniture purchased.

Post-offices.

Whangarei.—Alterations were made to one building and renovations and repairs dealt with in connection with fourteen buildings.

Auckland.—A new garage was built at Paeroa Post-office. Renovations and repairs were effected to fifty-five buildings.

Taumarunui.—The new post-office, a two-storied building in reinforced concrete, was completed. Renovations were carried out to six post-offices and repairs were dealt with at fourteen buildings.

Tauranga.—Extensive renovations and repairs were executed to the post-office and Postmaster's residence at Rotorua, general renovations and repairs made to six buildings, and general maintenance effected at fourteen buildings.

Gisborne.—Alterations, renovations, and repairs were carried out at the Chief Post-office, Gisborne; renovations and repairs were dealt with at twelve buildings.

Stratford.—Alterations and renovations were effected at the New Plymouth Post-office and maintenance repairs undertaken at fifteen other buildings.

Napier.—The post-office at Port Ahuriri was removed from temporary premises to new quarters in Cassidy's buildings, furnished, and fitted out. At Woodville the second story in brick was removed, new residential quarters erected in wood, and general repairs attended to. Renovations and repairs were rendered at twelve buildings.

Wellington.—A new post-office in wood was erected at Karori. The old post-office at Petone has been demolished, temporary quarters fitted up in an adjacent schoolroom, and a contract let for the erection of a new two-storied structure in reinforced concrete. Renovations and repairs were executed at thirteen buildings.

Nelson.—Renovations and repairs were made to ten buildings.

Christchurch.—Alterations were dealt with at one building. Renovations and repairs were effected at ten buildings.

Dunedin.—Good progress was maintained with the erection of the new post-office. All the structural steelwork has been completed, a total of 2,300 tons being used. The concrete has been poured, a total of 9,500 cubic yards, together with 290 tons of reinforcing steel, being used. The Bluff granite has been set up to the level of the first floor, and the vitric tuff is being quarried and a commencement made with its working. The fitting-up of the interior partitions is in hand and a commencement has been made with the bronze work. The installing of the plumbing, central heating, and electrical services is in hand, about a quarter of these works being completed.

Renovations and repairs were carried out to twenty-six other buildings.

Greymouth.—Repairs and renovations were effected to fifteen post-offices.

Courthouses.

Whangarei.—Renovations and repairs were effected at three courthouses.

Auckland.—A new building was erected at Putaruru and furniture supplied.

Taumarunui.—Repairs were undertaken at the Taumarunui Courthouse.

Tauranga.—Renovations and repairs were executed at four courthouses.

Gisborne.—Renovations and repairs were rendered at one courthouse.

Stratford.—Additions were made to the Wanganui Courthouse and renovations and repairs were attended to at nine courthouses.

Napier.—The erection of a new courthouse at Wairoa is in hand, four courthouses were renovated and repaired, and the building at Ormondville was sold and removed.

Wellington.—Parapets and overhanging ornament were removed from the Lambton Quay frontage of the courthouse and new heating-boilers were installed. Renovations and repairs were dealt with at three courthouses and a contract was let for additions to the Palmerston North Courthouse.

Nelson.—Renovations and repairs were undertaken at two courthouses.

Christchurch.—Four courthouses were renovated and repaired.

Dunedin.—Renovations and repairs were effected at nine courthouses.

Greymouth.—Renovations and repairs were carried out at five courthouses.

Police-stations and Gaols.

Whangarei.—Renovations and repairs were carried out to five buildings.

Auckland.—Renovations and repairs were made to twenty-seven buildings.

Taumarunui.—Renovations were effected to four buildings, repairs were undertaken at seven buildings, and alterations and additions were made to two buildings. The erection of a bathhouse and laundry at Hautu Prison Farm is in hand.

Tauranga.—Four buildings were renovated and repaired.

Gisborne.—Slow progress was made with the erection of a new residence, two-cell lock-up, garage, and stable at Tikitiki on account of bad weather conditions, flooding of creeks, and slips on road delaying cartage of materials. Renovations and repairs were executed at four buildings and general maintenance was rendered to one building. The two-cell lock-up at Motu was shifted to Matawai.

Stratford.—A new police-station was erected at St. John's, Wanganui. A new garage was erected and repairs attended to at Ohakune. Alterations were dealt with at two buildings and renovations and repairs were undertaken at twelve buildings.

Napier.—Renovations and repairs were effected at three buildings.

Wellington.—A contract was let at Palmerston North for the erection of a new lock-up in reinforced concrete, it being the first portion of a complete new police-station. Renovations and repairs were made to nine buildings.

Nelson.— Renovations and repairs were carried out at five buildings.

Christchurch.—A machinery-store was erected at one prison. Four buildings were renovated and repaired, and general maintenance and renovations and repairs were rendered.

Dunedin.—Renovations and repairs were executed at twenty-three buildings.

Greymouth.—Renovations and repairs were rendered at twenty-four buildings.

Mental Hospitals.

Avondale.—The new residence and garage for the Medical Officer was completed. The boiler-house was enlarged and a new boiler was installed. Extensive repairs and renovations were undertaken.

Kingseat.—Four new villas were completed, a temporary laundry extended, and a store erected. General maintenance was effected.

Tokanui.—A new villa for farm labourers was completed.

Porirua.—Only minor works were carried out and general maintenance attended to.

Nelson and Ngawhatu.—Two additional villas were erected. A new laundry and boiler-house were completed and the installation of machinery was well in hand when a serious fire occurred; the reconditioning of the building and machinery is now nearly completed. A contract was let for the erection of two more villas.

Christchurch.—A new villa was erected at Sunnyside and two additional villas were erected at Templeton. A kitchen was constructed at the Templeton Reception Home, and general renovations and repairs were executed.

Seacliff.—The Nurses' Home was rebuilt and renovations and repairs generally were undertaken.

Hokitika.—A new villa was completed, a new morgue erected, and extensive repairs and renovations were carried out.

Education Department.

Whangarei.—Additions, alterations, and renovations were completed at Mangamuka.

Auckland.—Renovations and repairs are in hand at the Ponsonby Receiving Home and Boys' Probation Home, Mount Albert.

Gisborne.—Renovations and repairs were effected to four Native schools and residences.

Stratford.—Repairs were carried out to the Education Department offices at Stratford.

Wellington.—Alterations and repairs were made to one Native school.

Christchurch.—Renovations and repairs were executed at four buildings.

Health Department.

Whangarei.—The amalgamation of the Kaitaia and Mangonui Hospitals was completed.

Auckland.—Renovations and repairs were undertaken at Motuihi Quarantine Station and St. Helens Hospital, Auckland.

Wellington.—A boiler-house and bathroom-block was erected at St. Helens Hospital, Wellington.

Christchurch.—Additions were attended to at Hanmer Women's Hospital and repairs were dealt with at St. Helens Hospital, Christchurch.

Dunedin.—Renovations were carried out to the St. Helens Hospital, Invercargill.

Greymouth.—A new X-ray room was erected at the Westland Hospital, Hokitika. At the Grey River Hospital, Greymouth, a new sanitary annexe was built to the Hannan Ward; additions to the Nurses' Home and the erection of the Matron's cottage are well in hand.

Defence Department.

Whangarei.—Repairs and renovations were effected to one drill-hall.

Auckland.—At the Hobsonville Air Base new medical, photographic, and wireless buildings and three houses for married officers were completed. Barracks for single men, ten cottages for married airmen, and No. 2 hangar are nearing completion.

At Narrow Neck Camp a new office and oil-store were completed, single men's barracks are under construction, and general maintenance was carried out.

At Waikato Camp the floors of Nos. 3 and 4 dining-halls were relaid in concrete with a bitumen-fabric covering. Additional ventilation was provided under floors of Nos. 1 and 2 dining-halls.

General maintenance to drill-halls was attended to.

Stratford.—Renovations were dealt with at Rewa Rewa Rifle Range and renovations and repairs were rendered at the Wanganui Drill-hall.

Napier.—A new markers' gallery was erected at Roy's Hill and three sheds removed and re-erected on the new site.

Wellington.—At Fort Dorset new barracks, gun-park, offices, store, and stable were built, and alterations and additions were made to officers' quarters.

Nelson.—A building was shifted from Washington Valley to Wellington.

Christchurch.—Two hangars, in concrete, are being erected at Wigram Aerodrome. Minor renovations and repairs were carried out to three drill-halls.

Dunedin.—Renovations and repairs were dealt with at two drill-halls.

Greymouth.—Renovations and repairs were attended to at three drill-halls.

Agricultural Department.

Wellington.—Renovations were undertaken at several outbuildings at the Wallaceville Laboratory. Alterations and renovations were attended to at two buildings.

Christchurch.—Renovations and repairs were effected at two Stock Inspectors' residences.

Dunedin.—Renovations and repairs were carried out at thirteen buildings.

Tourist Department.

Taumarunui.—The electrification of the kitchen at Chateau Tongariro was completed, and repairs and renovations were made to the roof. Overhaul of the plumbing system and repairs to the hydro-electrical plant were attended to consequent to damage caused by floods. Renovations and repairs were undertaken at the Waitomo Caves Hostel.

Tauranga.—The permanent heating-system was installed at the Blue Bath, Rotorua. The entire scheme is now completed. The Bowling Pavilion in the Government Gardens, Rotorua, was removed from the main ground, a veranda added, and re-erected in the golf links as a golf pavilion. Alterations and additions were made to the Tourist Department offices at Rotorua.

Miscellaneous.

Whangarei.—The Public Trust Office, Whangarei, was repaired and renovated. The Public Works Department fitting-shop was removed from Okaihau and re-erected at Whangarei.

Auckland.—Toilet accommodation was installed at the Labour Bureau, Auckland, for the use of the Unemployment Board Staff. A concrete building was built at Tiritiri to house the fog-signal. An extra room was added to the R.N.V.R. barracks, St. Mary's Bay, for instruction in mine-sweeping, and the exterior was repaired and renovated. Work was commenced on the erection of an office-block at the Devonport Naval Base. Renovations and repairs were dealt with at three other Government buildings. Ten cottages were removed and re-erected on new sites for the Native Department.

Taumarunui.—Six buildings were repaired and three renovated. Two cottages were built and seven cottages removed and re-erected in fresh locations.

Tauranga.—The exterior of the Government offices at Rotorua was repainted. The Public Works store at Rotorua was enlarged. A separate small office was built at the Tauranga Government Buildings for the use of the Unemployment Board's certifying officer. In connection with the Native Land Development Scheme eighteen cottages, two wool-sheds, one sheep-dip, one store and implement shed were erected, three houses were repaired and renovated, and over a dozen houses altered and chimneys added.

Gisborne.—Repairs and renovations were attended to at various buildings.

Stratford.—Central heating was installed in the Government Buildings at Wanganui. The top story of the Government Life Building at Wanganui was removed, the building strengthened and completely renovated. Alterations and renovations were carried out to the Public Works Offices at Stratford.

Napier.—New toilet accommodation was provided at the Public Works Office, Napier. Additions were made to the Manager's residence at the Smedley Estate, and renovations and repairs were attended to at the Public Trust Office, Napier. A small office was built at Wairoa for the Unemployment Board.

Wellington.—A concrete store was erected at the Dominion Laboratory and the chimneys and parapets of the Sydney Street building were lowered. The hot-water installation was completed at the Public Works District office and the exterior painted. The second floor of Messrs. Hope Gibbons' building was fitted up for the Unemployment Board. A new building in reinforced concrete was erected at Palmerston North for the Hydro-electrical Branch. A benzine store was erected at the Government Printing Office and a contract was let for the removal of the parapets. The dome of the Public Trust Office was sheathed in copper. Renovations and repairs were effected to five buildings. A contract was let for the erection of the new building for the Government Life Insurance Department; the site is excavated and the contractor is making good progress with the sinking of the foundation caissons.

Nelson.—Extensions and rearrangements to the Public Works office were carried out. Alterations and repairs were made to two cottages for the State Forest Service at Golden Downs.

Christchurch.—Additional accommodation was provided for the Unemployment Board. Renovations and repairs were carried out to three buildings, alterations were made to one building, and additions to one building.

Dunedin.—Alterations were effected at one building and renovations and repairs were dealt with at three buildings.

Greymouth.—Additions were made to one building, electric light and power were installed in one building, and three buildings were renovated and repaired.

Generally.—Decorations were put up on the occasions of the visit of the Duke of Gloucester and the King's Jubilee celebrations.

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. 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:—

GENERATING-SCHEMES IN OPERATION.

NORTH ISLAND ELECTRIC-POWER SYSTEM.

Since the 15th day of April, 1934, the Arapuni, Mangahao, and Waikaremoana schemes have been grouped as one system.

During the year under review the accounts have been amalgamated and the financial and other relevant statistical information is now presented under the comprehensive heading of the North Island Electric-power System.

1. Capital Outlay.

At the close of the year 1934–35 the total capital outlay was £8,443,582, representing assets in operation, and £61,957, representing assets not in operation, giving a total capital outlay of £8,505,539, and Table II gives an analysis of this amount.

2. Financial Results.

The total revenue for the year amounted to £712,766 and working-expenses £120,927, which resulted in a gross profit of £591,839, equal to a return of 7·087 per cent. on the average capital in operation (£8,350,506).

After paying interest (£414,042), depreciation (£150,538), and the departmental proportion of the capital charges on King's Wharf Station (£37,687) there was a net loss of £10,428. The accumulated loss now stands at £586,849 for the North Island system.

Comparative figures for the year ending 31st March, 1934, are as follows: Revenue, £681,879; working-expenses, £98,884; interest, £434,623; depreciation, £78,717; and King's Wharf charges, £38,113—with a net profit of £31,543.

The increase in the depreciation charge from £78,717 in 1934 to £150,538 in 1935 is due to having to debit the statutory charge on the assets of the amalgamated systems, whereas prior to the amalgamation, each individual scheme paid its own statutory charge, with the result that when the Mangahao–Waikaremoana fund reached the 12½-per-cent. limitation two years ago, no subsequent payments were made to its depreciation fund. In the case of Arapuni the 12½-per-cent. limitation had not been reached prior to the amalgamation of the accounts.

The increase in this year's working-expenses is due mainly to the 5-per-cent. restoration of salaries and wages, repairs to Arapuni head-race, maintenance of roads, maintenance of additional main transmission lines, and general increase of work due to growth of load, together with expansion in the amount of testing work now carried out by the Department.

The accumulated Depreciation Reserve and Sinking Funds as at 31st March, 1935, amounted to £1,015,016. Table I gives full particulars of financial results as well as other relevant statistical information.

3. General.

The units generated totalled 580,338,247, and to this must be added 62,712 purchased units, making a grand total of 580,400,959 units output for the system. Units actually sold total 519,542,480, and units used for station auxiliaries, &c., total 5,866,868.

The number of non-productive or lost units total 60,858,479, equivalent to 10·49 per cent. of total output.

The maximum load on the system was 111,290 kw. and the annual load factor 59·5 per cent. The total connected load was 766,198 kw., and the demand factor or ratio of maximum load to connected load was 14·52 per cent.

4. Construction, Operation, and Maintenance.

A. HAMILTON DISTRICT.

(1) Construction.

(*a*) *Power-stations.*

Arapuni.—Work was commenced on the Arapuni extensions late in August, 1934, when a commencement was made with assembling and installing the necessary construction services.

A 4 ton overhead cableway over the site of the proposed power-house extension was put into service, and on the completion of the electrical and compressed-air installations, the excavation work on the new site was commenced late in September. Simultaneously, excavation work on the proposed site of the outdoor station extension was completed, a total of 2,260 cubic yards of excavation and 1,190 cubic yards of filling being handled.

Excavation on the power-house extension site was carried out on three shifts, and at the end of March, 1935, a total of 22,710 cubic yards of rock had been broken out and removed.

A composite steel-and-concrete dam with a timber waterproof face was erected across the existing tail-race at the south end of the present power-house, to dam off the site of the proposed new tail-race and power-house foundations. Sinking pumps of a total capacity of 178,000 gallons per hour were installed and put into operation, lowering the water in the new tail-race site to 2 ft. below the required tail-race floor. A complete concrete plant has been installed in readiness for work on the power-house extension, and during March this plant was put into operation on pouring the power-house foundations.

A road was constructed leading from the lower power-house road to the front of the existing building and along the stop-log platform.

The excavation of the tail-race commenced during March, 1935, after the water had been pumped out and the country dewatered.

At the end of March a total of 124 persons was employed on the power-house extensions, exclusive of contractors.

Turbines: The new electric governor drives installed on Nos. 2, 3, and 4 units have operated successfully, and have eliminated the corrosion of steel strips in the pendulums.

(*b*) *Substations.*

Hamilton No. 1.—The new steel structure was put into service on the 22nd April, and the transformers (50/11 kv.) were moved into their permanent positions in May. The workshop-roof was raised, and a new crane installed.

Edgecumbe, Ngongotaha, and Te Awamutu.—A new 50 kv. O.C.B. was installed, with relays, to control the outgoing line at each substation. New cottages were built at Edgecumbe and Ngongotaha, at each of which substations there are now three cottages.

(*c*) *Transmission-lines.*

No transmission-line construction was done, but a start was made on the houses and buildings at Ongarue depot.

(2) Operation and Maintenance.

(*a*) *General.*

Since completion of the Arapuni–Stratford line at the end of last year the Arapuni-Horahora Section has been run in parallel with the Mangahao-Waikaremoana Section for the greater part of the year without any difficulties.

In the early part of the year, with four units available at Arapuni, it was practicable to shut down Horahora for one shift per day and on Sundays, but after the failure of No. 1 generator on 15th February, it became advisable to run Horahora continuously again. The standby plants have not been required to operate during the year, but the Diesel plant at Penrose was given a short-period full-load test. The Okere plant of the Tourist Department, Rotorua, was run regularly as required for their own purposes.

A large amount of work was done at power-stations and substations to make apparatus safe against earthquake damage.

(*b*) *Power-stations.*

Arapuni.—Turbines: Two new spare runners were received and one was installed on No. 4 and tested for efficiency.

Generators: No. 1 generator developed a fault in the winding, which burnt out on the 15th February, and it was decided to put in a complete new winding of a slightly different type.

Transformers: Blow-out vents were installed on the main transformers.

Switch-gear: There were the following failures during the year: one 10/5 amp. 50 kv. current transformer bushing broke down and damaged the transformer; a flashover when operating an 11 kv. isolating-switch damaged six pillar insulators; one 110 kv. O.C.B. bushing flashed over on the lower porcelain cone, causing a surge, which cleared itself without loss of load or operation of relays; one 50 kv. O.C.B. bushing which burst off half its porcelain shed without causing a flashover; two 110 kv. pillar insulators which failed on the same day.

Generator over-voltage relays were put in service.

Horahora.—Head-race, &c.: The pit-gates were cleaned and painted and the operating-gear overhauled. The station was shut down from the 7th to 14th October, 1934, to install new screens of improved design.

Generators: Rain blown into the station in a violent storm caused burn-outs on Nos. 4 and 5 generators, damaging the iron as well as the coils. No. 4 was repaired with the spare coils and with iron taken from No. 5. Additional coils and iron have been ordered to repair No. 5.

Transformers: Fault-current due to breakdown of a 50 kv. O.C.B. bushing resulted in a short circuit in the high-tension winding of a 50 kv. transformer.

Switch-gear: There were the following failures during the year: A rubber-insulated cable which had been damaged by mice, three 50 kv. O.C.B. bushings, one 11 kv. current-transformer.

A new cable was installed for generator No. 7 replacing the old overhead wires, and a good deal of work was done on replacing the old overhead control wires by cables and on installation of new relays.

Penrose Diesel Plant.—The Diesel engines were run weekly for a few minutes, and were given a full-load test run during the year.

(*c*) *Substations.*

Penrose.—A summation metering-device was installed, but is not yet in regular service.

There were the following failures of apparatus: One 110 kv. O.C.B. bushing broke down by puncture, and another, partly punctured, was detected by radio-interference before it failed. One 6 kv. terminal box in the synchronous condenser pit broke down owing to moisture.

Bombay.—A number of cracked 110 kv. pillar insulators on isolating-switches were replaced. New roller-shutter doors were installed on the substation building.

Hamilton.—One of the 110 kv. transformers which had burnt out and been repaired was installed as a spare. A number of cracked 110 kv. pillar insulators were replaced.

Matamata.—Further work was done to stop leakage of compound on the 11 kv. switch-gear.

Waihou.—A defective cast-iron pin on a 50 kv. air-break switch-insulator broke.

Te Awamutu.—Three 11 kv. current transformers broke down. A broken cap was found on a 50 kv. A.B.S. insulator.

Ngongotaha.—50 kv. and 11 kv. pipe-busses were installed to enable the spare transformer to be put in service without moving it from its position.

Edgecumbe.—A flashover inside the neutral earthing-reactor, due to lightning, necessitated minor repairs.

Waiotahi.—The main transformers were overhauled, sludge having been noticed in the oil.

Henderson.—An arrester was damaged by lightning. A flashover on a 50 kv. O.C.B. bushing, due to lightning, caused no damage. A new (Swanson) 11 kv. feeder was connected up.

Grand Junction.—An 11 kv. wall-bushing was shattered by flashover apparently caused by a bird.

Other Substations.—Waikino, Kerepeehi, Hangatiki, Huntly, Mamaku, Takapuna: Nothing to report.

(*d*) *Transmission-lines.*

Two 50 kv. pin insulators failed in service during the year, both being shattered by lightning. Also three strings of 110 kv. insulators were found by inspection to be damaged, probably by lightning.

Two hundred and ninety-one pin insulators (50 kv.) were found defective by live-line testing during the year, and, in addition, 49 were found defective by inspection. The total defective insulators replaced on all 50 kv. and 110 kv. lines totalled 342 pin and 3 strain or suspension, compared with 281 pin and 21 suspension, and 395 pin and 13 suspension in the two previous years. Of the pin insulators, 82 were replaced with live-line tools.

Fifty-one poles were found defective and replaced during the year, compared with 63 in the previous year, and 42 in the year before.

On all lines during the year there was a total of 50 accidental interruptions, due to faults on lines (49), and to unknown causes (1), involving outages of the lines on which they occurred of a total time of 165 hours. The large number of interruptions this year is due mainly to 11 interruptions on the Bombay–Kerepeehi line and 10 on the Ngongotaha–Edgecumbe line, mostly in a very bad storm, while the time includes 66 hours for the Bombay–Kerepeehi line, 23 hours for the Matamata–Waihou line and 24 hours for the Arapuni–Penrose pole-line, all of which have alternative routes over which supply to consumers can be given.

Special work on individual lines was as follows:—

Arapuni–Stratford Line.—A slip in papa country near Tower 95 made it advisable to strengthen the foundation. This was done by bolting it down with bolts grouted into holes drilled with spiral grooves in the solid papa and by putting in short steel rails to prevent further slipping.

Penrose–Takapuna Line.—This line was found in places to have insufficient sag and there was evidence of damage due to conductor vibration. The line (both circuits) is being resagged where necessary, and several lengths of wire were replaced, apparently damaged by arcing from the earth wire above.

(*e*) *Reliability of Supply.*

At the seventeen points of supply the average number of accidental interruptions during the year was fourteen, of an average duration of 22 minutes, compared with 7·5 and 5·5 minutes and 19 and 11·6 minutes for the two previous years.

Major interruptions to supply, which are principally responsible for the high average shown above were as follows:—

Kerepeehi: 8 hours 14 minutes on 3rd May. In very windy weather hay blown on the 50 kv. line between Matamata and Waihou, and a limb of a tree blown on it between Bombay and Kerepeehi, caused both sections of line to be out of service at the same time. Waikino and Waihou also were affected, but received emergency supply for the period.

Edgecumbe: 3rd May, 5½ hours } Due to contact between telephone and power wires in
Waiotahi: 3rd May, 5½ hours } very windy weather.

Hangatiki: 8th July, 7 hours 34 minutes. Due to pole struck by lightning.

Ngongotaha: 28th December, 1 hour 15 minutes; 11th February, 4 hours 18 minutes.

Mamaku: 28th December, 1 hour 15 minutes; 11th February, 4 hours 18 minutes.

Edgecumbe: 28th December, 1 hour 15 minutes; 11th February, 12 hours (approximately).

Waiotahi: 28th December, 1 hour 15 minutes; 11th February, 12 hours (approximately).

Due (28th Dec.) to a pole on fire, and (11th Feb.) to two poles struck by lightning.

The above interruptions account for 80 per cent. of the total time power was off the bus-bars.

The main 110 kv. supply to Penrose Substation was interrupted twice during the year, both occasions on the 15th February, 1935, for a total time of 19 minutes.

B. SHANNON DISTRICT.

1. Construction.

(*a*) Power-stations.

Mangahao Power-house and Headworks.—A ventilation system was installed in the switch-gallery and this has had a very satisfactory effect in improving conditions for the operators.

The new winches for the surge-chamber gates have been transported to the surge-chamber. Preparatory work has been carried out on the foundations for these winches and on the extensions to the surge-chamber platform. A new 400-volt line and control circuits were erected between the power-house and surge-chamber, and a start has been made on the installation of the necessary control-gear.

Waikaremoana Power-house and Headworks.—At Onepoto, the outlet of Lake Waikaremoana, work has been started in connection with the lake-control. An access road has been constructed and preparations made for the establishment of a camp.

Substations.—Khandallah: Two new lightning-arresters were installed in place of the original type, one of which failed completely, and new switch-gear was installed in readiness for the supply to the Wellington–Paekakariki Railway electrification.

A number of modifications and extensions to the 110 kv. switch-gear will soon be commenced. The stick-operated isolating-links for the Mangahao line O.C.B.s are to be replaced by manual gang-operated isolating-switches. The transformer isolating links are to be replaced by motor-operated air-break switches, and the bus-tie air-break switch is to be converted from manual to motor operation. In conjunction with this work, the Mangahao line air-break switches and the bus-tie air-break switch are to be respaced to 10 ft. centres and the bus-bars are to be modified.

(*b*) Substations.

Bunnythorpe.—In conjunction with the duplication of the Bunnythorpe–Woodville transmission line an additional girder was erected on the outdoor structure. The erection of a new O.C.B. and air-break switch for this line and the installation of the necessary relay protection for the double line are proceeding. A new bus-tie air-break switch was also erected and put into service.

In order to provide the necessary protection against fault-current flowing south from Arapuni new directional relays were installed on the Wanganui line.

Wanganui.—The erection of an air-break switch on the new transformer bay was completed.

Marton.—The two-pole structure on the south side was altered to a four-pole structure, on which was erected a new air-break switch to enable the south line to be isolated.

Stratford.—Construction work on the new substation is now nearly completed. The new building has been completed and the crane erected in the workshop. The synchronous condenser transferred from Napier was delivered at the substation. Erection work on this includes the erection and drying-out of the condenser, the installation of the necessary control switch-gear, 11 kv. cables, oil-pump, and air trunking. Work is in progress on the secondary wiring of the condenser equipment.

In connection with the outdoor switch-gear the relay panels from Wanganui have been erected. All control cables for the O.C.B.s and mimic bus-bar have been installed and the wiring completed for the 110 kv. potential transformers.

The auto transformer was erected and the necessary oil piping installed.

A metering equipment was installed on the Arapuni line to measure the power-supply from Arapuni. Additional metering has since been installed to meter power supplied to Arapuni so that a complete record can be kept of the power exchanged between Arapuni and Mangahao.

Masterton.—A new local service transformer and cubicle were installed, providing the substation with a 400 volt supply direct from the 11 kv. bus-bars.

Mangamaire.—The existing relays on the Masterton line were replaced by new relays. A sound-proof telephone-both was also installed.

Woodville.—A start was made on the assembly and erection of the new steelwork, oil-circuit breaker, and relays for the duplicate line to Bunnythorpe.

Dannevirke.—A relay system for transformer protection was installed and put into service. A new sound-proof telephone-booth was installed and the battery-stand strengthened against earth-quake damage.

Waipukurau.—A relay system for transformer protection was installed. The battery-stand was strengthened against earthquakes, a new oil-tank erected, and a new 11 kv. potential transformer installed.

Napier.—A new bus-tie air-break switch was erected to facilitate switching-operations. Both transformer-banks may now be supplied from Tuai West line, leaving the east line bay isolated.

(*c*) Transmission-lines.

The second line between Bunnythorpe and Woodville has been completed with the exception of the section east of the Ruahines.

The Woodville–Napier line was completely rewired with copper, replacing the existing aluminium. Due to vibration in the lines, trouble was experienced with broken strands, and this circumstance, combined with the necessity of providing increased current-carrying capacity, brought about the decision to rewire the line. A very efficient system was devised for doing this work, which was both rapid and economical. Not only was the cost considerably below the estimate, but a total of 76 miles was rewired in thirteen weeks.

On the two 11 kv. lines—Tuai-Lake House and Tuai-Thomas's Mill—new 11 kv. air-break switches were erected. A new 11 kv. line was erected from Tuai to Onepoto.

The survey of the 50 kv. duplicate line from Tuai to Ruakituri was carried out, but, due to the unsatisfactory nature of the foundations, the final plans have been delayed pending a more intensive investigation.

The survey of the Masterton–Melling 110 kv. line was started and a considerable amount of location work has been done.

A survey was made of the Khandallah–Ngahauranga 11 kv. line for the Wellington–Paekakariki railway electrification.

Other survey-work was carried out on the Mangahao–Khandallah, Woodville–Masterton, and Napier–Waipukurau lines.

A design was prepared for a wood guy-insulator, which it is proposed to use on all guys in future. Several were made up and tested, the results of the tests being very satisfactory.

(*d*) TELEPHONE SYSTEM.

Radio-telephone transmitting and receiving sets are being installed at Mangahao and Waikaremoana power-houses. These will facilitate communication in the event of the telephone-lines being damaged by earthquakes or other causes.

A new motor-generator ringing-set is also being installed at Mangahao to aid in ringing Arapuni.

2. OPERATION AND MAINTENANCE.

(*a*) POWER-STATIONS.

Mangahao Power-house and Headworks.—This part of the system operated very satisfactorily during the year. The water-supply was well maintained generally, but in November and December the level in No. 1 dam fell 41 ft. 3 in. below normal, due to the dry weather and the fact that Waikaremoana was out of parallel. In February and March the dam had to be emptied to enable repair-work to be carried out. The rainfall at No. 1 dam was again below the average, amounting to 113·24 in.

During the winter damage was caused to the power, telephone, and indicator lines to the headworks, due to heavy wind, rain, and snow, as much as 2½ in. of snow being observed on the wires on one occasion.

Some very large slips, which blocked access to No. 1 dam, had to be cleared during the year.

At No. 1 dam advantage was taken of the low water-levels to overhaul the automatic gates, all the steelwork being scraped and painted. In February a failure occurred in the disperser-valve which, under normal conditions, is used to regulate the flow of water from the dam, to prevent wastage of water from No. 2. The valve apparently stuck and became too stiff to be operated by the motor. The dam was emptied, and the valve dismantled and thoroughly overhauled. An ammeter has now been installed in the motor circuit so that a check may be kept on the operating-condition of the valve.

While attempting to open the by-pass tunnel sluice-gates to empty the dam trouble was met with, due to the accumulation of rust and debris on the rollers and sliding faces. The gate was thoroughly cleaned and painted, the rollers and sliding faces being well greased.

A further survey was made in connection with shingle deposits in the dam, but the results have not yet been plotted.

At No. 2 dam the cushion-pool was pumped out and examined. A survey was made of the pool and the toe of the dam, and any erosion that has taken place has not affected the stability of the dam. Plans have been prepared to place concrete, where required, to prevent further erosion.

The water-level recorder was shifted to a new position nearer the dam and a stone retaining-wall was built to prevent debris falling on the sill of the automatic gates. Damage has been caused by this debris in the past, when the gates have been operated under flood conditions.

Willow and flax planting has been carried on at Arapeti (No. 3) dam.

The main pipe-lines were inspected internally and are in good order. An 8 in. diameter drain-valve was fitted to one 72 in. pipe just below the surge-chamber, and both pipes were scraped and painted externally.

Nos. 4 and 5 bus-pipes were sandblasted and painted internally, the deepest pits being welded. A noteworthy feature is that sandblasting was successfully carried out in pipes as small as 24 in. and 27 in. diameter. In addition, the main valves at the entrance to the power-house were replaced by straight pipes and the tee in No. 5 was removed and used to replace the cross in No. 4 pipe. These modifications have improved the hydraulic efficiency of the pipes considerably.

While sandblasting was being carried out on the bus-pipes Nos. 4 and 5 turbines and governor gear were completely overhauled. After ten years' continuous service on heavy loading the turbines and governors were in very good condition. It was found necessary to fit bronze bushes to the needle-valve operating-rods, and provision was made for better lubrication of the needle-shafts. Minor repairs to the governor-gear were carried out. After cleaning and drying out the generators, comprehensive governor tests were carried out on both machines.

The protection of concrete-brick walls and apparatus in the power-houses against earthquakes was completed. Alterations to the main-system diagram-board were carried out and a smaller one was made up for the telephone-booth. An earth-indicator system was fitted to the D.C. bus-bars, emergency trips were fitted to the 11 kv. cubicle-doors, and the station earthing-system was strengthened.

Waikaremoana Power-station and Headworks.—The variation in lake-level during the year was 6 ft. and the average discharge was 512 cusecs. The average rainfall was 68·27 in.

Experiments were carried out tripping the pipe-line gates with a view to improving the closing of these gates under load conditions. Further work will be carried out after experience is obtained with the new gates at Mangahao.

The turbine draught-tubes were strengthened by fitting extra stays to prevent vibration on light loads, and the tail race-weir was reconditioned.

Reinforcing of the generator and test room walls was completed.

A fault in the tapping-switch of one of the 110 kv. transformers was discovered during schedule testing and was repaired, and an 11 kv. pot-head on one transformer blew up, due to moisture, and was replaced. A break also occurred in a copper-tube jumper on the outgoing Gisborne line due to vibration caused by the swinging of the line.

(*b*) SUBSTATIONS.

Supply to Horowhenua Power Board.—During the year there were six accidental interruptions to supply, of a total duration of 8 minutes.

There were also four arranged shutdowns for maintenance purposes, of a total duration of 4 hours 26 minutes.

A new metering-equipment was installed, the current-transformers on the two feeders being paralleled so that the meter measures the total power in the two feeders. New overload relays were installed on the two feeder-panels.

Khandallah.—Power is supplied from this substation to the Wellington City Council, New Zealand Railways Department, the Wellington Meat Export Co., and the Hutt Valley Electric-power Board.

During the year there were four total interruptions to supply at Khandallah, affecting all consumers, of a total duration of 23 minutes.

There were also one total interruption to the Hutt Valley Power Board of 12 minutes, ten partial interruptions of 21 minutes total duration, and one arranged shutdown involving a partial interruption of 1 hour 18 minutes.

The supply to the New Zealand Railway Department's Workshops was also interrupted on three other occasions, totalling 4 minutes, and there were thirteen arranged shutdowns of 52 hours 42 minutes.

Supply to the Wellington Meat Export Co. was also interrupted on four additional occasions, of a total duration of 20 minutes. There were eleven arranged shutdowns, of a total period of 81 hours 32 minutes.

The Wellington City Council's supply was also interrupted once for 4 minutes.

Melling.—This substation forms a second point of supply for the Hutt Valley Electric-power Board. There were six interruptions to supply, of a total period of 26 minutes.

Bunnythorpe.—The Manawatu-Oroua Electric-power Board is supplied from this substation. There were four interruptions to supply, of 33 minutes total duration.

Wanganui.—This is the main point of supply to the Wanganui-Rangitikei Electric-power Board. There were eleven accidental interruptions to supply affecting both Wanganui and Marton, of a total period of 59 minutes. There were also two arranged shutdowns affecting both substations, one of 3 minutes total, and one of 3 hours 19 minutes, during which power was supplied from Marton and the Board's steam-plant.

Marton.—This substation forms a second point of supply for the Wanganui-Rangitikei Electric-power Board and the transformer operates in parallel with those at Wanganui through the Board's 11 kv. lines.

In addition to the interruptions to supply affecting both Wanganui and Marton there was one interruption to Marton only, of 12 minutes. There were, in addition, three arranged total interruptions of 2 hours 11 minutes for maintenance and switching purposes.

There was also a partial interruption of 4 hours to enable work to be done on the 110 kv. line over a Power Board's feeder.

Hawera.—Supply is given from this substation to the South Taranaki Electric-power Board.

The Power Board 11 kv. bus-coupler switch operated on seven occasions on reverse power, causing interruptions to supply of a total duration of 1 hour 7 minutes. These operations were caused by surges due to faults on remote parts of the system, not directly causing an interruption. The settings of the relays on this switch have now been altered and it is expected that these faulty operations will be eliminated.

There were eleven accidental interruptions to supply of 2 hours 43 minutes total duration.

There were also twelve arranged interruptions of 12 hours 40 minutes for maintenance and switching purposes.

Owing probably to the heavy insulation of the Wanganui–Stratford line considerable trouble has been experienced with blown and shattered lightning-arrester fuses. It is now proposed to replace the lightning-arresters with a more modern type to provide better protection for the substation apparatus against lightning strokes.

Stratford.—Power is supplied from this substation to the New Plymouth Substation at 50 kv., and an emergency supply is also given to the Taranaki Power Board.

There were six accidental interruptions to the Taranaki Power Board's supply, totalling 4 hours 55 minutes.

New Plymouth.—Power is supplied from this substation to the New Plymouth Borough Council. There were twenty-one accidental interruptions, totalling 7 hours 26 minutes, and twenty arranged shutdowns, totalling 85 hours 50 minutes.

On several occasions interruptions to supply were prolonged while conditions were restored to normal on the system. On these occasions the Borough Council was able to supply its own load, so that no inconvenience was caused.

Trouble has also been experience here with blown lightning-arrester fuses, and it is proposed to install a more modern type, as at Hawera.

Masterton.—This substation, in conjunction with the Kourarau hydro-electric plant, supplies power to the Wairarapa Electric-power Board. Under agreement with the Power Board the Kourarau plant forms part of the departmental power-supply system.

Accidental interruptions to supply numbered sixteen, of a total duration of 25 minutes. There were also four arranged shutdowns, of 4 minutes duration.

At the beginning of October a very severe gale did an enormous amount of damage to the Power Board's lines. Sheets of corrugated iron, blown on to the main 110 kv. line, caused an interruption of 6 minutes, but power-supply would have been restored sooner had the telephone-line remained in working order. The Power Board, however, were not able to take power for 7 hours 3 minutes, as their lines had been so much damaged by falling trees, broken poles, and broken wires, and several weeks elapsed before their system was restored to a state approaching its normal condition.

Mangamaire.—The Tararua Electric-power Board obtains its supply from this substation and, during the year, had twelve accidental interruptions to supply, of a total period of 41 minutes. In addition, there were three arranged shutdowns of 7 hours 18 minutes total duration.

Woodville.—Satisfactory operation of this switching-station was experienced during the year.

Dannevirke.—This is the point of supply for the Dannevirke Electric-power Board, which experienced four accidental interruptions to supply, of a total duration of 39 minutes.

There were also sixteen arranged shutdowns, of a total time of 9 hours 50 minutes.

Waipukurau.—Supply from this substation to the Central Hawke's Bay Electric-power Board was interrupted accidentally on three occasions for a total period of 1 hour 29 minutes. In addition, there were four arranged shutdowns of 6 hours 43 minutes.

The two 11 kv. transformer pot-heads of an obsolete type were to be replaced by new ones, but one failed before the work could be put in hand. This failure was due to the presence of a bird, which caused a flashover to ground and between phases, and power-supply was interrupted for 55 minutes until the spare transformer could be connected into service.

Napier.—Power is supplied from this substation to the Hawke's Bay Electric-power Board. There was only one accidental interruption to supply, of 1 minute, and there were two arranged interruptions of 2 hours 6 minutes total duration.

The synchronous condenser was dismantled, packed, and forwarded to Stratford.

During a check on the current flowing in the neutral of the transformer-banks it was discovered that currents were present in the tanks and cooling-pipes of the transformers. This was rectified by properly insulating the neutral connection from the tanks and earthing it at one point only.

Wairoa.—The Wairoa Electric-power Board obtains its supply from this substation. There was only one accidental interruption of 1 minute, and six arranged shutdowns of a total duration of 20 hours 41 minutes.

Gisborne.—This substation supplies the Poverty Bay Electric-power Board, and there were six accidental interruptions to supply of a total period of 10 hours 24 minutes and twelve arranged shutdowns of 32 hours 8 minutes total duration.

In order to facilitate the removal of the regulator for repairs or overhaul, the outdoor bus-bars were extended so that the regulator can be speedily by-passed.

The conversion of the transformers from water to air cooling was completed. The original water-cooling system was a source of anxiety owing to the necessity of cleaning the cooling-tubes of scale, which formed in considerable quantities. A design was prepared for converting the transformers to air-cooling, and this has proved a very satisfactory job. The danger from the cooling-system has been eliminated and the transformers can now be left unattended except for the daily routine inspection.

Substations, General.—The regular inspection and maintenance of all apparatus has been maintained and has generally resulted in good operation of all substations. Of the five interruptions caused by 11 kv. apparatus, one was due to an external cause—*i.e.*, a bird. There were none due to 50 kv. apparatus, and of the six due to 110 kv. apparatus three were due to insulator failures at Arapuni.

(*c*) TRANSMISSION-LINES.

(i) *110 kv.*

Mangaore–Khandallah Duplicate Line.—Power is transmitted over this line to Khandallah and Melling Substations, and supply was well maintained during the year, there being one interruption due to a gorse fire under the line and one due to lightning.

A profile survey of this line is in progress, and a considerable amount of maintenance-work has been done reconditioning poles, replacing defective insulators, and overhauling tower structures.

Khandallah–Melling Line.—This line operated very satisfactorily during the year, and there were no interruptions due to trouble on the line.

Mangaore–Bunnythorpe Duplicate Line.—This line gave no trouble during the year. Considerable maintenance was carried out inspecting poles, replacing and overhauling defective poles, cross-arms, &c.

Bunnythorpe–Marton–Wanganui Line.—This line operated satisfactorily during the year, there being only one interruption, due to a flashover.

Wanganui–Hawera–Stratford Line.—Trouble on this line caused an interruption on one occasion, due to a peat fire under the line, which burnt one pole nearly through.

Bunnythorpe–Woodville Line.—This line gave very good service, causing no interruptions during the year.

Woodville-Dannevirke–Waipukurau–Napier Line.—This line gave good service, there being only one interruption due to bird-deposit on an insulator on the Woodville–Dannevirke section.

Woodville–Mangamaire–Masterton Line.—There were four faults on this line, three being due to external causes. Bird-deposit on an insulator caused a flashover, another flashover was caused by a

gorse fire, and during a heavy gale in the Wairarapa district sheets of corrugated iron were blown on to the line. The fourth interruption was due to a suspension insulator string coming adrift.

A further considerable amount of maintenance-work was done on this line by the special maintenance gang, using live-line methods.

Tuai–Napier Duplicate Line.—This line operated very well, causing no interruptions to supply during the year. There were two outages, due to lightning, but no interruptions to supply were involved, one line only being affected on each occasion. Some cracked insulators on the sectionalizing switches were replaced.

Stratford–Pohokura Section.—This section of the Arapuni–Stratford line was taken over during the year, and has operated very satisfactorily. Several insulators had to be replaced due to damage by lightning.

(ii) *50 kv.*

Stratford–New Plymouth Line.—No trouble was experienced on this line during the year.

Tuai–Gisborne Line.—Only one fault occurred on this line during the year, the top lip of an insulator being broken off. Considerable trouble has been experienced on this line with broken binders and chipped insulators, but it has been found that all cases of binder trouble have occurred on spans greater than 10 chains and where there is uplift.

Tests were made to determine the relative values of different types of binders. It was found that if the binder was soft it stretched and broke, and with a hard binder the insulator was broken. Special clamps were also tried, but proved unsatisfactory.

It appears that pin-type insulators are unsuitable for the long spans, uplift, and heavy gales experienced on part of this line, and it has therefore been decided to duplicate the section from Tuai to Ruakituri. Suspension insulators will be used on this new section.

Tuai–Wairoa Line.—Satisfactory operation was experienced on this line, but thirty-two defective poles had to be replaced.

(iii) *11 kv.*

Mangaore–Shannon Line.—This line, operated and maintained by the Horowhenua Power Board, gave very good service during the year.

Tuai–Thomas's Mill and Tuai–Lake House.—These two lines were maintained in good condition. One interruption during the year was due to a heavy snow-storm, a cross-arm being broken on the Lake House line.

(iv) *General.*

Lightning Storms.—Thirty-six lightning storms were observed on the system during the year, causing interruptions to supply on nine occasions. No serious damage was done apart from several insulators shattered and an 11 kv. potential transformer damaged.

Sap-tests and inspections of poles are being continued over the whole district. The "live-line" gang is still operating on single lines, and maintenance work on double lines is carried out with one line "dead."

During the year the "live-line" gang carried out the following work while the line was under pressure: 41 poles were replaced; 80 strings of insulators were replaced or overhauled; 68 poles were shortened; 147 poles were refitted; and 62 cross-arms were lowered or replaced. Other work done included replacing of split pins; restrutting of H poles; clamps changed and weights overhauled.

Assistance was given to the Wairarapa Power Board after the gales in October, 1934, some of their 11 kv. lines being reconditioned, and "live-line" tools were used in certain cases. At Bunnythorpe, to avoid a shutdown, 11 kv. leads were connected to the Power Board's structure by "live-line" methods.

(*d*) TELEPHONE-LINES.

A considerable amount of maintenance was done on the telephone system during the year. The growth of the system, the interconnection of several power-stations, and the importance of maintaining supply of power to the supply authorities have made it essential that the communication system should not fail during times of disturbance.

In order to cure extensive trouble from vibration breaks on the cadmium-copper sections a considerable number of observations and measurements were made on experimental spans, and a cure, which it is believed will finally overcome the trouble, was developed in the form of a cork damper. Dampers were fitted on the whole of the cadmium-copper section between Mangahao and the Manawatu River, a total of 2,240 being so fitted. On the Wanganui–Stratford Section fifty-three dampers were fitted, and on the Stratford–New Plymouth Section seventeen dampers were fitted. Arrangements have now been made to fit both these latter sections with dampers throughout their entire length.

(*e*) TELEPHONE SYSTEM.

Telephonic Transmission.—Reception at the power-stations was improved by the introduction of valve-amplifiers in the receiver circuits, and, to prevent acoustic shock from induced currents, caused by faults on the main power-line, switching-operations, or lightning, acoustic shock-absorbers have been in service for some time. Transmission has been improved by the introduction of modern microtelephone handsets, and the question of reducing side-tone from room noise has received considerable attention, resulting in the closing-in and sound-proofing at the power-station of control-rooms and the introduction of sound-proof booths in some of the substations.

Telephone Protection.—Following on the burnout of several telephones during earth faults on the main line, even though these telephones were protected in the standard manner, an inquiry into the causes of this phenomenon was made and several defects in the protective system were shown up by test. An endeavour to rectify these is being made.

Ringing.—Very unusual conditions with regard to ringing are encountered on the system and it has been necessary to evolve new methods of overcoming these. Ringing in to Mangahao has been made practically certain by the installation of a Relay Code Exchange, very much more sensitive than the old drop-shutter type of exchange. Ringing out from Mangahao has been improved from practically an impossibility to practically a certainty by the introduction of power ringing at a very much higher voltage than obtainable from a hand magneto. Experimental work has resulted in the successful production of a two-way ringing repeater, which it is believed will finally solve all the ringing problems present.

General.—Results so far obtained indicate that a considerable improvement in the telephone system generally is possible, and experimental work with this end in view is continuing.

(*f*) TESTING.

This now plays an important part in the efficient operation and maintenance of the system. A comprehensive six-monthly schedule of meter and relay tests at all substations and power-stations has been developed. These schedules tests have now been in operation for some time and have proved very satisfactory.

In addition, a considerable number and variety of tests are carried out in the test-room, including tests on meters and instruments, relays, telephone apparatus, and miscellaneous tests. There was a big increase during the year in the number of meters and instruments tested and calibrated for supply authorities, both in the test-room and on site.

Designs were prepared for the new test-room in Palmerston North, where the scope of the testing-work will be considerably increased.

(*g*) GENERAL.

Standby stations were called on to supply power on thirteen occasions. The New Plymouth Borough Council supplied 1,450 units, the Taranaki Power Board supplied 2,480 units, while the Wellington City Council generated 59,035 units at the request of the Department, of which 11,404 units were supplied back into the Department's system.

SOUTH ISLAND ELECTRIC-POWER SYSTEM.

The year ending 31st March, 1935, represents the twentieth year of operation of the Coleridge undertaking, and a portion of the first year of operation of the Waitaki Scheme. Due to the merging of these two systems to form the South Island Electric-power System the accounts have been amalgamated, and the final figures for the year under review show a profit of £16,670, which will be utilized towards sinking-fund payment.

1. Capital Outlay.

Financial Results.—The capital outlay at 31st March, 1935, was £4,381,464, representing assets in operation, and £16,407, representing assets not in operation, giving a total capital outlay of £4,397,871, being an increase of £381,672 on the previous year's figure of £4,016,199.

2. Financial Results.

The total revenue for the year was £228,097, as against £219,492 for 1933–34, representing an increase of £8,605, as compared with the previous year's increase of £6,147. After paying working-costs (£35,083) the gross profit was £193,014, equal to a return of 7·49 per cent. on the average capital in operation (£2,577,083).

The total costs of operation, including interest and depreciation, amounted to £211,427 for the year, the previous year's figure being £134,308. The increase of £79,119 was due chiefly to the amount set aside for depreciation, which was £78,552 for 1934–35, while the amount for the previous year was £11,351, the large difference being caused by the assets at Waitaki coming into operation, and also due to the fact that in the previous year the full appropriation allowed by the Act had been reached, whereas for the year under review, with the inclusion of the Waitaki assets, 2 per cent. on the combined assets was appropriated. After payment of working-expenses, depreciation, and interest, the surplus for the year was £16,670, and was insufficient to meet the full charges for sinking fund. The accumulated depreciation reserve and sinking funds as at 31st March, 1935, amounted to £594,154 and the general reserve fund £241,419.

Table I gives full particulars of financial results as well as other relevant statistics for the first year of operation as a combined system, and Table II shows the analysis of capital outlay as at 31st March, 1935.

Table III, which gives details of operating-costs, shows that the total costs per unit generated were 0·057d. for the year under review, as against 0·068d. for the previous year. Operating-expenses show a reduction from £39,348 in 1933–34 to £35,083 in 1934–35, chiefly owing to the Lyttelton Diesel Station being called upon to supply only a small amount of power.

Table V gives details of gross financial results of the distribution of energy of the South Island Electric-power System and of those supply authorities and consumers who are supplied by it.

3. General.

The units generated totalled 148,928,340, of which 136,922,841 were actually sold, and 2,561,954 were used for departmental purposes in the generating plants.

The number of non-productive or lost units total 12,005,499, equivalent to 8·06 per cent. of the output of the system.

The maximum load on the system was 32,540 kw., and the annual load factor 52·3 per cent. The total connected load was 249,847 kw., being an increase of 6·1 per cent. over the 1934 figure. The demand factor or ratio of maximum load to connected load was 13·05 per cent.

4. Construction, Operation, and Maintenance.

(1) Construction.

(a) Power-stations.

Coleridge Power-house.—An enclosure with air-conditioning and ventilating equipment was installed on the switchboard gallery to provide the operators with a sound-proof room.

Earthed chequered plates were installed at all 66 kv. air-break switch positions.

(b) Substations.

Addington Substation.—The erection of the new 11,000-volt switch-gear was completed, and the main transformer banks and the M.E.D. feeders were connected.

No. 1 section of the old switch-gear was dismantled, reconditioned, and forwarded for erection at Timaru Substation. Two sets of reactors were installed between the new and old types of switch-gear.

New control panels were erected, and alterations to the wiring of the existing panels were completed.

Earthed mats have been installed on the outdoor switch-gear.

The erection of new lamp standards for the outdoor steelwork was commenced during the year and was completed by the end of May.

The 10,000 kv.a. synchronous condenser has been connected up, and is being dried out preparatory to being given a trial run.

Hororata Substation.—Tenders for the erection of cottages No. 2 and No. 3 and a water-supply tower closed on the 15th January, 1935, and this work should be completed about August, 1935. A septic tank and drainage were installed for all the buildings.

Ashburton Substation.—Arrangements are being made for the erection of two cottages for linesmen and operators. An adjoining section of land has been purchased from the Railways Department to provide accommodation for these cottages, and also for future extensions to the E.H.T. switch-gear.

Timaru Substation.—The construction of the steel structure substation buildings and two cottages was completed during the year. Other work included levelling of site, drainage, water-supply, lighting, cable ducts, and roading.

The installation of the equipment in the substation building was proceeded with, and at the end of the period most of the equipment was installed and the substation put into operation.

The change-over from the old substation to the new was carried out with an interruption to supply of minimum duration.

Dismantling of the structures at the former substation-site is in hand as equipment is released from service.

By the installation of two banks of 110/66 kv. 16,500 kv.a. auto-transformers at this substation the voltage of the transmission-lines south of Timaru Substation has been increased from 66 kv. to 110 kv.

The capacity of this station will be increased by the installation of two 5,000 kv.a. banks of 66/11 kv. transformers which had been converted by the Department from indoor to outdoor type.

Glenavy Substation.—With the putting into service of the Waitaki Hydro the voltage of this substation was altered from 66 kv. to 110 kv.

Two oil storage tanks were erected, and also linesmen's quarters and a storage shed. The control and relay boards were put into operation, and the storage battery overhauled and placed in service. A shelter-belt of *Pinus radiata* was planted on the boundaries of the section.

Oamaru Substation.—The voltage of this substation was changed from 66 kv. to 110 kv., and all work rendered necessary through the change of pressure was carried out. Substation buildings and linesmen's quarters were erected, in addition to levelling of site, drainage, water-supply, roadway, and the erection of the 25-ton electric crane was completed. Outdoor switch-gear and a 110/11 kv. 4,500 kv.a. transformer bank was installed, while the 66/11 kv. 5,000 kv.a. bank was transferred for erection at Timaru Substation. The change-over to 110 kv. was completed in March.

Halfway Bush Substation.—A new 110/33 kv. substation with a capacity of 10,000 kv.a. was installed to provide a supply to the 33 kv. system of the Dunedin City Corporation. The equipment consists of a steel structure for the switch-gear, the necessary substation buildings, including a 25-ton electric crane and two cottages for the operators.

Supply was available from this substation on 1st April, 1935.

(c) Transmission Lines.

Linesmen's accommodation quarters have been installed at Ashburton, Hororata, Glenavy, and Oamaru.

The voltage of supply to the Malvern Power Board was changed from 3 kv. to 6 kv., while the line supplying the North Canterbury Power Board was changed from 11 kv. to 33 kv. operation.

During the year steel gantries were erected between Addington and Sockburn, and all the 66 kv., 33 kv., and 11 kv. conductors were transferred from the wood poles which were removed.

A new double circuit steel tower section was constructed to replace the first two miles of both the Timaru–Oamaru 110 kv. lines. A four-circuit 11 kv. line and a two-circuit 11 kv. line were erected for the South Canterbury Power Board near the new substation at Timaru.

A single-circuit 110 kv. line on wood poles with steel towers in bad sections of the route was erected between Oamaru and Halfway Bush Substations, and the line was tested at 110 kv. in March.

The first Timaru–Oamaru line was reinsulated for 110 kv.

The Oamaru – Halfway Bush line was switched in on 31st March, 1935, and supply was made available for Dunedin through a 110/33 kv. bank of transformers on 1st April.

(d) Telephone System.

No. 1 telephone-exchange was constructed, erected, and placed in commission at Waitaki.

(e) General.

Survey and Easements.—During the year the completion of surveys and layout of the Oamaru–Dunedin 110 kv. line, the new section of the Timaru–Oamaru 110 kv. line, telephone-line laterals, and supervision of pole-erection and conductor-stringing operations were undertaken, as well as setting out work in connection with Timaru, Oamaru, and Halfway Bush Substations. The survey and layout of the double circuit 33 kv. line from Addington to Stoddart's Corner were carried out.

The new hostel at Coleridge was completed in June, 1934.

On 27th October, 1934, the Waitaki Power Station was officially opened by Lord Bledisloe, the then Governor-General of the Dominion of New Zealand.

(2) Operation and Maintenance.

(a) Power-stations.

Coleridge.—No serious trouble was experienced with the headworks during the year. After tests had been carried out on the level of the water in No. 1 surge-chamber due to sudden drops in the station load, the height of the walls of No. 1 and No. 2 surge chambers were raised by 9·75 ft. and 3·75 ft. respectively, and an overflow basin was constructed near No. 2 surge-chamber. The operating-gear of the gates and the height of the vent pipes were altered.

19/13 copper mains have been installed on the power-house surge-chamber route to secure improved voltage and reliable operation of the gates at the surge chambers.

All the plant was overhauled, adjustments, repairs, and tests being carried out where found necessary. The thrust ball-race on No. 9 unit broke down, and the spare ball-race was duly fitted.

After various modifications the automatic-closing gear for No. 2 Larner-Johnson valve was made to operate in a comparatively satisfactory manner. Similar alterations are being made to No. 3 equipment.

The battery which has been installed since 1927 was replaced in April with an automobile type of battery.

The copper cooling coils fitted to the 4,000 kv.a. S.P. transforners were observed to be leaking, due to corrosion. The replacement of these coils was put in hand and was finally completed.

Waitaki Power-house.—The auxiliary units were first put into service on 19th December and the supply from Coleridge through Waitaki Substation was discontinued. Commercial load was supplied from No. 1 Main Set at 8.22 a.m. on 1st January, 1935. Generator and turbine efficiency tests were carried out under the supervision of the Inspecting Electrical Engineer. Operating at 6,600 instead of 11,000 volts one of the Waitaki generators was first run in parallel with the Coleridge plant on 20th December. After another test on 27th December Waitaki supplied power to the system from 1st January to 20th March, when the plant was shut down for carrying out efficiency tests. On completion of these the station continued to supply commercial load.

Lyttelton Diesel Station.—The plant at this station rendered assistance in the afternoon of each of the three days 10th, 11th, and 14th May, and generated only 1,620 units for the whole year, as compared with 2,130,250 units for 1933–34. The whole of the plant has been maintained in a satisfactory condition throughout the year.

(b) Substations.

The 6,000 kv.a. condenser at Addington was shut down due to the breaking of a bolt, and after examination a complete set of new bolts and lock washers was fitted, the condenser being placed in service on 10th May.

(c) Transmission lines.

A severe snowstorm near Snowdon on 24th and 25th August caused several line "shorts," and for a short period all load was carried on the Coleridge–Hororata section of the South line, and for nearly two hours there was no telephone communication beyond the Point.

During the year 88,216 insulators were tested under live-line conditions, and 761 or approximately 0·86 per cent. were found defective. Forty-two insulators were replaced on the Southern 33 kv. line without interruption to supply.

The laying of all the 11 kv. feeders at Addington in concrete ducts was completed.

Interruptions to 110 kv. and 66 kv. Supply (excluding all prearranged Shutdowns).—To Coleridge, Point, Hororata, and Addington Supplies: There were no outages at any of these stations throughout the year.

To Ashburton Supply: There were three accidental interruptions, the aggregate period of which amounted to 51½ minutes.

To Timaru Supply: There were eight accidental interruptions, the aggregate duration of which amounted to 25½ minutes.

To Glenavy Supply: There were eight accidental interruptions, the aggregate duration of which amounted to 32 minutes.

To Waitaki Supply: The total duration of the ten accidental interruptions amounted to 1 hour 9½ minutes.

To Oamaru Supply: There were eleven accidental interruptions, the total duration being 53½ minutes.

(d) Testing.

During the year 275 tests and investigations were recorded, and maintenance and repairs were carried out on meters, relays, telephone apparatus, &c.

The system frequency has been satisfactorily controlled, and daily time signals are transmitted to Waitaki Station.

New construction at Addington, Southbrook, Timaru, Waitaki, and Halfway Bush entailed a considerable amount of testing and checking of wiring connections.

(e) General.

A fire broke out in the oil store at Coleridge and some damage was done to the building and its contents.

Work undertaken during the year at Addington substation includes the rewinding of two transformers for the Railways Department at Darfield, repairs to the Sumner Borough Council's main transformer, rewinding of current transformers for the Heathcote County Council, of an earthing transformer for Stoddart's Corner Substation, and of a relay testing transformer for the Testing Department. A bank of 66/11 kv. transformers was converted from indoor to outdoor type for erection at Timaru Substation. Alterations to the winding of a 100 kv.a. transformer were carried out for the Banks Peninsula Power Board. A burnt-out regulator has been repaired and awaits testing. Several electric motors have been rewound.

A memorial tablet to Michael Faraday, presented by the Municipal Electricity Department, of Christchurch, was erected in the Coleridge Power-house. It was unveiled in May, 1934, by the late Councillor E. McCombs in the presence of the Mayor and members of the Christchurch City Council and departmental officials.

Rainfall.—For the calendar year 1934 the rainfall at Coleridge Power-house was 25·80 in., which is about 5¼ in. below the average annual fall for the past twenty years. Rain fell on 113 days.

DESIGN OFFICE.

In the year under review the amount of investigation and design work entailed was greater than in the two preceding years, and it was found necessary to augment the staff to cope with the increasing work. Particulars of the principal work done are scheduled hereunder:—

A. Electrical Section.

(1) North Island Electric-power System.

(a) Power-stations.

Arapuni.—The extensions to Arapuni Power Station called for a large amount of design work. As the penstock tunnels for Nos. 7 and 8 units had already been driven, it was decided to put in these units at this stage. The extensions to the buildings will provide for four additional units space being left for the addition of Nos. 5 and 6 units at a later date. Considerable investigation was necessary before the size of the new units was finally fixed, as the width of the generator-room and the distance between centre of units are fixed by existing works. The turbines are being provided with relief valves to obtain better governing, and the governor spindles are provided with synchronous motor drive. The generators are of a type known as the umbrella pattern, in which the weight of the rotating parts is carried below the main rotor—an arrangement which results in a saving in first cost and simplifies erection and maintenance. The generators will have closed-circuit ventilating systems to eliminate the dust nuisance in the windings. Quick response excitation is being provided to ensure stability in the electrical operation of the system. The main transformers are being placed immediately outside the west wall of the generator-room. This arrangement results in a large saving in insulated cables and minimizes the possibility of interruption due to cable breakdowns. Improved access is being provided between the power-station and outdoor station by an automatic electric lift, which will run

in an inclined shaft up the face of the cliff. This lift installation will be somewhat unique in this respect, whilst the height of the lift shaft—over 125 ft. between landings—marks it as one of the highest in the country.

For the outdoor switch-gear, reinforced concrete supports are being adopted in place of steelwork wherever their use is economically justified. The arrangement adopted will simplify the maintenance and operation of the switch-gear, whilst the construction of the concrete supporting structures will utilize local labour and materials.

Drawings and specifications were prepared for tendering purposes for turbines, generators, transformers, outdoor switch-gear and steelwork, control equipment, electric lift, steel roof-trusses, steel windows, travelling scaffold, and reinforcing-steel. The design work for the new access road and retaining-wall, lift shaft, and some of the design work for the floors and walls of building extensions was completed. The design of machinery foundations and adjacent floors and walls is partly held up pending receipt of maker's drawings of equipment.

Mangahao.—A specification and diagram of connections were prepared for tendering purposes for the control equipment for new electrically operated winches for the surge-chamber gates. Specifications were prepared for a battery and copper-oxide rectifier charging equipment for operating the emergency tripping equipment, thus rendering it independent of the main supply.

Waikaremoana.—Drawings and specifications were prepared for tendering purposes for four new cottages and alterations to an existing cottage at the village settlement. A specification was prepared for tendering purposes for indirect lighting fittings for the control room.

(b) Substations.

Khandallah.—The design work for this station included a diagram of connections for main circuits showing phasing and particulars of apparatus, an outline drawing of the mimic bus-board for 110 kv. apparatus, and an outline drawing of porcelain bushing and stud for 11,000-volt selector switch.

Woodville.—Drawings and specifications were prepared for tendering purposes for a third cottage, with septic tank for drainage.

Wanganui.—Drawings were prepared for tendering purposes of the switch-gear and additional supporting steelwork required for the second bank of transformers. An outline drawing of the transformers was prepared for tendering purposes.

Stratford.—An exhaust air trunk was designed for the synchronous condenser. An outline drawing of the mimic bus-panels for the 110,000-volt switch-gear was prepared for tendering purposes.

Wairoa.—Drawings and specifications were prepared for tendering purposes for a cottage for the operating staff.

(c) Transmission-lines.

Survey data and location charts prepared in connection with 110 kv. line between Masterton and Melling, 50 kv. line to supply North Auckland District, 50 kv. duplicate line between Tuai and Ruakituri, and 11 kv. lines between Tuai and Onepoto, also between Khandallah and Ngahauranga.

(2) South Island Electric-power System.

(a) Power-stations.

Waitaki.—Specifications were prepared for street-lighting fittings for Waitaki Village, and for equipment for recording the water-levels in forebay and tail-race, and integrating the flow over the spillway.

(b) Substations.

Addington.—Specifications were prepared for tendering purposes for outdoor lighting units for the illumination of the outdoor switch-gear and steelwork. Vertically mounted post-type fittings are being tried out in this installation in place of flood-lighting, which has previously been adopted for similar service.

Timaru.—Specifications were prepared for tendering purposes for battery-charging equipment using copper-oxide rectifier equipment for operating the battery on the full-float system. The design work for this station included a layout drawing for the 66,000-volt potential transformers and lightning-arresters, foundations for the latter, and details of cable-ducting for the synchronous condenser.

Glenavy.—Drawings and specifications were prepared for tendering purposes for an additional cottage for the operating staff. The contract included a septic tank for the drainage from the cottage, the adjacent single men's quarters, and an additional future cottage.

Oamaru.—Drawings and specifications were prepared for tendering purposes for two additional cottages with septic tanks and drainage system to serve the existing cottage and substation building as well as the new cottages. Drawings were prepared for a stormwater-drainage system for the site. A 10-ft.-diameter turntable for the traverser truck, and the foundations for this turntable were designed. Other design work for this station included layout of indoor and outdoor equipment on site, layout of cables and details of cable supports, foundations for potential transformers.

Halfway Bush.—Drawings and specifications were prepared for tendering purposes for the substation building, oil filter house, garage, and cottages. Layout and foundation drawings were prepared for indoor and outdoor switch-gear transformers and lightning-arresters. A traverser truck was designed for handling the main transformers.

(*c*) *Transmission-lines.*

Work under this section was mainly associated with 110 k.v. line Timaru–Oamaru–Dunedin, and duplication of 110 kv. line Hororata to Ashburton.

(*d*) *General.*

The plotting of operating data for the various systems including lake-level and river-flow data, maximum loads and weekly outputs for generating-stations, maximum demands and consumption of energy for the local-supply authorities and other major consumers, was continued throughout the year.

B. Hydraulic Section.

(*a*) *New Work.*

Proposals were developed to secure control of the flow from Lake Waikaremoana by piercing a tunnel 65 ft. below the surface of the lake. This will not only allow the full capacity of the existing plant to be utilized but will provide water for the third unit for which specifications are being prepared.

Extensive boring and grouting operations have been carried out to render the country impervious through which the tunnel will be driven.

(*b*) *Maintenance.*

New surge-chamber gates at Mangahao have been fitted with remote-control equipment and with an automatic closing-device which will function with excessive flow in the penstocks. This should prevent a major disaster in the event of a pipe-burst or earthquake.

The pipe-distribution system at the bottom of the penstock at Mangahao has been remodelled and tests show a substantial gain in head as a result of these operations.

(*c*) *Tests.*

Satisfactory turbine and governor tests to specification were carried out on one of the Waitaki units in March, 1935.

(*d*) *Statistics of River Flow.*

Statistics have been kept of developed and undeveloped streams, and these have been charted up ready for use. Duration curves on "probability" graph paper have also been prepared for twenty-two rivers.

(*e*) *Investigation of Power Resources.*

Preparation of drawings embracing the Waikato power-survey has proceeded steadily, but definite recommendations for future development have not yet been made.

ELECTRIC-POWER BOARDS.

There are now forty-five districts constituted, and forty-one (including Westland Power, Ltd., operating under delegated license) actually carrying out the distribution and sale of electrical energy (August, 1935). The total area covered is 78,968 square miles, or 76 per cent. of the total area of the Dominion (103,415 square miles); (the total population concerned is 1,076,051 or 69·5 per cent. of the total population (1,553,005) of the Dominion) and the unimproved value of the land included in the electric-power districts and outer areas is £249,357,348, or 80·5 per cent. of the total unimproved value of the Dominion (£309,770,390).

So far only one of the four main cities—viz., Auckland—has been included in the inner area of a power district, but of the secondary centres the cities of Wanganui, Palmerston North, and Invercargill, and the Boroughs of Timaru, Napier, Hastings, Blenheim, Greymouth, Gisborne, and Oamaru, are included. The advantage of Power Board organization is more obvious to rural than to urban ratepayers, and yet the above position indicates that some of the more important centres have realized that it is to their advantage generally to be associated with the country in undertaking the work of reticulation of electric power on a comprehensive scale.

Table VIII gives details of the gazetted date of constitution, the area, population, and rateable value of each of forty-five 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 forty districts which have taken their polls is £13,766,625. The population of the districts concerned is 943,964, so that the loans authorized amount to £14·58 per head of population, as compared with £14·5 last year. The unimproved valuation of the districts is £219,322,780, the loans authorized amounting to 6·28 per cent. of the unimproved rateable value of the lands pledged as security for the loans. The voting at the polls totalled 69,720 for and 12,409 against the loan proposals.

Table X shows the capital outlay incurred by each Board up to the end of the financial year 1934–35, together with the revenue and annual expenditure.

The total capital outlay by the forty Boards which are in operation is £14,120,490, practically all of which is on works in service. The gross revenue from the sale of electricity by these Boards was £2,252,109. The general result is a profit over the whole business of the Power Boards of £129,799 for appropriation to reserve funds, &c., after paying working-expenses and capital charges for interest, sinking fund, and depreciation.

During the last year five of the Boards struck a general rate, which was collected in all cases, and one of the Boards struck special rates for the security for loans, which were collected in this case.

The following table gives details of the rates levied and collected :—

RATES COLLECTED BY ELECTRIC-POWER BOARDS FOR YEAR ENDED 31ST MARCH, 1935.

Name of Board.	General Rate.		Availability Rate.		Special Rates.		Total Amount collected.
	Levied.	Collected.	Levied.	Collected.	Levied.	Collected.	
	d.	£		£	d.	£	£
Banks Peninsula ..	$\frac{1}{32}$, $\frac{1}{6}$, and $\frac{4}{10}$	2,902	..	..	..	..	3,067*
Malvern	$\frac{1}{4}$	2,071	..	..	..	..	2,958*
Marlborough ..	..	..	..	107*	..	..	107*
Manawatu-Oroua ..	..	1,094*	..	..	..	..	1,094*
Otago	0·05	58	..	..	0·3, 0·325, and 0·35	4,612	6,331*
Southland ..	$\frac{7}{10}$	25,918	..	..	..	..	37,610*
Taranaki	..	..	..	194*	..	..	194*
Teviot	..	3*	..	..	..	..	3*
Wairoa	$\frac{1}{8}$	2,032	..	..	..	..	2,700*
Totals ..	..	34,078	..	301	..	4,612	54,064

* Includes arrears for previous years.

On 1st June, 1934, the name of the Central Electric-power Board was changed to Central Waikato Electric-power Board.

LOCAL ELECTRIC-SUPPLY SYSTEMS.

Including the Government plants, there are now (31st March, 1935) forty public electric-power stations operating in the Dominion, as compared with thirty-seven last year, the additional ones being accounted for by scheduling Public Works Department as operating six stations (Arapuni, Horahora, Tuai, Mangahao, Coleridge, and Waitaki) instead of three as shown last year (Table XXIII). Two new hydro stations (Waitaki and Brooklyn) went into commission during the year, and Motueka Borough's gas-station went out of commission, being superseded by the Waimea Power Board's standby Diesel plant. There are ninety-two local electric-supply authorities directly engaged in the retail sale of electricity, and the following table shows the porportion using Government-generated power :—

Class of Local Authority controlling Electric-supply System.	Using Government Supply.	Using Non-Government Supply.
	Number.	Number.
Power Board	28 (*a*)	12 (*b*)
City Council operating own reticulation	3 (*c*)	3 (*d*)
Borough Council operating own reticulation	13 (*e*)	16 (*e*)
County Council operating own reticulation	2	3
Town Board operating own reticulation	2 (*e*)	3 (*e*)
Company	..	5
Private	..	1
Tourist Department	1	..
Totals	49	43
	92	

(*a*) Included in these supply areas are 54 boroughs and 36 town districts. (*b*) Included in these supply areas are 23 boroughs and 11 town districts. (*c*) Palmerston North, Wellington, and Christchurch. (*d*) Nelson, Dunedin, and Invercargill. (*e*) Exclusive of 77 boroughs and 47 town districts incorporated as constituent parts of Power Board supply areas.

On the 1st May, 1934, the Waimea Electric-power Board took over the plant and lines of the Motueka Borough Council, and on the 24th November, 1934, this Board's hydro station on Brooklyn River was officially opened.

On the 1st July, 1934, Christchurch City Council took over Halswell County Council's reticulation system, the license for which was assigned on the 21st August, 1933.

On the 1st August, 1934, Waitara Borough was changed over from New Plymouth Borough's supply system and connected to the Taranaki Electric-power Board's system.

Negotiations were finalized for the purchase by the Hawke's Bay Electric-power Board of Hastings Borough electric-supply system, and the Board took possession as from 1st October, 1934.

The total installed capacity (excluding standby plant) has increased by 30,103 kw. during the year, being at present 233,754 kw. The increase is due principally to Waitaki Station, which went into commercial operation in January, 1935.

The proportion of installed plant is now as follows :—

	Stations.	Kilowatts.	Proportion per Cent.
Water-power (excluding 11 standby installations)	35	232,787	99·580
Steam-power (excluding standby plants at Portland (3,190 kw.), Auckland (41,160 kw.), Wanganui (1,500 kw.), Wellington (10,000 kw.), Invercargill (1,975 kw.), Gisborne (350 kw.), Waihi*, Huntly (1,500 kw.), Dunedin (1,875 kw.), Christchurch (1,500 kw.), Nelson (500 kw.), Petone (516 kw.); totalling 64,066 kw.)	1	750	0·321
Gas-power (excluding standby plant Palmerston North (1,020 kw.), Westport (210 kw.); totalling 1,230 kw.)	1	37	0·022
Oil-power (excluding standby plants at Penrose (3,750 kw.), Lyttelton (5,760 kw.), Dunedin (860 kw.), Blenheim (456 kw.), Hastings (1,087 kw.), Gisborne (980 kw.), Ashburton (160 kw.), Napier (500 kw.), Thames (262 kw.), Opunake (148 kw.), Ohakune (113 kw.), Hawera (485 kw.), Oamaru (192 kw.), New Plymouth (350 kw.), Hokitika (Kanieri) (150 kw.), Hokitika (200 kw.), Motueka (110 kw.), Patea (64 kw.), Reefton (80 kw.), Petone (316 kw.); totalling 16,027 kw.) ..	3	180	0·077
Total	40	233,754	100·000

* 1,640 kw. plant partially dismantled at present.

Kaikoura County Council is installing a 40 kw. Diesel generating-set as an addition to its present installed capacity of 37 kw. Palmerston North City Council has recently placed an order for a 2,000 kw. Diesel plant. Otago Central Power Board has under construction a hydro station of 1,600 kw. capacity.

The number of consumers supplied has increased from 334,593 to 342,334, an increase of 7,741, or 2·31 per cent., for the year.

The total population included in the various areas of electric-supply is 1,451,148, or 93·5 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. Table XII shows for each supply authority the average maximum demand per consumer.

The maximum demand per head of population in the areas supplied is nearing the allocation of 0·15 kw., or 0·2 h.p., per head of population, the basis of the design of the Government schemes.

The units sold per head of population supplied were 493, as compared with 472 last year. (See footnote on Table IX.)

The total length of transmission and distribution-line in service is 21,707 route-miles, as compared with 20,996 last year, an increase of 711 miles, or 3·4 per cent. This fact would seem to indicate that, although the completion of the Arapuni–Stratford 110 kv. line was responsible for a portion of this increase, there is a steady demand for the extension of electric lines to meet the requirements of the rural areas. The number of consumers per route-mile is 15·72, as compared with 15·9 last year. The decrease is due to the extra mileage of new lines erected during the year, to which lines the full number of services are not yet connected.

The sales per route-mile of line were 33,000 units and the gross revenue £211. The units are more than last year (31,800), and there is an increase in revenue as against £210 last year, due to a general reduction in selling-rates and to load-building campaigns.

Out of the ninety-four distributing authorities (including Public Works Department, North Island and South Island Systems and excluding Ross Borough), 87 showed a profit for the year amounting to £479,967 and 7 showed a loss amounting to £30,468. The gross revenue (excluding rates) was £4,577,998, and the general result is a profit for the whole Dominion of £449,499 after paying working-costs (£2,052,133) and capital (interest, sinking fund, and depreciation) charges (£2,076,366) at the rate of 6·33 per cent. on the total capital outlay of £32,823,944. This shows a net profit of 1·37 per cent., as compared with 1·49 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 93·5 per cent. of the population of the Dominion.

The following table summarizes the results of the year's operations in connection with electric supply throughout the Dominion, and Tables X and XI show the financial statistics for each supply authority. It should be noted that the method of compilation and computation adopted for the following table is slightly different to that of years previous to 1933 :—

—	—	Water.	Steam.	Gas.	Oil.	Total.
1. Number of main stations	No.	35	1	1	3	40
2. Installed capacity (main plant)	Kw.	232,787	750	37	180	233,754
3. Number of standby stations	No.	11	9	5	19	44
4. Installed capacity (standby plant) ..	Kw.	2,922	63,200	2,038	15,707	83,867
5. Number of consumers	No.	338,718	2,933	157	526	342,334
6. Connected load	Kw.	1,219,929	8,063	124	698	1,228,814
7. Units generated	No.	911,533,789	2,284,350	47,590	207,261	914,072,990
8. Units sold to consumers (Table IX) ..	No.	714,204,405	1,722,810	38,678	151,471	716,117,364
9. Percentage of non-productive units ..	%	21·60	19·80	18·70	27·00	21·70
10. Total operative capital (including distribution systems and standby plant)	£	32,675,441	116,170	10,180	22,153	32,823,944
11. Total capital per kilowatt installed (including distributing systems, &c.)	£	103·4	93	275	123	103·4
12. Annual working-costs	£	1,051,275*	13,238*	1,390	3,078	1,068,981*
13. Annual working-cost per unit under section 8	d.	0·35	1·85	8·63	4·87	0·36
14. Annual capital costs (interest, sinking fund, and depreciation)	£	2,064,783	9,210	553	1,820	2,076,366
15. Annual capital cost per unit under section 8	d.	0·70	1·28	3·43	2·88	0·70
16. Annual capital costs as percentage of capital	%	6·33	7·93	5·44	8·21	6·33
17. Total annual costs (section 12 plus section 14)	£	3,116,058	22,448	1,943	4,898	3,145,347
18. Total annual cost per unit under section 8 ..	d.	1·05	3·13	12·06	7·75	1·06
19. Total annual revenue (excluding rates and bulk sales) from consumers	£	3,562,750	25,714	1,639	4,743	3,594,846
20. Average revenue per unit† under section 8 ..	d.	1·167	3·44	9·78	7·29	1·173
21. Net profit (section 19, less section 17) ..	£	446,692	3,266	—304	—155	449,499
22. Ratio working-costs to revenue (section 12 and section 19)	%	29·50	51·50	84·80	65·00	29·70

* After deducting revenue derived from bulk sales (Table X). † From retail sale of electricity (Table X).

GROWTH OF LOAD.

The total connected load at end of the year under review was 1,228,814 kw., compared with 1,149,173 for 1934, an increase of 79,641 kw. or 6·93 per cent.

Statistics pertaining to the increasing use of electric ranges, electric water-heaters, and milking-machines, have been collected and scheduled for some years past, and from the following table will be seen the annual growth which has taken place in each class :—

Year.	Consumers.	Annual Increase.	Electric Ranges.	Annual Increase.	Electric Water-heaters.	Annual Increase.	Electrified Milking-machines.	Annual Increase.
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1925	148,699	..	1,526	..	..	..	3,581	..
1926	192,392	29·3	4,671	205·0	6,654	..	4,856	35·8
1927	228,345	18·7	9,511	104·0	14,160	113·0	6,738	38·8
1928	243,795	6·8	15,766	66·0	21,513	52·0	8,514	26·3
1929	266,306	9·2	20,254	28·5	29,257	36·0	10,161	19·4
1930	284,235	6·7	25,997	28·3	37,564	28·5	11,922	17·3
1931	300,809	5·9	29,480	13·2	42,803	13·9	13,656	14·5
1932	309,360	2·8	31,973	8·5	45,796	7·1	14,163	3·7
1933	322,997	4·4	33,998	6·4	48,070	5·0	15,913	12·4
1934	334,593	3·6	36,081	6·2	50,272	4·6	16,992	6·8
1935	342,334	2·3	39,730	10·1	53,635	6·7	17,200	1·2

See Table XIV for details for year ended 31st March, 1935.

BROKEN WIRES AND POLES.

Gales of exceptional severity, accompanied in some instances by heavy snowstorms, occurred in various parts of the Dominion during the past year and account for the large number of breaks reported.

There were 2,204 broken wires reported by electric-supply authorities, with 106,336 miles of conductor erected. The corresponding figures for the previous year were 1,613 broken wires, and 98,854 miles of conductor in use.

Falling trees were again the principal cause of the breaks, and accounted for 26·6 per cent. of the total, as against 16·25 per cent. for 1934.

As regards broken poles, 519 instances were reported for the year, of which 365, or 70·4 per cent., were New Zealand blue-gum.

For 1934 the total number of broken poles reported was 417, and it is still evident that electric supply authorities who experimented with New Zealand blue-gum and nondescript Australian "hardwoods" are now being called upon to make replacements sooner than the anticipated life of fifteen years for poles used on distribution-lines.

ACTUAL MILEAGES AND SIZES OF OVERHEAD CONDUCTORS IN USE AT 31ST MARCH, 1935.

Size of Conductors (S.W.G.).	Copper.		Aluminium.		Galvanized Steel.		Galvanized Iron.		Copperweld.		Steel-cored Aluminium.		(1) Bronze, and (2) Cadmium-copper.		Total Breakages.
	Miles.	Breakages.	Miles.	Breakages.	Miles.	Breakages.	Miles.	Breakages.	Miles.	Breakages.	Miles.	Breakages.	Miles.	Breakages.	
7/20 ..	6,726	470	..	..	1	..	..	..	..	..	..	..	..	..	470
7/18 ..	10,536	325	..	..	..	..	..	..	..	..	..	..	..	..	325
7/17 ..	2,338	21	..	..	..	..	..	..	..	..	..	..	..	..	21
7/16 ..	18,931	173	22	..	142	..	45	..	..	..	177	..	..	..	173
7/15 ..	164	1	18	..	..	..	..	..	..	..	123	..	..	..	1
7/14 ..	10,528	43	55	..	49	..	..	..	2	..	587	..	..	..	43
7/13 ..	1,050	..	..	..	4	..	..	..	..	..	..	..	..	..	..
7/12 ..	416	1	150	1	3	..	..	..	5	..	3	..	..	..	2
7/11 ..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..
7/10 ..	33	2	25	..	..	..	..	..	10	..	51	..	..	..	2
7/9 ..	79	..	15	..	5	..	..	..	..	..	..	..	..	..	..
7/8 ..	..	..	1	..	..	..	..	..	..	..	4	3	..	..	3
7/7 ..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
19/18 ..	332	1	..	..	..	..	..	..	..	..	..	..	..	..	1
19/17 ..	588	10	..	..	..	..	..	..	..	..	..	..	..	..	10
19/16 ..	1,847	13	..	..	..	..	..	..	..	..	..	..	..	..	13
19/15 ..	168	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19/14 ..	590	1	..	..	..	..	..	..	..	..	..	..	..	..	1
19/13 ..	2,462	2	..	..	..	..	..	..	..	..	..	..	..	..	2
19/12 ..	565	..	..	..	2	..	..	..	..	..	..	..	..	..	..
19/10 ..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..
37/16 ..	49	..	..	..	..	..	..	..	..	..	..	..	..	..	..
37/15 ..	395	..	..	..	..	..	..	..	..	..	..	..	..	..	..
37/14 ..	132	..	..	..	..	..	..	..	..	..	..	..	..	..	..
37/13 ..	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..
37/12 ..	77	..	..	..	..	..	..	..	..	..	246	..	..	..	..
66/13 ..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	2,749	112	..	..	2	..	101	1	12	..	..	..	..	..	113
11	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	10,246	483	..	..	376	..	318	1	426	2	..	..	30(1)	..	486
8	12,769	295	..	..	3,165	122	6,698	66	1,140	1	..	..	..	..	484
7	772	6	..	..	..	..	145	..	91	..	..	..	..	..	6
6	306	1	..	..	60	..	17	..	208	..	..	..	..	..	1
4	599	..	..	..	..	..	..	..	79	..	2	..	..	..	..
2	66	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2/0 ..	..	..	10	..	..	..	..	..	..	..	59	..	..	..	..
3/0 ..	..	..	..	..	..	..	..	..	..	..	986	..	..	..	..
3/13 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3/12 ..	91	1	28	..	..	..	..	..	..	..	..	..	..	..	1
3/11 ..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..
3/10 ..	24	..	10	..	..	..	..	..	..	..	..	..	..	..	..
3/9 ..	..	..	10	..	..	..	..	..	..	..	..	..	..	..	..
3/8 ..	..	..	9	..	..	..	..	..	..	..	..	..	..	..	..
4/16 ..	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4/14 ..	..	..	..	..	253	1	..	..	..	..	..	..	..	..	1
5/14 ..	..	..	..	..	207	..	..	..	..	..	..	..	..	..	..
2/10 ..	43	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6/·144 ..	..	..	..	..	..	..	..	..	..	..	19	..	..	..	..
7/·186 ..	..	..	..	..	..	..	..	..	..	..	41	..	..	..	..
7/·136 ..	39	..	164	..	..	..	..	..	..	..	..	..	..	..	..
7/·0834 ..	..	..	..	..	..	..	..	..	..	..	29	..	..	..	..
7/·0743 ..	..	..	..	..	..	..	..	..	..	..	52	11	..	..	11
7/·112 ..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..
1/·112 ..	..	..	..	..	..	..	..	..	..	..	..	..	284(2)	9	9
Miscellaneous ..	93	24	1	..	..	..	3	1	2	..	..	..	..	..	25
Totals ..	85,923	1,985	529	1	4,269	123	7,327	69	1,975	3	2,381	14	314	9	2,204

Grand total, 102,718 miles.

No returns received from Auckland, Christchurch, and Heathcote.

ELECTRICAL SUPPLY AND ELECTRICAL WIRING REGULATIONS.

The Electrical Supply and Electrical Wiring Regulations, which were gazetted in 1927, with the intention of revising same after two years' trial, occupied the attention of the Regulations Advisory Committee throughout the year. This revision has now been completed, and the new regulations have been submitted to the Executive Council for signing by His Excellency the Governor-General.

INSPECTION OF ELECTRIC LINES, ALSO PRIVATE GENERATING-PLANTS.

The annual departmental inspection of the electric lines in operation was carried out in the case of eighty-six supply authorities last year, and any defects or breaches of the regulations which came under notice were duly notified to the supply authorities concerned. These inspection activities of the Department undoubtedly tend towards the maintaining of a high standard, and the general willingness on the part of the supply authorities to co-operate in a general observance of the regulations governing such matters is of great assistance to this Department.

The following supply authorities have notified extensions to electric lines in their respective districts during the year:—

Power Boards—
Auckland.
Ashburton.
Banks Peninsula.
Central Hawke's Bay.
Central Waikato.
Dannevirke.
Franklin.
Golden Bay.
Grey.
Hawke's Bay.
Horowhenua.
Hutt Valley.
Malvern.
Manawatu-Oroua.
Marlborough.
North Canterbury.
Otago.
Otago Central.
Poverty Bay.
Southland.
South Taranaki.
Springs-Ellesmere.

Power Boards—*continued.*
Tararua.
Tauranga.
Taranaki.
Te Awamutu.
Thames Valley.
Waimea.
Wairere.
Waitemata.
Waitomo.
Wairarapa.
Wanganui-Rangitikei.

Cities—
Christchurch.
Dunedin.
Invercargill.
Palmerston North.
Wellington.

Boroughs—
Hamilton.
Napier.

Boroughs—*continued.*
New Plymouth.
Te Aroha.

Town Districts—
Nil.

County Council—
Waimairi.

Company—
Westport Coal Co.

It is not generally known that under the Electrical Wiremen's Registration Amendment Act, 1928, it is mandatory to give notice of the installation of private electric plants, and provision is made for the inspection of these plants before same are placed in service. During the year a number of such installations came under notice, and in some instances inspection has been made as opportunity offered.

LICENSES ISSUED.

The following water-power and electric-line licenses (32) and permits (12) have been issued during the period between 30th June, 1934, and 30th June, 1935: *Licenses*—F. J. Delaney, Inangahua Junction; Christchurch Tramway Board; L. Keys, Kohukohu; Hudson and Darling, Clinton; Stuart and Watson, Murchison; J. E. McKibbin, Kawhia; E. C. Govan, Te Anau; N. Wells, Mercury Bay; R. Thomson, Poerua; Hawke's Bay Power Board (amendment); A. F. Speight, Otautau; W. H. Lowe, Whitianga; D. Ross, Mawheraiti; Robson and Rogers, Waiau; Waimea Power Board; F. Loughran, Ranfurly; Sullivan Bros., Weheka (amendment); T. McMahon, Cronadun; J. W. Patterson, Reefton; Otago Central Power Board; E. Norris, Westport; M. Rait, Owen Junction; L. L. W. Heaphy, Berlins; H. J. Topliss, Inchbonnie; H. M. C. Dampier-Crossley, Hawarden; H. B. Walker, Westport; D. J. Barry, Te Puia; F. O. Matthews, Waitotara; Picton Borough Council. *Revocations*—Hastings Borough Council; Motueka Borough Council. *Assignment*—M. W. Wallis, Okete. *Permits*—W. D. McIntosh, Waipara; T. Mallinson, Kopara; A. and L. Pye, Huka Falls; J. I. Wilson, Maungatapere; P. Prendergast, Ikamatua; E. Scholfield, Norsewood; A. V. Nisbet, Mahers Creek; E. Barker, Korere; W. D. Bell, Raetihi; J. Chartres, Te Anau; H. L. E. Powell, Opuawhanga; A. McCaughan, Kingston.

ELECTRICAL APPLIANCES BOARD.

An opportunity to submit the draft Bill to give effect to representations regarding the sale and use of unsafe electrical appliances did not present itself during the past year.

ELECTRICAL ACCIDENTS.

During the year there were reported to the Department forty-five electrical accidents, involving the loss of human life in seven instances. Corresponding figures for 1934 were thirty-two and ten respectively.

This year's electrical accidents resulted in injuries (fatal and otherwise) to the following:—

Electrical employees	17
Other tradesmen	3
General public	17
Stock	8
Total	45

ELECTRICAL FIRES.

During the year there were twenty-two fires attributed to electrical causes and reported to the Department by electrical-supply authorities, as per list below. The corresponding figures for 1934 and 1933 were twenty-six and thirteen respectively.

The sources of this year's electrical fires included the following:—

Electric irons	8
Electric radiator	1
Other electrical appliances	6
Defective installations	7
Total	22

REGISTRATION OF ELECTRICAL WIREMEN.

The term of office of the Board members expired on the 31st March, 1935, and, the interests affected being agreeable, the members of the late Board were reappointed for a further three years.

For the year ended the 30th June eight meetings of the Board were held.

The Act was amended in 1934 in several important details. The penalty for carrying out electrical wiring contrary to the provisions of the Act or for employing or permitting any person so to do was increased to £50 for each offence. It has been made an offence to wilfully hinder or obstruct any authorized person in the exercise of the powers conferred on him by the Act. It has been made an offence to allow a certificate of registration or a provisional license to be used by any person other than the person to whom such certificate or license was issued. The Board has been given power to suspend a wireman for defective work in addition to the existing power to endorse his registration certificates or to remove his name from the register or withdraw his provisional license. Provision has been made for Inspectors of Electrical Wiring to enter premises for the purposes of inspection and testing. The penalty for refusing, without reasonable cause, to permit an Inspector to enter any premises is disconnection of the installation from the supply. Provision has been made for University electrical engineering students to assist wiremen, as it is necessary for such students to gain practical experience during the course of instruction. The definition of improver has been enlarged to include a person who, having completed an apprenticeship and sat for the examination, is not yet registered. The question of whether notice of intention to carry out wiring should be in writing or not has been clarified by providing that where verbal notice has been given it shall be confirmed in writing within forty-eight hours. To avoid duplication of notice in the case of mines having their own plants, provision has been made for the notice to the Inspector of Mines to be sufficient. It has been made definite that electrical wiring involved in the repair or assembly of electrical apparatus must be inspected by a registered wireman or the holder of a provisional license before the apparatus (or part) is removed from the premises where the work was done. Unless the person undertaking the work of repair or assembly is a registered wireman or the holder of a provisional license, or has in his service (as a full-time employee) such a person, the person inspecting the work must enter particulars of the work in a register and sign the entry. The register is to be kept on the premises of the person undertaking the work and be open for inspection.

The regulations were recently amended to provide for the payment of fees for the inspection of private plants, appeals and the re-registration of a wireman after his name has been removed from the register as a result of the quinquennial purging, and his failure to reply to a letter from the Board asking whether he wishes to have his name retained on the register. The fee for an appeal against the decision of the Board is with the object of discouraging frivolous appeals, and has been made flexible so that it may fit each individual case as far as possible.

The five-yearly purging of the registers will take place in January, 1936; and in October, 1935, a letter will be posted to each registered electrical wireman, including those with limited registration, requesting him to state, within three months, whether he wishes to have his name retained on the register. The names of all wiremen who do not reply by the 31st January, 1936, will then be removed from the registers, but provision is made for re-registration on payment of a fee of ten shillings.

A further endeavour has been made during the year to restrict the practice of incompetent persons assembling or repairing electrical apparatus. A circular letter setting out the requirements of the Act was forwarded to the electrical-supply authorities for distribution to persons who undertake the assembly and repair of electrical apparatus. It does not appear to be generally known that the attachment of a flexible cord, plugs, connectors, and the like to electrical apparatus, and the replacement of elements in irons, radiators, and other electrical apparatus, must be carried out by registered wiremen or the holders of provisional licenses when such work is carried out on the premises where such apparatus is to be used. Provision is made for the assembly and repair of electrical apparatus on premises other than the premises where such apparatus is to be used to be carried out in the usual manner, but where the work is not done by a registered wireman or the holder of a provisional license it must be inspected and tested by such a person before it leaves the premises where the work was done.

The results of the examinations are still somewhat disappointing. In the written part only 28 per cent. passed in September, 1934, and only 19 per cent. in March, 1935. In the practical part only 42 per cent. passed in September, 1934, and 59 per cent. in March, 1935. The examiners in the written part drew special attention to the difficulty experienced in deciphering the writing and sketches and to the lack of knowledge of the wiring regulations. The examiners in the practical part stated that more attention should be paid to cleaning the ends of conduit to avoid damage to the protective covering of the wires, to the bending of conduit, to the removal of the braid and tape from the wires at connections to accessories, to the cleaning of the conduit where in contact with earthing-clips, to the tightening of earthing-clips, and to a stricter adherence to the measurements given.

The details supplied to the Board in connection with reports of defective work and breaches of the Act are not as complete as they should be in some cases, and it would reduce the work of the Board if more attention was given to this matter and better use made of the instructions printed on the back of the report forms.

Every registered wireman is supplied with a certificate which has to be signed by him and produced for inspection by the person for whom the work is being performed, or the occupier of the premises on which the work is being performed, and such persons, for their own protection, should see that the person doing the work has such a certificate.

The statistics for the year ended 30th June are as follows:—

Registrations: Inspectors, 15. Wiremen—Full registration, 111; limited registration, 40; provisional licenses, 10.

Examinations: Candidates—Written part, 231; practical part, 176. Passed—Written part, 56; practical part, 86. Highest marks—Written part, 77; practical part, 89.

Defective-work reports: 46.

Breach of Act reports: 49.

Prosecutions taken: 15.

Fines and costs: £25 8s.

The amount collected from the electrical-supply authorities was equivalent to 0·6d. per consumer.

F. T. M. Kissel, B.Sc., M.I.E.E., A.M.I.C.E.,
Chief Electrical Engineer.

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YEAR ENDING 31ST MARCH, 1935.

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TABLE I.—SUMMARY OF FINANCIAL AND OPERATING STATISTICS FOR NORTH ISLAND AND SOUTH ISLAND ELECTRIC-POWER SYSTEMS FOR THE YEAR ENDING 31ST MARCH, 1935.

NOTE.—North Island system includes Arapuni–Horahora–Mangahao–Waikaremoana all interconnected. South Island system includes Lake Coleridge and Waitaki interconnected.

(*a*) Financial.

	1934–35 (First Year).
Capital outlay—	
Assets in operation—	£
North Island system	8,443,582
South Island system	4,381,464
Total assets in operation	12,825,046
Assets not in operation—	
North Island system	61,957
South Island system	16,407
Total assets not in operation	78,364
Total capital outlay	12,903,410
Revenue for year—	
North Island system	712,766
South Island system	228,097
Total revenue for year	940,863
Costs—	
Working-costs—	
North Island system	120,927
South Island system	35,083
Total working-costs for year	156,010
Capital charges—	
Interest—	
North Island system	414,042
South Island system	97,792
Capital charges—*continued.*	
Depreciation—	£
North Island system	150,538
South Island system	78,552
Half capital charges, King's Wharf Station	37,687
Total capital charges for year	778,611
Total costs for year	934,621
Net profit or loss for year—	
North Island system	*Dr.* 10,428
South Island system	*Cr.* 16,670
Total **profit** for year	6,242
Accumulated Depreciation Reserve—	
North Island system	959,086
South Island system	323,600
Total Depreciation Reserve	1,282,686
Accumulated Sinking Fund Reserve—	
North Island system	55,930
South Island system	270,554
Total Sinking Fund Reserve	326,484
Accumulated loss—	
North Island system	586,849
General reserve—	
South Island system	241,419

(*b*) Operating Results.

Maximum load (kilowatts)—		
North Island system		111,290
South Island system		32,540
Average load (kilowatts)—		
North Island system		66,000
South Island system		17,000
Average load factor—		Per Cent.
North Island system		59·50
South Island system		52·30
Units output—		Units.
North Island system		580,400,959
South Island system		148,928,340
Units distributed—		
Units sold—		
North Island system		519,542,480
South Island system		136,922,841
Combined		656,465,321
Units unsold (station auxiliaries, &c.)—		
North Island system		5,866,868
South Island system		2,561,954
Combined		8,428,822
Total units distributed, North Island system		525,409,348
Total units distributed, South Island system		139,484,795
Line losses—		
Transmission—	Units.	Per Cent.
North Island system	54,798,875	9·45
South Island system	7,879,385	5·29
Combined	62,678,260	..
Distribution—		
North Island system	192,736	..
South Island system	1,564,160	..
Combined	1,756,896	..
Total line losses, North Island system	60,858,479	10·49
Total line losses, South Island system	12,005,499	8·06

Revenue—	
Per kilowatt (system maximum)—	£
North Island system	6·41*
South Island system	7·01*
Per unit generated—	d.
North Island system	0·294
South Island system	0·368
Per unit distributed—	
North Island system	0·325
South Island system	0·392
Per unit sold—	
North Island system	0·330
South Island system	0·400
Working-costs—	
Per kilowatt (system maximum)—	£
North Island system	1·086
South Island system	1·080
Per unit generated—	d.
North Island system	0·050
South Island system	0·057
Per unit distributed—	
North Island system	0·055
South Island system	0·060
Per unit sold—	
North Island system	0·056
South Island system	0·061
Capital Charges—	
Per kilowatt (system maximum)—	£
North Island system	5·42
South Island system	5·42
Per unit generated—	d.
North Island system	0·250
South Island system	0·284
Per unit distributed—	
North Island system	0·275
South Island system	0·303
Per unit sold—	
North Island system	0·280
South Island system	0·309
Total Costs—	
Per kilowatt (system maximum)—	£
North Island system	6·51
South Island system	6·50
Per unit generated—	d.
North Island system	0·300
South Island system	0·341
Per unit distributed—	
North Island system	0·330
South Island system	0·363
Per unit sold—	
North Island system	0·336
South Island system	0·370

* Based on gross revenue. Corresponding figures in Table XII—*i.e.*, £6·34 and £6·95 respectively—are based on revenue received from sale of electricity only.

Table II.—Analysis of Capital Outlay as at 31st March, 1935.

North Island System.		South Island System.		Combined Totals.
	£		£	£
Headworks and power-stations—		Headworks and power-stations—		
Land, fencing, and roading—		Land, fencing, and roading—		
Arapuni	110,233	Coleridge	21,525	
Horahora	3,208	Waitaki	39,794	
Mangahao	83,303			
Waikaremoana	67,502			
				325,565
Headworks—		Headworks—		
Arapuni	1,284,926	Coleridge	520,032	
Horahora	151,423	Waitaki	1,027,788	
Mangahao	829,283			
Waikaremoana	146,862			
				3,960,314
Generating-station, buildings, and village—		Generating-station, buildings, and village—		
Arapuni	269,763	Coleridge	88,212	
Horahora	60,876	Waitaki	432,973	
Mangahao	88,661			
Waikaremoana	120,072			
				1,060,557
Generating plant and machinery—		Generating plant and machinery—		
Arapuni	446,596	Coleridge	162,381	
Horahora	94,773	Waitaki	182,774	
Mangahao	207,529			
Waikaremoana	187,385			
				1,281,438
Auxiliary stations (three)—Penrose, Huntly, Grand Junction	81,775	Auxiliary station (one)—Lyttelton	89,006	
				170,781
Transmission and distribution—		Transmission and distribution—		
Primary distribution—		Primary distribution—		
11 kv. lines	40,750	11 kv. lines	..	
33 kv. lines	..	33 kv. lines	24,097	
50 kv. lines	311,516	50 kv. lines	..	
66 kv. lines	..	66 kv. lines	333,086	
110 kv. lines	1,174,636	110 kv. lines	239,950	
Secondary distribution	..	Secondary distribution	71,110	
				2,195,145
Substations—		Substations—		
11 kv. substations	10,824	11 kv. substations	..	
33 kv. substations	..	33 kv. substations	15,299	
50 kv. substations	206,167	50 kv. substations	..	
66 kv. substations	..	66 kv. substations	258,463	
110 kv. substations	694,841	110 kv. substations	139,075	
				1,324,669
General—		General—		
General offices, garages, stores, and other accommodation	122,890	General offices, garages, stores, and other accommodation	..	
Telephone services	5,665	Telephone services	19,925	
Explorations and preliminary surveys; engineering, office, and general expenses; charges and expenses of raising loans	766,610	Explorations and preliminary surveys; engineering, office, and general expenses; charges and expenses of raising loans	278,515	
Interest during construction	937,470	Interest during construction	453,866	
				2,584,941
Grand totals	8,505,539	..	4,397,871	12,903,410

Table III.—Operating or Working Costs for Year ended 31st March, 1935.

	North Island System.				South Island System.			
	Cost.	Cost per Unit.			Cost.	Cost per Unit.		
		Generated.	Distributed.	Sold.		Generated.	Distributed.	Sold.
	£	d.	d.	d.	£	d.	d.	d.
(*a*) Headworks and power stations	36,205	0·0151	0·0166	0·0168	9,926	0·0160	0·0171	0·0174
(*b*) Auxiliary stations	162	..	..	..	1,428	0·0023	0·0024	0·0025
	36,367	0·0151	0·0166	0·0168	11,354	0·0183	0·0195	0·0199
(*c*) Transmission and distribution—								
Primary distribution	27,894	0·0115	0·0127	0·0129	4,948	0·0080	0·0085	0·0087
Secondary distribution	..	..	..	..	1,550	0·0025	0·0027	0·0027
(*d*) Substations	21,989	0·0091	0·0101	0·0102	7,638	0·0123	0·0131	0·0134
(*e*) Management and general—								
General expenses	152	..	..	..	383	0·0006	0·0006	0·0006
Management	33,775	0·0140	0·0155	0·0156	9,210	0·0148	0·0158	0·0161
Total costs (*a*) to (*e*)	120,177	0·0497	0·0549	0·0555	35,083	0·0565	0·0602	0·0614
(*f*) Power purchased	..	..	..	..	..	..	..	..
(*g*) Standby provision	750	..	..	..	..	..	..	..
Total costs (*a*) to (*g*)	120,927	0·050	0·055	0·056	35,083	0·057	0·060	0·061

North Island System.		*South Island System.*	
Units generated	580,400,959	Units generated	148,928,340
Units distributed	525,409,348	Units distributed	139,484,795
Units sold	519,542,480	Units sold	136,922,841

TABLE IV.—NORTH ISLAND ELECTRIC-POWER SYSTEM.—GROSS FINANCIAL RESULTS OF DISTRIBUTION OF ENERGY FOR THE YEAR ENDED 31ST MARCH, 1935.

Distributing Authority.	Number of Consumers.	Capital Outlay.	Revenue.						Expenditure.							Balance.		
			From Sales of Electrical Energy.		Rates.	Trading Account.	Other Sources.	Total.	Paid for Electrical Energy.	Working-costs and Management.	Interest.	Depreciation.	Sinking Fund.	Other Expenditure.	Total.	Profit.		Loss.
			Retail.	Bulk (for Resale).												Appropriated to Reserves.	Unappropriated.	
		£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Public Works Department ..	257	8,505,539	36,570	668,859	..	..	7,337	712,766	..	120,927	414,042	150,538	..	..	685,507	..	..	10,428
	..	..	..	..	..	..	..	..	..	..	19,189*i*	7,951*i*	9,084*i*	1,463*i*	37,687			
Auckland Power Board	51,948	3,453,868	621,950	..	..	..	8,003	629,953	195,644	97,522	122,962	49,388	58,100	52,727	576,343	53,610	..	..
Bay of Plenty Power Board	1,563	194,800	38,694	..	..	813	804	40,311	12,434*a*	8,628	9,250	1,529	3,170	..	35,011	3,494	1,806	..
Cambridge Power Board	1,526	110,321	18,532	..	..	56	742	19,330	6,616	5,708	5,055	94	1,056	134	18,663	..	667	..
Central Hawke's Bay Power Board ..	1,633	146,676	22,588	..	..	..	255	22,843	7,283	4,134	6,212	1,058	100	2,221	21,008	30	1,805	..
Central Waikato Power Board	4,572	345,867	57,288	56	..	49	584	57,977	20,187	12,054	15,201	3,201	4,857*b*	169	55,669	600	1,708	..
Dannevirke Power Board	2,640	213,801	28,481	..	..	65	788	29,334	6,770	6,466	9,346	4,224	..	..	26,806	702	1,826	..
Franklin Power Board	3,726	291,227	44,460	..	..	1,373	3,307	49,140	17,991	8,059	12,549	360	4,754	289	44,002	4,660	478	..
Hamilton Borough Council	4,458	58,416	37,392	..	..	..	213	37,605	11,721	6,538	2,551	..	1,919	1,938	24,667	11,133	1,805	..
Hastings Borough Council	(*h*)	(*h*)	16,710	..	..	15	31	16,756	5,717	2,845	1,555	955	1,629	119	12,820	1,186	2,750	..
Havelock North Town Board	307	27,000	3,591	..	..	..	10	3,601	850	887	1,004	..	479	..	3,220	..	381	..
Hawke's Bay Power Board	6,477	347,074	48,182	21,593	..	50	701	70,526	34,636	10,465	14,464	2,407	3,000	1,784*c*	66,756	530	3,240	..
Horowhenua Power Board	4,312	224,848	43,523	..	..	19	1,281	44,823	17,410	11,100	9,135	1,443	1,165	2,042*c*	42,295	314	2,214	..
Hutt Valley Power Board	11,779	380,373	93,577	..	..	243	954	94,774	43,000	23,196	17,677	2,443	1,670	2,550*c*	90,536	2,000	2,238	..
Inglewood Borough Council	423	8,897	3,933	..	..	880	..	4,813	1,623	1,630	648	..	213	50*c*	4,164	649	..	..
Manawatu-Oroua Power Board	4,992	502,060	66,128	16,089	1,094	231	390	83,932	35,380	13,518	23,200	4,763	3,030	98	79,989	3,074	869	..
Mangaweka Town Board	113	5,552	940	..	153	196	51	1,340	348	623	91	..	22	..	1,084	..	256	..
Napier Borough Council	4,369	160,619	43,909	..	..	..	73	43,982	15,018	5,977	5,708	5,709	..	33*c*	32,445	7,353	4,184	..
New Plymouth Borough Council ..	6,360	354,340	66,663	1,641	..	657	1,740	70,701	8,400	22,372	11,524	500	1,699	4,447*cd*	48,942	10,250	11,509	..
Opunake Power Board	960	109,256	12,593	..	..	..	29	12,622	1,159	3,846	3,890	1,200	564	17*c*	10,676	768	1,178	..
Palmerston North City Council	5,855	229,978	56,949	..	..	20	52	57,021	16,089	11,735	7,807	..	284	..	35,915	17,600	3,506	..
Patea Borough Council	372	17,228	4,106	..	..	55	..	4,161	1,095	934	414	..	45	35*c*	2,523	1,600	38	..
Poverty Bay Power Board	5,035	315,907	58,157	..	..	130	504	58,791	16,428	17,105	13,133	1,300	5,185	2,007*ce*	55,158	3,399	234	..
Rotorua (Tourist Department)	2,089	76,874	19,115	..	..	..	622	19,737	5,959	4,713	3,880	1,552	1,552	..	17,656	2,081	..	..
South Taranaki Power Board	3,077	195,696	32,341	1,048	..	341	478	34,208	5,632	10,116	8,276	1,058	3,274	1,010*c*	29,366	3,376	1,466	..
Stratford Borough Council	1,075	35,460	12,836	..	..	..	..	12,836	4,590	2,745	2,136	250	480	..	10,201	2,635	..	..
Taihape Borough Council	575	10,426	5,026	..	..	130	..	5,156	199	1,663	661	508	41	73	3,145	2,011	..	..
Taranaki Power Board..	2,312	469,231	34,481	7,513	194	270	349	42,807	2,015	11,583	19,376	140	..	6,993*c*	40,107	2,322	378	..
Tararua Power Board	1,620	158,490	22,708	..	..	108	143	22,959	6,246	4,987	7,207	701	1,577	211*c*	20,929	1,419	611	..
Te Aroha Borough Council	734	16,301	7,692	..	..	..	29	7,721	2,508	3,263	426	350	95	22	6,664	317	740	..
Te Awamutu Power Board	1,869	187,168	30,163	..	..	37	234	30,434	10,048	6,275	7,407	1,285	1,368	312	26,695	395	3,344	..
Thames Valley Power Board	7,463	790,326	112,534	5,525	..	..	1,262	119,321	38,725	22,454	45,440	922	7,507*b*	267	115,315	500	3,506	..
Thames Borough Council	1,160	28,827	9,249	..	..	..	87	9,336	3,017	2,955	675	327	71	74	7,119	1,037	1,180	..
Wairarapa Power Board	4,893	352,936	50,864	..	..	491	753	52,108	11,050*f*	17,997	15,243	2,806	1,265	683*c*	49,044	1,700	1,364	..
Wairoa Power Board	365	65,774	6,697	4,906	2,700	81	290	14,674	6,364	2,433	322	482	500	..	10,101	..	4,573	..
Wairoa Borough Council	675	10,708	8,422	..	..	..	148	8,570	4,906	1,221	673	358	..	..	7,158	334	1,078	..
Waitara Borough Council	517	7,244	3,726	..	474	59	45	4,304	1,382	910	744	199	100	..	3,335	414	555	..
Waitemata Power Board	10,287	422,400	77,976	..	..	32	1,174	79,182	24,754	20,026	19,017	3,531	5,690*b*	434	73,452	332	5,398	..
Waitomo Power Board	1,309	101,554	18,301	..	..	94	76	18,471	6,434	3,762	4,647	286	855*b*	..	15,984	2,331	156	..
Wanganui-Rangitikei Power Board ..	10,478	527,027	101,246	550	..	..	2,534	104,330	34,252*g*	18,545	24,484	9,852	2,170	7,341*c*	96,644	2,753	4,933	..
Wellington City Council	36,675	1,128,701	306,062	..	..	..	7,859	313,921	83,516	99,694	22,610	20,998	4,776	4,812*d*	236,406	63,138	14,377	..
Totals	210,850	20,588,790	2,284,355	727,780	4,615	6,495	43,932	3,067,177	727,396	631,611	909,831	284,668	133,346	94,355	2,781,207	210,047	86,351	10,428

NOTES.—(*a*) Includes £3 paid to Whakatane Borough Council. (*b*) Includes portion of principal repayment. (*c*) Principal repayment. (*d*) Includes exchange. (*e*) Includes loan conversion annual premium. (*f*) Paid for electric power rebated by £4,088. (*g*) Paid for electric power rebated by £1,000. (*h*) Taken over by Hawke's Bay Power Board as from 1st October, 1934. (*i*) Half capital charges for King's Wharf Station, paid by Department.

Gross profit, £285,970; rates collected, £4,615: net profit, £281,355.

TABLE V.—SOUTH ISLAND ELECTRIC-POWER SYSTEM.—GROSS FINANCIAL RESULTS OF DISTRIBUTION OF ENERGY FOR THE YEAR ENDED 31ST MARCH, 1935.

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.	Working-costs and Management.	Interest.	Depreciation.	Sinking Fund.	Other Funds.	Other Expenditure.	Total.	Profits.		Loss.
			Retail.	Bulk (for Resale).													Appropriated to Reserves.	Unappropriated.	
		£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Public Works Department ..	97	4,397,871	47,472	178,616	..	105	1,904	228,097	..	35,083	97,792	78,552	..	..	..	211,427	16,670‡	..	..
Ashburton Power Board ..	3,827	325,274	45,272	..	..	..	887	46,159	12,604	8,672	14,968	2,444	663	4,750*	..	44,101	1,238	820	..
Banks Peninsula Power Board ..	1,004	101,872	11,219	..	3,067	55	259	14,600	3,454	3,722	4,612	122	1,728	..	507	14,145	..	455	..
Christchurch City Council ..	29,493	770,084	210,873	8,486	..	744	6,525	226,628	87,000	62,173	13,646	29,453	4,815	..	1,078†	198,165	28,463	..	..
Heathcote County Council ..	1,259	16,875	11,090	..	..	59	60	11,209	5,937	2,243	1,056	..	869	..	..	10,105	..	1,104	..
Kaiapoi Borough Council ..	474	10,615	3,104	..	..	80	..	3,184	1,240	720	408	159	135	..	45	2,707	119	358	..
Lyttelton Borough Council ..	857	11,681	6,302	..	..	67	..	6,369	2,384	1,584	245	151	175	..	..	4,539	446	1,384	..
Malvern Power Board	665	69,463	7,345	..	2,958	36	304	10,643	2,386	2,758	3,039	603	329	..	314	9,429	..	1,214	..
North Canterbury Power Board ..	1,915	147,334	21,535	3,061	..	..	563	25,159	9,744	6,412	4,666	1	2,249	849*	33	23,954	135	1,070	..
Riccarton Borough Council ..	1,458	22,343	11,059	..	..	261	..	11,320	5,339	2,451	480	694	206	..	486	9,656	470	1,194	..
Rangiora Borough Council ..	641	9,854	5,358	..	..	..	63	5,421	1,825	1,478	260	385	75	..	..	4,023	..	1,398	..
South Canterbury Power Board ..	4,038	322,256	39,362	14,914	..	336	888	55,500	26,140	6,387	13,656	3,864	3,500	..	113	53,660	..	1,840	..
Springs-Ellesmere Power Board ..	2,533	158,883	29,966	..	..	31	257	30,254	10,078	7,761	6,574	..	2,474	..	355	27,242	..	3,012	..
Sumner Borough Council ..	1,045	15,226	5,716	..	..	32	..	5,748	2,718	1,400	316	398	30	..	63	4,925	820	3	..
Timaru Borough Council ..	4,264	99,943	36,541	..	..	..	270	36,811	14,919	7,686	4,095	..	4,283	..	1,000	31,983	4,458	370	..
Waimairi County Council ..	3,411	61,263	21,483	34	73	20	140	21,750	8,901	4,008	1,723	3,933	1,380	..	..	19,945	1,805	..	..
Waitaki Power Board	3,717	174,705	30,818	..	..	349	383	31,550	10,116	7,373	7,535	2,421	1,857	276*	..	29,578	200	1,772	..
Totals	60,698	6,715,542	544,515	205,111	6,098	2,175	12,503	770,402	204,785	161,911	175,071	123,180	24,768	5,875	3,994	699,584	54,824	15,994	..
																	70,818		

* Principal repayment. † Exchange. ‡ To Sinking Fund.

	£
Gross profit	70,818
Rates collected	6,098
Net Profit	£64,720

TABLE VI.—ROUTE-MILES OF LINE OPERATED BY THE PUBLIC WORKS DEPARTMENT, AS AT 31ST MARCH, 1935.

NORTH ISLAND SYSTEM.

Voltage	110 kv.		50 kv.		11 kv.				Total Route-miles, 1,197·58
Number of Circuits	1.	2.	1.	2.	1.	2.	3.	4.	
Miles	498·84	246·13	380·57	28·68	16·02	19·95	0·72	6·67	

SOUTH ISLAND SYSTEM.

Voltage	110 kv.		66 kv.		33 kv.	11 kv.				6·6 kv.	3 kv.	Total Route-miles, 654·5
Number of Circuits	1.	2.	1.	2.	1.	1.	2.	3.	4.	1.	1.	
Miles	220·5	..	348·9	..	28·4	48·4	..	..	..	5·9	2·4	

Actual Mileages and Sizes of Overhead Conductors in use in connection with above Lines.

—	North Island System.						South Island System.					
	Copper.	A.C.S.R.	Galvanized Iron.	Copperweld.	Cadmium Copper.	Total Miles.	Copper.	Aluminium.	A.C.S.R.	Galvanized Iron.	Copperweld.	Total Miles.
1/·112..	..	..	..	..	284	284	..	..	..	..	..	..
1/·160..	..	..	205	577	..	782	10	..	..	195	18	223
1/·192..	..	..	..	..	..	..	1	..	..	..	16	17
1/0 ..	72	..	..	..	..	72	..	..	..	..	..	..
3/0	..	..	..	..	..	..	..	..	411	..	..	411
7/·064..	100	..	..	..	..	100	83	2	..	..	..	85
7/·080..	666	..	..	..	..	666	227	49	..	..	..	276
7/·104..	204	..	..	..	..	204	1	15	..	..	..	16
7/·128..	..	..	..	..	..	..	14	..	..	..	..	14
7/·135..	..	..	..	..	..	..	..	164	..	..	..	164
7/·167..	..	575	..	..	..	575	..	..	..	..	..	..
19/·052..	2	..	..	..	..	2	..	..	..	..	..	..
19/·064..	606	..	..	..	..	606	40	..	..	..	..	40
19/·072..	2	..	..	..	..	2	..	..	..	..	..	..
19/·080..	..	..	..	..	..	..	1	..	..	..	..	1
19/·092..	1,509	..	..	..	..	1,509	939	..	..	..	..	939
19/·104..	436	..	..	..	..	436	27	..	..	..	..	27
37/·072..	359	..	..	..	..	359	..	..	..	..	..	..
37/·092..	17	..	..	..	..	17	..	..	..	..	..	..
37/·102..	..	..	..	..	..	..	..	..	246	..	..	246
Totals	3,973	575	205	577	284	5,614*	1,343	230	657	195	34	2,459†

* Includes 1,066 miles of telephone line conductors.

† Includes 223 miles of telephone line conductors.

Table VII.—Route-miles of Supply Authorities' Lines connected to Government Systems as at 31st March, 1935.

Voltage	22,000.	11,000.				6,600.		3,300.		400.		Total Route-miles. (a)
Number of Circuits	1.	1.	2.	3.	4.	1.	2.	1.	2.	1.	2.	
North Island System.												
Auckland Power Board	54·01	151·15	..	..	..	188·88	..	..	..	684·34	..	1,078·38
Bay of Plenty Power Board	..	231·97	..	..	..	..	..	..	..	30·66	..	262·63
Cambridge Power Board	..	..	..	..	..	..	..	113·00	..	73·00	..	186·00
Central Hawke's Bay Power Board	..	153·50	1·50	..	..	30·00	..	4·25	..	41·00	..	230·25
Central Waikato Power Board	..	264·98	12·35	..	0·67	..	..	100·00	..	252·05	..	630·05
Dannevirke Power Board	..	24·30	3·00	1·50	..	210·30	0·50	..	..	81·50	..	321·10
Franklin Power Board	..	389·50	8·00	..	0·50	..	..	..	..	164·00	..	562·00
Hamilton Borough Council	..	6·74	..	..	..	..	..	..	..	48·40	..	55·14
Hawke's Bay Power Board	..	174·75	15·00	..	..	..	..	6·25	..	84·25	..	280·25
Horowhenua Power Board	..	169·49	5·80	0·82	..	..	..	..	..	257·12	..	433·23
Hutt Valley Power Board	..	6·41	21·83	..	..	17·03	67·41	..	..	182·06	1·56	296·30
Manawatu-Oroua Power Board	..	260·15	33·00	..	1·50	..	..	164·88	..	150·25	..	609·78
New Plymouth Borough Council	..	245·92	16·00	..	2·00	..	..	..	..	57·54	..	321·46
Poverty Bay Power Board	..	36·19	11·63	..	..	140·73	4·88	..	..	62·88	..	256·31
Rotorua (Tourist Department)	..	..	..	..	..	32·49	5·00	8·75	..	16·16	0·51	62·91
South Taranaki Power Board	..	149·82	8·88	..	..	..	..	1·37	..	146·90	..	306·97
Taranaki Power Board	..	..	..	..	..	..	..	..	..	..	..	..
Tararua Power Board	..	83·09	12·31	..	..	..	..	140·50	..	146·62	..	382·52
Te Awamutu Power Board	..	61·11	12·00	..	..	..	..	160·85	4·75	79·65	..	318·36
Thames Valley Power Board	..	499·46	84·50	..	..	..	..	38·18	..	174·57	..	796·71
Wairarapa Power Board	..	243·79	27·25	1·25	..	..	..	13·67	..	252·60	..	538·56
Wairoa Power Board	..	..	..	..	..	..	..	..	..	..	..	..
Waitemata Power Board	..	200·80	6·45	..	..	..	..	..	..	398·50	..	605·75
Waitomo Power Board	..	84·75	7·00	..	..	..	..	..	..	21·25	0·50	113·50
Wanganui-Rangitikei Power Board	..	212·50	25·00	..	..	226·00	..	3·00	..	492·00	..	958·50
Totals	54·01	3,650·37	311·50	3·57	4·67	845·43	77·79	754·70	4·75	3,897·30	2·57	9,606·66(a)

Voltage	33,000.	11,000.				6,600.		3,300.		400.		230.	Underground Cable.	Total Route-miles.
Number of Circuits	1.	1.	2.	3.	4.	1.	2.	1.	2.	1.	•	1.		
South Island System.														
Ashburton Power Board	..	77·44	19·00	0·7	0·62	704·41	2·1	..	..	79·93	..	..	1·00	885·20
Banks Peninsula Power Board	22·0	25·30	..	..	..	58·85	4·0	38·88	..	56·21	..	..	..	205·22
Christchurch City Council	..	14·60	..	..	..	..	..	6·44	..	251·79	..	..	64·57	337·40
Heathcote County Council	..	7·63	..	..	..	..	..	1·62	..	21·25	..	..	0·75	31·25
Kaiapoi Borough Council	..	..	..	..	..	..	..	1·06	..	5·50	..	7·88	..	14·44
Lyttelton Borough Council	..	1·80	..	..	..	..	..	..	..	8·28	..	..	0·22	10·31
Malvern Power Board	..	..	..	..	..	171·60	..	..	..	12·00	..	..	0·51	184·10
North Canterbury Power Board	..	217·53	14·16	..	..	42·76	..	25·60	..	22·05	..	52·82	0·26	375·18
Rangiora Borough Council	..	..	..	..	..	..	..	2·21	0·57	7·03	0·1	3·35	0·09	13·36
Riccarton Borough Council	..	..	..	..	..	..	..	..	2·50	15·75	..	..	..	18·25
South Canterbury Power Board	..	29·88	83·50	..	..	531·86	3·5	..	..	94·56	0·5	..	1·64	745·44
Springs-Ellesmere Power Board	..	28·80	6·50	..	..	39·82	..	128·98	..	113·86	..	..	0·45	318·41
Sumner Borough Council	..	1·00	..	..	..	..	..	2·50	..	6·00	..	..	..	9·50
Timaru Borough Council	..	1·19	..	..	..	..	..	4·20	3·60	47·26	..	..	2·75	59·00
Waitaki Power Board	..	113·96	0·70	..	..	179·98	..	3·56	..	96·75	..	..	0·08	395·04
Waimairi County Council	..	..	..	..	..	35·75	1·0	23·00	..	63·50	..	19·00	0·61	142·86
Totals	22·0	519·12	123·86	0·7	0·62	1,765·03	10·6	238·05	6·67	904·72	0·6	83·05	72·93	3,747·96

Grand total, 13,355 miles.

(a) Includes underground cables.

Table VIII.—Electric-power Districts of New Zealand as constituted at 31st March, 1935.

Name of Board.	Proclamation affecting Constitution gazetted.	Members on Board.	Approximate Area.		Population.		Value of Rateable Property.			Valuation Basis used for Rating Purposes.	Amount of Loan authorized.	Voting for Loan Poll.		Number of Ratepayers.
							Used as Rating Basis.	Unimproved.						
			District.	Outer Area.	District.	Outer Area.	District.	District.	Outer Area.			For.	Against.	
		Number.	Sq. Miles.	Sq. Miles.	Number.	Number.	£	£	£		£	Number.	Number.	
1. Ashburton	17/11/21	12	1,193	1,271	18,200	550	11,500,000	8,314,594	700,000	Capital	411,150	2,999	706	4,175
2. Auckland	1/4/22, 7/9/22, 21/8/24, 15/7/25, 12/11/25, 29/7/26	12	325	..	225,000	..	78,840,179	50,491,865	..	Capital	2,542,500	11,004	1,367	35,000
3. Banks Peninsula	8/1/20, 24/11/21	7	387	..	4,050	..	3,757,075	3,545,448	..	Capital	114,680	658	113	1,082
4. Bay of Plenty	20/8/25	8	460	2,615	8,750	3,100	1,769,657	1,769,657	450,000	Unimproved ..	206,000	654	153	1,460
5. Buller(1)	11/5/22	5	1,987	..	9,197	..	696,374	696,374	..	Unimproved ..	Poll not yet taken.			
6. Cambridge	8/1/20, 6/9/23	8	137	..	6,000	..	2,559,567	1,550,262	..	Capital	122,835	749	123	1,600
7. Central Hawke's Bay ..	19/10/22, 7/4/27, 28/8/30	9	1,300	..	12,000	..	6,839,951	6,839,951	..	Unimproved ..	150,000	543	41	2,600
8. Central Waikato	8/7/20, 7/9/22, 6/3/24, 7/8/24, 8/1/25, 3/12/25, 3/9/27, 27/3/30	10	985	..	19,010	..	8,824,339	4,663,847	..	Capital	369,000	1,609	147	4,460
9. Dannevirke	11/8/21	10	578	118	12,188	426	3,582,183	3,582,183	466,663	Unimproved ..	224,000	1,584	330	4,452
10. Franklin	2/10/24, 28/7/27, 31/10/29	9	628	58	16,695	410	7,761,397	4,926,883	..	Capital	329,820	2,471	478	4,342
11. Golden Bay	18/6/25	5	51	..	1,200	..	465,514	248,871	..	Capital	28,000	393	98	391
12. Grey	26/10/22	9	640	810	13,250	1,750	2,453,941	645,047	117,700	Capital	248,000	2,073	665	3,170
13. Hawke's Bay	19/6/24, 3/2/27, 7/4/27, 28/8/30	11(3)	1,682	2	48,223	1,207	19,093,577	9,718,888	124,599	Capital	429,000	681	68	9,994
14. Horowhenua	1/12/21	9	600	..	17,600	..	6,898,987	3,403,255	..	Capital	60,000	973	26	3,780(4)
15. Hutt Valley	6/7/22, 11/12/24	11	530	..	45,500	..	4,637,580	4,637,580	..	Unimproved ..	390,000	2,333	343	13,320

(For notes see p. 86.)

TABLE VIII.—ELECTRIC-POWER DISTRICTS OF NEW ZEALAND AS CONSTITUTED AT 31ST MARCH, 1935—*continued.*

Name of Board.	Proclamation affecting Constitution gazetted.	Members on Board.	Approximate Area.		Population		Value of Rateable Property.			Valuation Basis used for Rating Purposes.	Amount of Loan authorized.	Voting for Loan Poll.		Number of Ratepayers.
							Used as Rating Basis.	Unimproved.						
			District.	Outer Area.	District.	Outer Area.	District.	District.	Outer Area.			For.	Against.	
		Number.	Sq. Miles.	Sq. Miles.	Number.	Number.	£	£	£		£	Number.	Number.	
16. Lake Wakatipu(1)	1/2/34	7	73	3,800	1,700	1,200	..	171,920	321,690	..	..	Poll not	yet taken.	474
17. Malvern	28/6/23 17/3/30	6	308	1,773	3,550	1,500	2,808,495	2,090,282	..	Capital	65,000	508	33	1,025
18. Manawatu-Oroua	1/12/21 20/6/29 1/11/34	12	1,301	..	40,000	..	12,918,565	12,918,565	..	Unimproved ..	550,000	1,144	96	9,100
19. Marlborough	25/10/23	8	3,218	..	14,530	..	7,449,979	4,258,916	..	Capital	327,500	1,334	300	3,758
20. North Auckland(1) ..	29/3/23 5/12/29 5/3/31 13/12/34	12	2,218	5	22,619	7,750	3,660,515	3,660,515	846,127	Unimproved ..	See note (5)	below.	..	5,974
21. North Canterbury	1/2/34 11/1/34	10	1,628	2,948	11,734	7,551	9,190,828	7,619,765	4,388,264	Capital	210,700	653	150	2,899
22. Opunake	18/8/21 19/3/25 20/8/25	7	230	10	5,020	70	2,191,404	1,162,972	..	Capital	95,000	504	107	969
23. Otago Central	26/10/22 4/12/24 19/7/28	9	306	2,378	3,585	1,585	742,782	296,380	727,447	Capital	87,000	430	31	858
24. Otago	18/10/23 23/12/26 1/11/28 26/4/29	9	1,391	890	17,931	6,251	4,797,711	3,061,588	1,634,860	Capital	310,500	1,358	206	5,535
25. Poverty Bay	20/12/23	11	1,747	1,344	24,440	8,610	14,461,734	6,140,499	3,110,233	Capital	379,750	2,319	530	8,173
26. Reefton(1)	30/6/21	5	24	..	1,639	..	178,055	38,054	..	Capital	..	Poll not	yet taken.	..
27. South Canterbury	26/10/22 8/3/28 13/12/28	12	1,673	3,579	35,618	6,980	15,096,516	12,946,839	2,640,530	Capital	380,220	1,919	587	6,410
28. South Taranaki	30/4/25 5/2/31	10	434	46	20,000	1,500	9,059,095	5,296,444	79,442	Capital	227,500	1,237	300	3,847
29. Southland	19/11/19	12	7,918	3,035	68,500	30	11,876,171	11,876,171	110,000	Unimproved ..	1,650,000	6,516	415	20,000
30. Springs-Ellesmere	8/7/20 29/3/23 23/8/23 17/3/30 5/2/31 6/8/31	5	524	..	12,330	..	7,856,719	5,678,061	32,000	Capital	166,520	1,352	105	3,133

(For notes see p. 86.)

TABLE VIII.—ELECTRIC-POWER DISTRICTS OF NEW ZEALAND AS CONSTITUTED AT 31ST MARCH, 1935—*continued.*

Name of Board.	Proclamation affecting Constitution gazetted.	Members on Board.	Approximate Area.		Population.		Value of Rateable Property.			Valuation Basis used for Rating Purposes.	Amount of Loan authorized.	Voting for Loan Poll.		Number of Rate-payers.
							Used as Rating Basis.	Unimproved.						
			District.	Outer Area.	District.	Outer Area.	District.	District.	Outer Area.			For.	Against.	
		Number.	Sq. Miles.	Sq. Miles.	Number.	Number.	£	£	£		£	Number.	Number.	
31. Taranaki	19/5/22, 6/5/26, 20/5/26, 5/2/31, 2/11/33	8	355	1,333	13,985	8,015	6,141,672	2,865,396	3,109,336	Capital	446,000	1,134	263	2,150
32. Tararua	23/3/22	10	700	524	8,115	1,805	2,815,000	2,815,000	1,262,581	Unimproved ..	200,000	714	83	3,600
33. Tauranga	14/6/23, 16/7/31, 1/6/33	7	646	3	8,940	4,030	1,004,372	1,004,372	517,107	Unimproved ..	144,500	1,192	417	3,120
34. Te Awamutu	8/1/20, 27/11/24	8	270	..	7,750	..	2,353,948	2,353,948	..	Unimproved ..	178,000	757	146	1,775
35. Teviot	22/7/20, 6/11/24	7	102	..	1,800	..	176,839	255,661	..	Unimproved ..	55,500	280	32	391
36. Thames Valley	8/1/20, 6/9/23, 22/12/24, 1/6/33	12	2,295	6	39,580	3,100	14,103,362	6,593,780	43,952	Capital	850,000	3,210	988	12,905
37. Waimea	2/5/29	7	434	1,126	10,000	14,000	1,350,000	..	..	Capital	84,500	1,708	349	841
38. Wairarapa	25/3/20, 20/5/26, 22/7/26, 4/11/26, 3/2/27, 17/10/29	9	606	1,390	19,650	4,350	9,862,376	5,595,921	2,753,453	Capital	330,600	2,295	312	5,445
39. Wairere	18/1/23, 4/11/26, 21/3/29, 24/9/31	7	382	25	2,500	200	696,621	696,621	163,379	Unimproved ..	45,800	94	8	755
40. Wairoa	29/7/20	10	1,354	..	5,520	..	3,949,998	1,751,503	..	Capital	100,000	504	31	1,461
41. Waitaki	9/8/23, 5/4/28	9	520	1,853	17,000	2,500	6,194,010	4,406,970	239,322	Capital	178,650	1,286	124	3,957
42. Waitemata	18/10/23, 27/11/24, 26/8/26, 7/3/29, 24/1/35	12	1,106	..	45,550	..	13,906,901	5,928,943	..	Capital	380,000	6,676	1,834	16,206
43. Waitomo	6/3/24	7	160	1,100	6,670	2,000	801,312	801,312	..	Unimproved ..	123,400(5)	557(5)	90(5)	1,634
44. Wanganui-Rangitikei ..	1/12/21, 23/12/26, 20/6/29, 6/11/34	12	1,648	972	52,000	3,000	22,099,617	6,568,540	1,408,210	Capital	375,000	1,315	214	10,350
45. Westland(2)	28/10/20	9	900	..	3,462	..	401,319	220,810	..	..	..	..	..	683
Totals, 1934–35 ..	..	404	45,954	33,014	982,581	93,470	347,826,237	224,110,453	25,246,895	..	13,766,625	69,720	12,409	227,254
Totals, 1933–34 ..	..	410	45,325	33,069	970,543	86,394	351,096,657	227,332,739	27,288,796	..	13,558,575	68,960	12,387	229,005

(1) Not yet actively functioning. (2) License delegated to Westland Power, Ltd. (3) To be reduced to nine members after 1935 elections. (4) 1931–32 figures. Later return not furnished. (5) Loans authorized since 31st March, 1935:—
North Auckland Power Board, £313,000; date of poll, 8/5/35; voting—for, 1,793; against, 499; Waitomo Power Board, £20,000; date of poll, 10/7/35; voting—for, 225; against, 19.

TABLE IX.—ELECTRIC-SUPPLY STATISTICS FOR YEAR ENDED 31ST MARCH, 1935.

G.N.=Government supply, North Island system. G.S.=Government supply, South Island system. I.=Independent (own generating-plant). B.=Bulk supply from another authority.

Supply Authority.	Source of Supply.	Supply commenced.	Population included in Area of Supply.	Number of Consumers.	Installed Capacity. Main Plant.		Installed Capacity. Standby Plant.		Maximum Load.	Connected Load. Including Bulk Supply.	Connected Load. Excluding Bulk Supply.	Demand Factor.	Units. Generated.	Purchased.	Total generated and purchased.	Sold. Including Bulk Supply for Resale.	Sold. Retail to Consumers.	Non-productive. *b*	Percentage Non-productive.	Annual Load Factor.	Average Units sold (excluding Sales in Bulk) per Consumer.	Average Units sold (excluding Sales in Bulk) per Capita of Population.	System of Supply.	Supply Voltage.	Route-miles of Lines.	Static Head.
PUBLIC WORKS DEPARTMENT.			No.	No.	Kw.	Kv.a.	Kw.	Kv.a.	Kw.	Kw.	Kw.	Per Cent.	No.	No.	No.	No.	No.	No.	Per Cent.	Per Cent.	No.	No.			Miles.	Ft.
1. Arapuni-Mangahao-Waikaremoana	I.	1921	..	257	122,600*	148,810	3,750‡ 1,500†	4,689 1,875	111290	766,198	18,902	14·52	580,338,247	62,712	580,400,959	519,542,480	31,525,479	60,858,479	10·49	59·50	..	..	A.C.	400/230	1,197	A=175;[7] H=27; M=896; W=676 [18]
2. Coleridge-Waitaki	I.	1915	..	97	64,500*	73,972	5,760‡ 1,100‡*a*	7,200 1,100	32,540	247,311	21,746	13·16	148,928,340	..	148,928,340	136,922,841	20,570,065	12,005,499	8·06	52·30	..	..	A.C.	400/230	657	C=480; Wi=70
Totals, P.W.D.	..	..	..	354	187,100	222,782	12,110	14,864	..	..	40,648	..	729,266,587	62,712	729,329,299	656,465,321	52,095,544	72,863,978	10·00[11]	..	..	..	..	..	1,854	..
ELECTRIC-POWER BOARDS.																										
1. Ashburton	G.S.	1923	18,200	3,827	..	..	160‡	200	1,755	..	15,316	11·46	15,468	7,188,000	7,203,468	..	5,346,286	1,857,182	25·80	46·90	1,396	294	A.C.	400/230	885	..
2. Auckland	G.N.	1908	225,000	51,948	..	..	35,550† 5,610†	43,940 D.C.	34,728	..	205,996	16·85	..	161,336,960	161,336,960	..	138,607,227	22,729,733	14·08	53·00	2,300	616	A.C. D.C.	400/230 460/230	1,129	..
3. Banks Peninsula	G.S.	1921	4,050	1,004	..	..	72*[1]	90	411	..	4,383	9·39	48,185	1,909,600	1,957,785	..	1,424,875	532,910	27·22	54·30	1,420	352	A.C.	400/230	205	310
4. Bay of Plenty	G.N.	1928	8,750	1,563	..	..	..	..	1,323	..	7,150	18·50	..	9,788,806	9,788,806	..	8,567,238	1,221,568	12·48	84·50	5,480	980	A.C.	400/230	263	..
5. Buller[14]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Cambridge	G.N.	1921	6,000	1,526	..	..	..	..	797	..	3,305	24·10	..	5,053,724	5,053,724	..	4,144,050	909,674	18·00	72·40	2,715	691	A.C.	400/230	186	..
7. Central Hawke's Bay	G.N.	1925	12,000	1,533	..	..	..	..	839	..	5,020	16·70	..	4,580,486	4,580,486	..	3,992,448	588,038	12·83	62·40	2,443	333	A.C.	400/230	229	..
8. Central Waikato	G.N.	1921	19,010	4,752	..	..	..	..	2,220	..	16,249	13·66	..	14,537,845	14,537,845	12,040,197	12,016,197	2,497,648	17·18	74·75	2,535	633	A.C.	400/230	630	..
9. Dannevirke	G.N.	1925	12,614	2,640	..	..	..	..	809	..	7,619	10·61	..	4,446,230	4,446,230	..	4,026,926	419,304	9·43	62·75	1,525	319	A.C.	400/230	324	..
10. Franklin	G.N.	1925	17,105	3,726	..	..	187§	220	2,214	..	12,038	18·40	..	13,295,547	13,295,547	..	11,362,664	1,932,883	14·54	68·50	3,050	664	A.C.	400/230	561	..
11. Golden Bay	I.	1929	1,200	371	175*	250	..	..	200	..	949	21·10	715,240	1,935	717,175	..	574,833	142,342	19·85	41·00	1,550	479	A.C.	400/230	60	330
12. Grey	I.	1926	13,420	3,209	3,060*	3,600	..	..	1,638	..	10,039	16·30	8,034,010	..	8,034,010	..	6,309,091	1,724,919	21·50	56·00	1,965	470	A.C.	400/230	172	42
13. Hawke's Bay	G.N.	1927	16,810	6,477	..	..	..	..	4,176	37,790	18,246	11·06	..	23,526,532	23,526,532	21,699,246	10,644,595	1,827,286	7·76	64·30	1,644	633	A.C.	400/230	341	..
14. Horowhenua	G.N.	1924	17,150	4,312	..	..	..	..	2,035	..	13,778	14·77	..	10,419,190	10,419,190	..	9,182,842	1,236,348	11·86	58·50	2,130	535	A.C.	400/230	323	..
15. Hutt Valley	G.N.	1925	45,500	11,779	..	..	..	..	4,566	..	44,985	10·15	..	22,367,500	22,367,500	..	19,276,000	3,091,500	13·82	55·80	1,637	423	A.C.	400/230	296	..
16. Lake Wakatipu[14]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17. Malvern	G.S.	1925	5,050	665	..	..	..	..	180	..	2,682	6·71	..	873,020	873,020	..	602,190	270,830	31·00	55·40	905	119	A.C.	400/230	184	..
18. Manawatu-Oroua	G.N.	1924	39,011	4,992	..	..	..	..	4,200	40,384	19,735	10·40	..	28,043,740	28,043,740	25,390,195	12,517,595	2,653,545	9·50	76·25	2,510	321	A.C.	400/230	610	..
19. Marlborough	I.	1927	14,530	2,772	1,000*	1,250	456‡	570	960	..	9,763	9·83	5,627,530	..	5,627,530	..	4,366,099	1,261,431	22·40	67·00	1,575	301	A.C.	400/230	278	100
20. North Auckland[14]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21. North Canterbury	G.S.	1928	9,064	1,915	..	..	..	..	1,208	9,315	6,634	12·96	..	5,475,200	5,475,200	4,601,473	3,535,913	873,727	15·96	51·75	1,846	390	A.C.	400/230	375	..
22. Opunake	I. & B.	1924	5,090	960	315*	450	148‡	185	500	..	2,517	19·86	1,458,600	482,728	1,941,328	..	1,530,923	410,405	21·14	44·30	1,595	301	A.C.	400/230	152	47
23. Otago Central	B.	1925	3,585	944	..	..	..	..	406	..	1,879	21·60	..	2,492,360	2,492,360	..	2,123,312	369,048	14·80	70·00	2,250	593	A.C.	400/230	167	..
24. Otago	B.	1926	17,931	4,055	..	..	..	..	1,453	..	11,969	12·14	..	6,762,877	6,762,877	..	5,077,994	1,684,883	24·90	53·20	1,250	283	A.C.	400/230	608	..
25. Poverty Bay	G.N.	1912	24,440	5,035	..	..	680‡ 300‡	850 D.C.	2,088	..	18,690	11·18	49,515	10,496,400	10,545,915	..	8,956,607	1,589,308	15·06	57·70	1,777	366	A.C. D.C.	400/230 460/230	374	..
26. Reefton[14]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27. South Canterbury	G.S.	1925	24,598	4,038	..	..	29*	36	3,225	25,750	12,403	12·52	9,855	15,327,800	15,337,655	13,742,451	6,986,931	1,595,204	10·40	54·25	1,724	283	A.C.	400/230	745	66
28. South Taranaki	G.N.	1929	20,000	3,077	..	..	555* 485‡	692 607	1,637	8,316	7,869	19·70	2,400,488	4,325,342	6,725,830	5,073,702	4,703,530	1,652,128	24·60	46·90	1,530	235	A.C.	400/230	220	57
29. Southland	I.	1925	48,350	9,750	6,000*	7,050	..	..	6,500	52,477	35,727	12·40	26,505,880	4,102	26,509,982	19,640,239	13,421,863	6,869,743	25·91	46·50	1,378	278	A.C.	400/230	2,404	154
30. Springs-Ellesmere	G.S.	1922	12,330	2,533	..	..	..	..	1,264	..	9,362	13·50	..	5,959,490	5,959,490	..	4,630,682	1,332,185	22·34	53·80	1,830	376	A.C.	400/230	318	..
31. Taranaki	I.	1927	22,000	2,312	3,200*	3,600	..	..	2,232	18,662	7,989	16·32	11,937,400	240,076	12,177,476	9,374,224	5,831,614	2,803,252	23·00	62·25	2,520	265	A.C.	400/230	363	300
32. Tararua	G.N.	1925	8,115	1,620	..	..	..	..	623	..	5,756	10·82	..	3,556,433	3,556,433	..	3,083,933	472,500	13·30	65·20	1,903	380	A.C.	400/230	211	..
33. Tauranga	B.	1926	8,940	1,297	..	..	..	..	..	..	4,773	..	..	4,448,862	4,448,862	..	4,448,862[4]	..	..	..	3,425	497	A.C.	400/230 460/230	381	..
34. Te Awamutu	G.N.	1921	7,750	1,869	..	..	..	..	1,219	..	6,851	17·80	..	6,920,568	6,920,568	..	5,840,399	1,080,169	15·60	64·80	3,120	754	A.C.	400/230	318	..
35. Teviot	I.	1924	1,800	414	750*	939	..	..	790	3,197	1,318	24·70	4,241,120	..	4,241,120	4,079,015	1,586,655	162,105	3·82	61·30	3,830	880	A.C.	400/230	68	380
36. Thames Valley	G.N.	1921	35,450	7,463	..	..	..	..	4,562	29,847	25,885	15·28	..	29,477,308	29,477,308	25,929,062	23,675,912	3,548,246	12·05	73·80	3,170	668	A.C.	400/230	797	..
37. Waimea	I. & B.	1912	8,550	1,765	390*	482	110‡	137	231	..	3,052	7·57	481,955	108,975	590,930	..	470,850	120,080	20·30	29·20	267	55	A.C.	400/230	117	960/16/10
38. Wairarapa	G.N.	1923	19,500	4,893	..	..	837*	1,188	1,902	..	19,100	9·95	(1,990,134)[2]	8,759,320	10,749,454[3]	..	9,283,096	1,466,358	13·63	64·50	1,898	476	A.C.	400/230	520	429/290
39. Wairere	I.	1925	2,000	342	336*	480	..	..	375	..	1,760	21·30	1,750,950	..	1,750,950	..	1,262,165	488,785	27·90	53·25	3,693	631	A.C.	400/230	117	65
40. Wairoa	G.N.	1923	5,520	365	..	..	..	..	804	4,219	1,545	19·05	..	3,663,600	3,663,600	3,136,398	1,179,291	527,202	14·38	52·00	3,230	214	A.C.	400/230	94	..
41. Waitaki	G.S.	1926	19,500	3,717	..	..	120* 192‡	150 240	1,634	..	12,605	12·96	223,439	7,169,000	7,392,439	..	6,231,202	1,161,237	15·72	51·65	1,678	320	A.C.	400/230	395	250
42. Waitemata	G.N.	1926	45,550	10,287	..	..	..	..	3,141	..	30,380	10·35	..	16,854,120	16,854,120	..	14,706,762	2,147,358	12·74	61·20	1,430	323	A.C.	400/230	599	..
43. Waitomo	G.N.	1926	6,670	1,309	..	..	..	..	806	..	4,475	18·00	..	3,406,977	3,406,977	..	2,843,636	563,341	16·55	48·25	2,173	427	A.C.	400/230	113	..
44. Wanganui-Rangitikei	G.N.	1924	52,380	10,478	..	..	1,500†	1,875	4,352	37,068	36,780	11·75	..	23,299,263	23,299,263	18,574,825	18,340,015	4,724,438	20·27	61·10	1,650	350	A.C. D.C.	400/230 500	763	..
45. Westland[15]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals, Power Boards	..	..	884,513	187,634	15,226	18,101	46,991	50,980	..	..	666,572	..	63,499,635[2]	466,599,916	530,099,551[3]	..	402,693,303	80,538,843	15·20[11]	..	2,148	456	..	..	16,895	..

(For notes, see page 89.)

TABLE IX.—ELECTRIC-SUPPLY STATISTICS FOR YEAR ENDED 31ST MARCH, 1935—*continued.*

G.N.=Government supply, North Island system. G.S.=Government supply, South Island system. I.=Independent (own generating-plant). B=Bulk supply from another authority.

Supply Authority.	Source of Supply.	Supply commenced.	Population included in Area of Supply.	Number of Consumers.	Installed Capacity. Main Plant.		Installed Capacity. Standby Plant.		Maximum Load.	Connected Load. Including Bulk Supply.	Connected Load. Excluding Bulk Supply.	Demand Factor.	Units. Generated.	Purchased.	Total generated and purchased.	Sold. Including Bulk Supply for Resale.	Sold. Retail to Consumers.	Non-productive. *b*	Percentage Non-productive.	Annual Load Factor.	Average Units sold (excluding Sales in Bulk) per Consumer.	Average Units sold (excluding Sales in Bulk) per Capita of Population.	System of Supply.	Supply Voltage.	Route-miles of Lines.	Static Head.
OTHER LOCAL AUTHORITIES.			No.	No.	Kw.	Kv.a.	Kw.	Kv.a.	Kw.	Kw.	Kw.	Per Cent.	No.	No.	No.	No.	No.	No.	Per Cent.	Per Cent.	No.	No.			Miles.	Ft.
1. Bluff Borough Council ..	B.	1903	1,700	498	..	..	..	..	257	..	1,645	15·62	..	582,976	582,976	..	499,238	83,738	14·36	25·90	1,000	294	A.C.	400/230	10	..
2. Christchurch City Council..	G.S.	1904	95,000	29,493	..	..	400†	D.C.	16,370	129,139	114,299	12·68	..	64,562,045	64,562,045	58,437,693	52,465,138	6,124,352	9·49	45·00	1,777	552	A.C.	400/230	337	..
3. Dunedin City Council ..	I.	1907	92,000	26,784	17,400*	21,750	1,875†	2,340	16,133	90,779	78,810	17·78	69,967,173	..	69,967,173	57,885,559	51,122,682	12,081,614	17·27	49·50	1,730	556	A.C.	400/230	564	700
							860‡	D.C.															D.C.	460/230		
4. Hamilton Borough Council	G.N.	1913	15,500	4,458	..	..	..	..	1,476	..	11,661	12·66	..	5,795,880	5,795,880	..	5,215,880	580,000	10·00	44·80	1,170	336	A.C.	400/230	55	..
5. Hastings Borough Council[16]	..	1912	12,713	..	..	..	520‡	650	1,134	..	8,841	12·82	..	2,196,250	2,196,250	..	1,875,759	320,491	14·60	..	..	..	A.C.	400/230	57	..
							567‡	D.C.															D.C.	460/230		
6. Havelock N. Town Board..	I. & B.	1916	1,207	307	144*	160	..	..	116	..	836	13·88	330,800	165,201	496,001	..	456,934	39,067	7·87	48·80	1,490	378	A.C.	400/230	17	50
7. Heathcote County Council	G.S.	1914	6,000	1,259	..	..	..	..	707	..	5,640	12·54	..	2,495,180	2,495,180	..	2,177,438	317,742	12·73	40·30	1,730	363	A.C.	400/230	31	..
8. Inglewood Borough Council	B.	1905	1,300	423	..	..	..	..	142	..	1,477	9·62	..	568,340	568,340	..	523,283	45,057	7·93	45·70	1,236	403	A.C.	400/230	8	..
9. Invercargill City Council ..	B.	1914	21,000	5,639	..	..	1,525†	1,874	1,800	..	15,105	11·90	1,400	5,635,400	5,636,800	..	4,824,292	812,508	14·42	35·75	748	230	A.C.	400/230	79	..
							450†	D.C.															D.C.	500		
10. Kaiapoi Borough Council..	B.	1917	1,700	474	..	..	..	..	124	..	836	14·83	..	399,050	399,050	..	364,800	34,250	8·58	36·80	770	215	A.C.	400/230	14	..
11. Kaikoura County Council..	I.	1922	630	157	37§	47	..	..	35	..	124	28·20	47,590	..	47,590	..	38,678	8,912	18·70	15·50	246	61	A.C.	400/230	5	..
12. Kamo Town Board ..	B.	1923	600	117	..	..	..	..	48	..	292	16·44	..	51,760	51,760	..	51,760[5]	..	..	12·30	442	86	A.C.	400/230	5	..
13. Kaponga Town Board ..	I. & B.	1916	1,200	370	96*	120	..	..	210	..	731	28·70	567,330	120,290	687,620	..	528,076	159,544	23·20	37·40	1,427	440	A.C.	400/230	52	58/31
					45*	D.C.																	D.C.	230		
14. Lyttelton Borough Council	G.S.	1918	3,775	857	..	..	..	..	252	..	3,103	8·12	..	963,744	963,744	..	834,599	129,145	13·40	43·60	975	221	A.C.	400/230	10	..
15. Mangaweka Town Board ..	B.	1913	415	113	..	..	32*	40	33	..	288	11·45	..	175,170	175,170	..	136,916	38,254	21·80	60·60	1,210	330	A.C.	400/230	10	37
16. Manunui Town Board ..	B.	1929	850	164	..	..	..	..	25	..	127	19·70	..	29,747	29,747	..	26,795	2,952	9·92	13·60	163	32	A.C.	400/230	5	..
17. Murchison County Council	I.	1922	500	173	80*	100	..	..	70	..	350	20·00	214,683	..	214,683	..	155,563	59,120	27·55	35·00	900	311	A.C.	400/230	16	105
							400‡	500																		
18. Napier Borough Council ..	B.	1913	18,700	4,369	..	..	100‡	D.C.	1,575	..	9,867	15·95	..	8,693,200	8,693,200	..	8,156,278	536,922	6·17	63·00	1,868	436	A.C.	400/230	42	..
							750§	D.C.																		
19. Nelson City Council ..	I.	1923	12,000	2,933	750†	937	500†	624	860	..	8,063	10·66	2,284,350	..	2,284,350	1,831,785	1,722,810	452,565	19·80	30·40	587	144	A.C.	400/230	48	..
20. New Plymouth Borough Cl.	I.&GN	1905	21,000	6,360	3,500*	4,375	350‡	437	3,700	23,893	21,893	15·50	11,505,750	4,875,253	16,381,003	14,508,940	13,848,472	1,872,063	11·42	50·50	2,055	659	A.C.	400/230	321	240/120
																							D.C.	500		
21. Ohakune Borough Council	B. & I.	1914	1,940	470	96*	120	113‡	141	101	..	639	15·80	2,468	364,000	366,468	..	277,708	88,760	24·22	41·50	591	143	A.C.	400/230	16	42
22. Palmerston N. City Council	B.	1924	23,850	5,855	..	..	816§	1,020	2,823	..	20,649	13·68	334,474	12,872,600	13,207,074	..	12,289,973	917,101	6·94	53·40	2,100	515	A.C.	400/230	82	..
23. Patea Borough Council ..	B. & I.	1901	1,800	372	..	..	64‡	80	145	..	447	32·40	132,812	370,172	502,984	..	472,816	30,168	6·00	39·60	1,270	263	A.C.	400/230	16	78
							88*	110																		
24. Picton Borough Council ..	I.	1917	1,400	375	125‡	D.C.	..	..	73	..	562	12·99	169,830	..	169,830	..	121,672	48,158	28·35	25·60	325	87	D.C.	460/230	10	279
					16*	D.C.																				
25. Queenstown Borough Council	I.	1924	900	257	60*	75	..	..	75	..	367	20·45	210,070	..	210,070	..	118,486	91,584	43·59	32·00	461	132	A.C.	400/230	7	510
26. Raetihi Borough Council ..	I.	1917	4,500	400	280*	350	96*	120	260	2,207	1,568	11·79	836,100	..	836,100	794,295	430,295	41,805	5·00	36·70	1,076	96	A.C.	400/230	28	380
27. Rangiora Borough Council	B.	1919	2,100	641	..	..	..	..	188	..	1,845	10·20	..	666,510	666,510	..	600,029	66,481	9·97	40·50	935	286	A.C.	400/230	13	..
28. Riccarton Borough Council	G.S.	1916	5,500	1,458	..	..	..	..	622	..	5,968	10·42	..	2,744,920	2,744,920	..	2,465,599	279,321	10·17	50·40	1,690	448	A.C.	400/230	18	..
29. Ross Borough Council[6] ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30. Rotorua (Tourist Dept.) ..	G.N.	1901	5,500	2,089	..	..	200*	251	681	..	5,284	12·90	308,729	2,899,988	3,208,717	..	2,164,432	1,044,285	32·55	53·80	1,036	394	A.C.	400/230	63	14
																								200/115		
31. Stratford Borough Council	B.	1898	3,650	1,075	..	..	..	..	531	..	2,574	20·60	..	2,546,400	2,546,400	..	2,070,227	476,173	18·70	54·80	1,926	567	A.C.	400/230	17	..
32. Sumner Borough Council ..	G.S.	1918	3,750	1,045	..	..	..	..	322	..	2,301	14·00	..	1,415,985	1,415,985	..	1,313,024	102,961	7·27	50·20	1,256	350	A.C.	400/230	10	..
33. Taihape Borough Council..	I. & B.	1913	2,450	575	150*	D.C.	75§	D.C.	198	..	1,110	17·84	502,010	59,640	561,650	..	515,022	46,628	8·30	32·40	895	210	D.C.	460/230	10	30
34. Taumarunui Borough Council	I.	1924	5,500	935	425*	500	..	..	305	2,076	1,949	14·70	1,051,014	..	1,051,014	862,693	832,946	188,321	17·90	39·40	891	152	A.C.	400/230	13	25
35. Tauranga Borough Council	I.	1915	4,000	1,029	3,040*	3,500	640*	800	3,014	8,581	2,863	35·15	11,643,007	..	11,643,007	7,951,388	2,855,203	3,691,619	31·70	44·10	2,780	714	A.C.	400/230	64	110/80
36. Te Aroha Borough Council	B.	1906	2,600	734	..	..	133*	166	257	..	2,256	11·40	157,360	940,550	1,097,910	..	978,622	119,288	10·87	48·80	1,334	376	A.C.	400/230	19	600
37. Te Puke Borough Council..	B.	1921	980	303	..	..	..	..	141	..	945	14·92	..	647,323	647,323	..	590,512	56,811	8·77	52·35	1,950	603	A.C.	400/230	11	..
38. Thames Borough Council ..	B.	1914	4,700	1,160	..	..	120*	150	302	..	1,706	17·70	146,550	1,312,600	1,459,150	..	1,244,705	214,445	14·70	55·20	1,073	265	A.C.	400/230	22	130
							262‡	327																		

(For notes, see page 89.)

TABLE IX.—ELECTRIC-SUPPLY STATISTICS FOR YEAR ENDED 31ST MARCH, 1935—*continued.*

G.N.=Government supply, North Island system. G.S.=Government Supply, South Island system. I.=Independent (own generating-plant). B=Bulk supply from another authority.

Supply Authority.	Source of Supply.	Supply commenced.	Population included in Area of Supply.	Number of Consumers.	Installed Capacity. Main Plant.		Installed Capacity. Standby Plant.		Maximum Load.	Connected Load. Including Bulk Supply.	Connected Load. Excluding Bulk Supply.	Demand Factor.	Units. Generated.	Units. Purchased.	Units. Total generated and purchased.	Units. Sold. Including Bulk Supply for Resale.	Units. Sold. Retail to Consumers.	Units. Non-productive. *b*	Percentage Non-productive.	Annual Load Factor.	Average Units sold (excluding Sales in Bulk) per Consumer.	Average Units sold (excluding Sales in Bulk) per Capita of Population.	System of Supply.	Supply Voltage.	Route-miles of Lines.	Static Head.
OTHER LOCAL AUTHORITIES—*continued.*			No.	No.	Kw.	Kv.a.	Kw.	Kv.a.	Kw.	Kw.	Kw.	Per Cent.	No.	No.	No.	No.	No.	No.	Per Cent.	Per Cent.	No.	No.			Miles.	Ft.
39. Timaru Borough Council ..	B.	1908	18,000	4,264	..	..	..	..	1,890	..	13,347	14·15	..	6,775,520	6,775,520	..	5,580,060	1,195,460	17·64	41·00	1,310	310	A.C.	400/230	59	..
40. Uawa County Council ..	I.	1925	400	98	30‡	D.C.	..	..	14	..	74	18·92	23,050	..	23,050	..	15,618	7,432	32·20	18·80	160	39	D.C.	230	3	..
41. Waimairi County Council	B.	1916	13,000	3,411	..	..	..	..	1,290	..	14,840	8·69	..	6,086,012	6,086,012	5,477,411	5,474,081	608,601	10·00	53·80	1,605	421	A.C	400/230	143	..
42. Wairoa Borough Council ..	B.	1913	2,450	675	..	..	..	..	474	..	2,674	17·71	..	1,957,107	1,957,107	..	1,843,394	113,713	5·81	47·20	2,730	752	A.C.	400/230	14	..
43. Waitara Borough Council..	B.	1905	1,875	517	..	..	..	..	129	..	891	14·48	..	484,270	484,270	..	434,647	49,623	10·25	42·80	840	232	A.C.	400/230	12	..
44. Wellington City Council ..	G.N.	1907	125,000	36,675	..	..	9,000† 1,000†	11,250 D.C.	21,216	..	132,782	16·00	48,422	64,360,200	64,408,622	..	56,304,222	8,104,400	12·58	34·60	1,260	450	A.C. D.C.	400/230 500	355	..
45. Westport Borough Council	I.	1925	4,200	863	200*	250	210§	265	268	..	1,947	13·76	767,575	..	767,575	..	647,838	119,737	15·59	32·70	750	154	A.C.	400/230	19	430
46. Whakatane Borough Council	I.	1922	1,850	483	390*	538	..	..	280	..	1,808	15·50	1,163,130	2,870	1,166,000	..	1,034,052	131,948	11·31	47·50	2,140	559	A.C.	400/230	65	258
47. Whangarei Borough Council	B.	1915	8,000	2,162	..	..	..	..	720	6,605	6,313	10·90	..	2,440,600	2,440,600	2,087,286	2,035,526	353,314	14·47	38·70	942	254	A.C.	400/230	35	..
Totals, other Local Authorities	..	..	557,685	152,869	26,864	32,822	21,146	21,145	..	..	511,697	..	102,415,677	206,256,753	308,672,430	..	247,736,100	41,886,433	13·57[11]	..	1,620	444	..	..	2,810	..
COMPANIES, ETC.																										
1. Alderton Utility Co. ..	I.	1930	250	51	88*	110	..	..	78	..	226	34·50	295,000	..	295,000	..	255,000	40,000	13·55	43·20	5,000	1,020	A.C.	230	10	123
2. Kanieri Electric, Ltd. ..	I.	1921	2,500	707	1,500*	1,806	150‡	167	810	..	1,791	45·20	5,578,500	..	5,578,500	..	4,303,354	1,275,146	22·86	78·60	717[7]	203[7]	A.C.	400/230	25	250/110
3. Reefton Electric Light and Power Co., Ltd.	I.	1887	1,200	361	75*	D.C.	80‡	D.C.	90	..	167	53·90	179,940	..	179,940	..	131,955	47,985	26·65	22·80	366	110	D.C.	230	8	27
4. P. Spender (Rawene) ..	I.	1926	300	53	25‡	D.C.	..	..	12	..	62	19·35	14,381	..	14,381	..	14,181	200	1·39	13·68	268	48	D.C.	230	1	..
5. Wilson's (N.Z.) Portland Cement, Ltd.	I.	1916	500	167	2,000*	2,500	3,190†	3,750	2,200	12,686	6,081	17·35	10,742,450	..	10,742,450	9,580,635	7,140,035	1,161,815	10·80	55·75	858[8]	286[8]	A.C.	400/230	44	130
6. Westland Power, Ltd. ..	I.	1928	4,200	138	876*	1,008	200‡	250	895	..	1,570	57·00	2,080,820	..	2,080,820	..	1,747,892	332,928	16·00	26·50	..	..	A.C.	400/230	60	260/105
Totals, Companies, &c...	..	..	8,950	1,477	4,564	5,424	3,620	4,167	..	..	9,897	..	18,891,091	..	18,891,091	..	13,592,417	2,858,074	15·13	..	880[9]	145[9]	..	..	148	..
Totals, all Supply Authorities	..	..	1,451,148	342,334	233,754	279,129	83,867	91,156	..	..	1,228,814	..	914,072,990[2]	672,919,381	..	..	716,117,364	198,147,328	21·70[12]	..	1,920[10]	453[10]	..	..	21,707	..

NOTES.—* Water. † Steam. ‡ Oil. § Gas. [1] Limited to 30 kw. by Pelton wheel capacity. [2] Units generated by Wairarapa Power Board's Kourarau stations are included in total units generated by Arapuni-Mangahao-Waikaremoana system, and are therefore not added to totals indicated. [3] Units generated by Kourarau subtracted from this total. [4] Tauranga Power Board pays on units measured at consumers' meters. Losses included in Tauranga Borough Council's system losses. [5] Kamo Town Board pays on units measured at consumers' meters. Losses included in Whangarei Borough Council's system losses. [6] No returns received. [7] Excludes units used for dredging. [8] Excludes units supplied to Whangarei and Cement Works. [9] After deducting from units sold retail 12,293,171 units used for mining and cement manufacture. [10] After deducting from units sold retail 58,693,509 units used for traction, mining, &c.; without this deduction the appropriate figures are 2,090 and 493 per consumer and per capita respectively. [11] Percentage of total units generated and purchased. [12] Percentage of total units generated. [13] A=Arapuni; H=Horahora; M=Mangahao; W=Waikaremoana; C=Coleridge; Wi=Waitaki. [14] Not yet actively functioning. [15] License delegated to Westland Power, Ltd. [16] Results of operation for six months only (1st April to 30th September, 1934). Hastings Borough electricity department taken over by the Hawke's Bay Power Board on 1st October, 1934. *a* Christchurch Tramway Board's standby plant available when required. *b* Includes units lost, units used free of charge, units used for station auxilaries, &c.

Table X.—Financial Statistics for Year ended 31st March, 1935.

(For appropriations and accumulated funds see Table XI.)

Supply Authority.	Capital Cost of Electric-supply System.	Revenue.					Working-expenses.				Capital Charges.						Total Annual Costs.	Net Results.		Credit Balance, Revenue Account.	Debit Balance, Revenue Account.	Amount collected by Rates to make up Deficiencies.
		Sale of Electricity.		Sales of Materials, &c. (Profit).	Other Sources (not including Rates).	Total.	Operating-costs. (*a*)	Miscellaneous. (*b*)	Total.	Per Cent. of Revenue.	Interest.	Sinking Fund.	Depreciation.	Other Capital Charges.	Total.	Per Cent. of Capital Cost.		Profit.	Loss.			
		Retail.	Bulk for Resale.																			
PUBLIC WORKS DEPARTMENT.	£	£	£	£	£	£	£	£	£	%	£	£	£	£	£	%	£	£	£	£	£	£
1. Arapuni-Mangahao-Waikaremoana	8,505,539	36,570	668,859	..	7,337	712,766	92,589	28,338	120,927	16·97	414,042	..	150,538	37,687(11)	602,267	7·08	723,194	..	10,428	..	586,849	..
2. Coleridge-Waitaki	4,397,871	47,472	178,616	105	1,904	228,097	25,490	9,593	35,083	15·38	97,792	..	78,552	..	176,344	4·01	211,427	16,670	..	..	..	..
Totals, P.W.D.	12,903,410	84,042	847,475	105	9,241	940,863	118,079	37,931	156,010	16·58	511,834	..	229,090	37,687	778,611	6·03	934,621	16,670	10,428	..	586,849	..
ELECTRIC-POWER BOARDS.																						
1. Ashburton	325,274	45,272	..	..	887	46,159	18,018	3,258	21,276	46·10	14,968	663	2,444	4,750(3)	22,825	7·02	44,101	2,058	..	..	12,843	..
2. Auckland	3,453,868	621,950	..	..	8,003	629,953	259,749	86,144(9)	345,893(9)	54·90	122,962(9)	58,100(9)	49,388(9)	5,709(5)	236,159(9)	6·84	582,052(9)	47,901	..	..	..	..
3. Banks Peninsula	101,872	11,219	..	55	259	11,533	5,959	1,724	7,683	66·60	4,612	1,728	122	..	6,462	6·35	14,145	..	2,612	5,504	..	3,067
4. Bay of Plenty	194,800(1)	38,686	..	813	804	40,303	17,199	3,863	21,062	52·25	9,250	3,170	1,529	..	13,949	7·16	35,011	5,292	..	..	14,873	..
5. Buller (13)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Cambridge	110,321	18,533	..	56	742	19,331	10,173	2,285	12,458	64·50	4,961	1,056	94	94(4)	6,205	5·62	18,663	668	..	5,445	..	..
7. Central Hawke's Bay	146,676	22,588	..	..	255	22,843	9,307	2,110	11,417	50·06	6,212	100	1,058	2,221(3)	9,591	6·53	21,008	1,835	..	3,330	..	..
8. Central Waikato	345,867(1)	57,288	56	49	584	57,977	26,560	5,850	32,410	55·90	15,201	3,804	3,201	1,053(3)	23,259	6·72	55,669	2,308	..	9,827	..	..
9. Dannevirke	213,801	28,481	..	65	788	29,334	10,199	3,037	13,236	45·10	9,346	..	4,224	..	13,570	6·35	26,806	2,528	..	5,598	..	..
10. Franklin	291,227(1)	44,460	..	1,373	3,307	49,140	21,583	4,756	26,339	53·50	12,549	4,754	360	..	17,663	6·06	44,002	5,138	..	4,000	..	..
11. Golden Bay	27,740	4,038	..	23	20	4,081	694	933	1,627	39·90	1,116	126	503	500(3)	2,245	8·10	3,872	209	..	823	..	..
12. Grey	287,252	32,500	..	129	963	33,592	3,332	8,261	11,593	34·50	14,169	4,069	..	968(3)	19,206	6·69	30,799	2,793	..	..	3,659	..
13. Hawke's Bay	347,074	48,182	21,593	50	701	70,526	38,867	6,234	45,101	64·00	14,464	3,000	2,407	1,784(3)	21,655	6·24	66,756	3,770	..	7,634	..	..
14. Horowhenua	224,848	43,523	..	19	1,281	44,823	24,272	4,238	28,510	63·60	9,135	1,165	1,443	2,042(3)	13,785	6·13	42,295	2,528	..	9,626	..	..
15. Hutt Valley	380,373	93,577	..	243	954	94,774	55,266	10,930	66,196	69·80	17,677	1,670	2,443	2,550(3)	24,340	6·40	90,536	4,238	..	2,861	..	..
16. Lake Wakatipu (13)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17. Malvern	69,463(1)	7,345	..	36	304	7,685	4,083	1,375	5,458	71·10	3,039	329	603	..	3,971	5·72	9,429	..	1,744	..	3,115	2,958
18. Manawatu-Oroua	502,060(1)	66,128	16,089	231	390	82,838	44,353	4,545	48,898	59·00	23,200	3,030	4,763	98(5)	31,091	6·20	79,989	2,849	..	..	9,092	1,094
19. Marlborough	327,592(1)	30,817	..	9	536	31,362	6,535	2,479	9,014	28·75	14,589	3,330	1,665	..	19,584	5·98	28,598	2,764	..	..	8,726	107
20. North Auckland (13)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21. North Canterbury	147,334	21,535	3,061	..	563	25,159	12,628	3,561	16,189	64·30	4,666	2,249	1	849(3)	7,765	5·27	23,954	1,205	..	4,514	..	..
22. Opunake	109,256	12,593	..	..	29	12,622	3,557	1,448	5,005	39·60	3,890	564	1,200	17(3)	5,671	5·19	10,676	1,946	..	5,705	..	..
23. Otago Central	87,773	10,827	..	121	164	11,112	1,965	1,958	3,923	35·30	3,930	413	534	1,517(3)	6,394	7·29	10,317	795	..	..	2,885	..
24. Otago	299,816	41,133	..	14	..	41,147	16,300	3,416	19,716	47·90	13,360	..	..	669(3)	14,029	4·68	33,745	7,402	..	..	4,610	6,331
25. Poverty Bay	315,907	58,157	..	130	504	58,791	27,564	5,969	33,533	57·00	13,133	5,185	1,300	2,007(3)(5)	21,625	6·85	55,158	3,633	..	9,475	..	..
26. Reefton (13)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27. South Canterbury	322,256	39,362	14,914	336	888	55,500	28,877	3,763	32,640	58·80	13,656	3,500	3,864	..	21,020	6·52	53,660	1,840	..	2,997	..	..
28. South Taranaki	195,696	32,341	1,048	341	478	34,208	10,403	5,345	15,748	46·00	8,276	3,274	1,058	1,010(3)	13,618	6·97	29,366	4,842	..	3,856	..	..
29. Southland	1,574,157	110,836	20,436	111	15,335	146,718	29,715	8,615	38,330	26·10	90,673	24,000	7,494	1,167(3)	123,334	7·83	161,664	..	14,946	7,278	..	37,610
30. Springs-Ellesmere	158,883(1)	29,966	..	31	257	30,254	13,734	4,105	17,839	59·00	6,574	2,474	..	355(3)(5)	9,403	5·92	27,242	3,012	..	9,461	..	..
31. Taranaki	469,231	34,481	7,513	270	349	42,613	9,755	3,843	13,598	31·90	19,376	..	140	6,993(3)	26,509	5·65	40,107	2,506	..	935	..	194
32. Tararua	158,490	22,708	..	108	143	22,959	9,039	2,194	11,233	49·00	7,207	1,577	701	211(3)	9,696	6·12	20,929	2,030	..	..	..	..
33. Tauranga	128,466	24,052	..	20	960	25,032	12,147	2,560	14,707	58·70	5,829	60	800	2,549(3)	9,238	7·18	23,945	1,087	..	219	..	..
34. Te Awamutu	187,168	30,163	..	37	234	30,434	13,868	2,767	16,635	54·60	7,407	1,368	1,285	..	10,060	5·37	26,695	3,739	..	3,344	..	..
35. Teviot	58,029	4,985	1,172	..	102	6,259	1,023	1,014	2,037	32·50	2,483	..	463	324(3)	3,270	5·64	5,307	952	..	2,424	..	2
36. Thames Valley	790,326	112,533	5,526	..	1,262	119,321	52,979	8,467	61,446	51·45	40,408	6,906	922	5,633(3)(4)	53,869	6·81	115,315	4,006	..	354	..	..
37. Waimea(10)	76,430	10,312	..	..	501	10,813	5,678	1,773	7,451	68·80	2,985	..	..	..	2,985	3·91	10,436	377	..	..	87	..
38. Wairarapa	352,936(1)	50,864	..	491	753	52,108	17,120	11,927	29,047	55·75	15,243	1,265	2,806	683(3)	19,997	5·66	49,044	3,064	..	4,208	..	..
39. Wairere	46,768	5,078	..	6	214	5,298	1,488	1,096	2,584	48·80	2,145	531	..	..	2,676	5·72	5,260	38	..	1,369	..	..
40. Wairoa	65,774	6,697	4,906	81	290	11,974	7,344	1,453	8,797	73·50	322	500	482	..	1,304	1·98	10,101	1,873	..	..	4,402	2,700
41. Waitaki	174,705(1)	30,818	..	349	383	31,550	15,431	2,058	17,489	55·40	7,535	1,857	2,421	276(3)	12,089	6·92	29,578	1,972	..	10,006	..	..
42. Waitemata	422,400	77,976	..	32	1,174	79,182	36,100	9,114	45,214	57·10	19,017	5,471	3,521	219(3)	28,238	6·69	73,452	5,730	..	7,711	..	..
43. Waitomo	101,554(1)	18,301	..	94	76	18,471	8,542	1,654	10,196	55·10	4,647	755	286	100(3)	5,788	5·70	15,984	2,487	..	156	..	..
44. Wanganui-Rangitikei	527,027(1)	101,246	550	..	2,534	104,330	45,687	7,110	52,797	50·60	24,484	2,170	9,852	7,341(3)	43,847	8·33	96,644	7,686	..	12,128	..	..
45. Westland (14)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals, Power Boards ..	14,120,490	2,101,551	96,864	5,723	47,971	2,252,109	937,093	247,232	1,184,325	52·60	614,696	154,213	115,387	53,689	937,985	6·64	2,122,310	149,101	19,302	140,788	63,792	54,064

(For notes see p. 91.)

TABLE X.—FINANCIAL STATISTICS FOR YEAR ENDED 31ST MARCH, 1935—*continued.*

(For appropriations and accumulated funds see Table XI.)

Supply Authority.	Capital Cost of Electric-supply System.	Revenue.					Working-expenses.				Capital Charges.						Total Annual Costs.	Net Results.		Credit Balance, Revenue Account.	Debit Balance, Revenue Account.	Amount collected by Rates to make up Deficiencies.
		Sale of Electricity.		Sales of Materials, &c. (Profit).	Other Sources (not including Rates).	Total.	Operating-costs. (*a*)	Miscellaneous. (*b*)	Total.	Per Cent. of Revenue.	Interest.	Sinking Fund.	Depreciation.	Other Capital Charges.	Total.	Per Cent. of Capital Cost.		Profit.	Loss.			
		Retail.	Bulk for Resale.																			
OTHER LOCAL AUTHORITIES.	£	£	£	£	£	£	£	£	£	%	£	£	£	£	£	%	£	£	£	£	£	£
1. Bluff Borough Council	7,295	4,651	..	..	192	4,843	2,801	847	3,648	75·40	480	250	9	..	739	10·12	4,387	456	..	901	..	..
2. Christchurch City Council ..	770,084	210,873	8,486	744	6,525	226,628	135,756	13,417	149,173	65·85	13,646	4,815	29,453	1,078(4)	48,992	6·36	198,165	28,463	..	..	..	..
3. Dunedin City Council	1,594,424	215,123	11,167	..	2,280	228,570	37,813	16,265	54,078	23·65	57,989	21,160	30,902	3,545(4)	113,596	7·12	167,674	60,896	..	55,842	..	..
4. Hamilton Borough Council ..	58,416	37,392	..	..	213	37,605	16,682	1,713	18,395	48·90	2,551	1,919	..	1,802(5)	6,272	10·74	24,667	12,938	..	15,781	..	..
5. Hastings Borough Council(8) ..	..	16,710	..	15	31	16,756	7,816	746	8,562	51·10	1,555	1,629	955	119(3)	4,258	3·50	12,820	3,936	..	..	..	..
6. Havelock North Town Board ..	27,000	3,591	..	..	10	3,601	1,425	312	1,737	48·25	1,004	479	..	..	1,483	5·44	3,220	381	..	5,492	..	..
7. Heathcote County Council ..	16,875	11,090	..	59	60	11,209	7,524	656	8,180	73·00	1,056	869	..	..	1,925	11·40	10,105	1,104	..	1,299	..	..
8. Inglewood Borough Council ..	8,897	3,933	..	880	..	4,813	2,426	827	3,253	67·50	648	213	..	50(3)	911	10·23	4,164	649	..	2,159	..	..
9. Invercargill City Council ..	137,723	46,914	..	..	1,296	48,210	23,667	3,570	27,237	56·50	7,934	..	1,222	..	9,156	6·65	36,393	11,817	..	2,826	..	..
10. Kaiapoi Borough Council ..	10,615	3,104	..	80	..	3,184	1,721	284	2,005	63·00	408	135	159	..	702	6·60	2,707	477	..	1,617	..	..
11. Kaikoura County Council ..	10,180	1,575	..	64	..	1,639	1,050	340	1,390	84·80	407	146	..	..	553	5·44	1,943	..	304	..	1,232	727
12. Kamo Town Board	2,167	862	..	2	3	867	561	60	621	71·60	99	2	..	88(3)	189	8·72	810	57	..	..	..	104
13. Kaponga Town Board	17,991	4,951	..	..	73	5,024	3,220	664	3,884	77·30	613	373	..	14(3)	1,000	5·56	4,884	140	..	..	..	274
14. Lyttelton Borough Council ..	11,681	6,302	..	67	..	6,369	3,673	295	3,968	62·30	245	175	151	..	571	4·90	4,539	1,830	..	9,673	..	..
15. Mangaweka Town Board ..	5,552	940	..	196	51	1,187	636	335	971	81·90	91	22	..	..	113	2·04	1,084	103	..	5,318	..	153
16. Manunui Town Board	3,166	839	..	..	29	868	373	183	556	64·10	169	40	45	..	254	8·02	810	58	..	113	..	..
17. Murchison County Council ..	14,800	2,122	..	30	..	2,152	711	368	1,079	50·10	664	152	..	..	816	5·51	1,895	257	..	357	..	..
18. Napier Borough Council ..	160,619(1)	43,909	..	..	73	43,982	18,954	2,041	20,995	47·75	5,708	..	5,709	33(3)	11,450	7·13	32,445	11,537	..	23,461	..	..
19. Nelson City Council	116,170	24,715	1,363	198	801	27,077	12,123	2,478	14,601	54·00	3,324	1,108	3,964	814(4)	9,210	7·93	23,811	3,266	..	34,995	..	..
20. New Plymouth Borough Council ..	354,340	66,663	1,641	657	1,740	70,701	27,484	3,288	30,772	43·50	11,524	1,699	500	4,447(3)(4)	18,170	5·13	48,942	21,759	..	40,963	..	..
21. Ohakune Borough Council ..	9,015	3,346	..	..	..	3,346	995	492	1,487	44·50	693	228	380	..	1,301	14·45	2,788	558	..	..	..	45
22. Palmerston North City Council ..	229,978(1)	56,949	..	20	52	57,021	23,186	4,638	27,824	48·80	7,807	284	..	..	8,091	3·52	35,915	21,106	..	..	..	..
23. Patea Borough Council	17,228	4,106	..	55	..	4,161	1,538	491	2,029	48·80	414	45	..	35(3)	494	2·86	2,523	1,638	..	..	..	..
24. Picton Borough Council	15,878	2,862	..	..	52	2,914	1,814	237	2,051	70·30	770	100	400	..	1,270	8·00	3,321	..	407	1,565	..	866
25. Queenstown Borough Council ..	13,057	1,527	..	..	87	1,614	338	226	564	34·90	558	70	119	26(3)	773	5·92	1,337	277	..	1,596	..	..
26. Raetihi Borough Council ..	22,165	3,992	428	11	211	4,642	1,116	1,117	2,233	48·20	1,305	292	51	..	1,648	7·44	3,881	761	..	..	6,005	..
27. Rangiora Borough Council ..	9,854	5,358	..	..	63	5,421	2,556	747	3,303	61·00	260	75	385	..	720	7·31	4,023	1,398	..	3,810	..	..
28. Riccarton Borough Council ..	22,343	11,059	..	261	..	11,320	7,196	1,080	8,276	73·10	480	206	694	..	1,380	6·18	9,656	1,664	..	8,858	..	..
29. Ross Borough Council(12) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30. Rotorua (Tourist Department) ..	76,874	19,115	..	..	622	19,737	9,802	870	10,672	54·00	3,880	1,552	1,552	..	6,984	9·09	17,656	2,081	..	2,081	..	..
31. Stratford Borough Council ..	35,460	12,836	..	..	..	12,836	5,922	1,413	7,335	57·15	2,136	480	250	..	2,866	8·08	10,201	2,635	..	6,289	..	..
32. Sumner Borough Council ..	15,226	5,716	..	32	..	5,748	3,554	627	4,181	72·80	316	30	398	..	744	4·88	4,925	823	..	9,332	..	..
33. Taihape Borough Council ..	10,426	5,026	..	130	..	5,156	1,502	360	1,862	36·10	661	41	508	73(3)	1,283	12·31	3,145	2,011	..	1,804	..	..
34. Taumarunui Borough Council ..	62,849(1)	8,796	380	22	366	9,564	1,248	1,853	3,101	32·40	2,907	117	..	470(3)	3,494	5·60	6,595	2,969	..	1,993	..	..
35. Tauranga Borough Council ..	159,431	11,150	8,385	..	794	20,329	3,457	2,285	5,742	28·20	6,426	1,287	1,000	..	8,713	5·46	14,455	5,874	..	17,947	..	..
36. Te Aroha Borough Council ..	16,301	7,692	..	..	29	7,721	5,328	465	5,793	75·00	426	95	350	..	871	5·34	6,664	1,057	..	8,456	..	..
37. Te Puke Borough Council ..	11,530	3,607	..	..	49	3,656	1,365	417	1,782	48·80	351	90	250	..	691	5·99	2,473	1,183	..	4,108	..	..
38. Thames Borough Council ..	28,827	9,249	..	..	87	9,336	4,738	1,308	6,046	64·80	675	71	364	..	1,110	3·85	7,156	2,180	..	4,975	..	..
39. Timaru Borough Council ..	99,943	36,541	..	..	270	36,811	20,096	3,509	23,605	64·20	4,095	4,283	..	..	8,378	8·38	31,983	4,828	..	11,130	..	..
40. Uawa County Council	6,275	1,039	..	2	58	1,099	502	36	538	49·00	206	..	..	224(3)	430	6·85	968	131	..	..	182	..
41. Waimairi County Council ..	61,263	21,483	34	20	140	21,677	10,967	1,942	12,909	59·50	1,723	1,380	3,933	..	7,036	11·48	19,945	1,732	..	..	..	73
42. Wairoa Borough Council ..	10,708	8,422	..	..	148	8,570	5,377	750	6,127	71·50	673	..	358	..	1,031	9·63	7,158	1,412	..	1,349	..	..
43. Waitara Borough Council ..	7,244	3,726	..	59	45	3,830	1,784	508	2,292	59·85	744	100	199	..	1,043	14·41	3,335	495	..	..	204	474
44. Wellington City Council ..	1,128,701	306,062	..	..	7,859	313,921	155,457	27,753	183,210	58·35	22,610	4,776	..	25,810(6)	53,196	4·72	236,406	77,515	..	426,492	..	..
45. Westport Borough Council ..	32,928	6,407	..	13	23	6,443	1,718	605	2,323	36·10	1,383	576	486	..	2,445	7·43	4,768	1,675	..	5,743	..	5
46. Whakatane Borough Council ..	34,236	6,444	..	13	3	6,460	1,045	874	1,919	29·67	1,674	311	..	206(3)	2,191	6·40	4,110	2,350	..	..	2,530	2
47. Whangarei Borough Council ..	71,287	17,016	546	31	225	17,818	8,576	2,285	10,861	61·00	1,328	327	1,740	..	3,395	4·76	14,256	3,562	..	..	..	..
Totals, other Local Authorities	5,537,022	1,285,785	32,430	3,661	24,560	1,346,436	587,593	105,577	693,170	51·50	174,616	52,002	86,486	38,834	351,938	6·36	1,045,108	302,039	711	719,325	10,153	2,723
COMPANIES, ETC.																						
1. Alderton Utility Co.	5,272	780	..	..	..	780	55	317	372	47·70	161	..	99	..	260	4·93	632	148	..	50	..	..
2. Kanieri Electric, Ltd.	80,347	11,541	..	117	177	11,835	4,103	2,372	6,475	54·70	2,852	..	..	1,365(7)	4,217	5·25	10,692	1,143	..	2,799	..	..
3. Reefton Electric Light and Power Co., Ltd.	7,092	3,296	..	67	3	3,366	898	1,329	2,227	66·15	..	..	..	..	..	..	2,227	1,139	..	..	..	..
4. P. Spender (Rawene)	.. (2)	699	..	..	31	730	384	105	489	67·00	..	..	120	..	120	..	609	121	..	..	..	..
5. Wilson's (N.Z.) Portland Cement, Ltd.	91,065	6,643	6,383	..	294	13,320	3,026	688	3,714	27·87	..	..	..	..	..	..	3,714	9,606	..	..	..	..
6. Westland Power, Ltd.	79,246	7,058	..	..	1,501	8,559	2,628	2,723	5,351	62·50	1,870	..	1,365	..	3,235	4·08	8,586	..	27	..	10,644	..
Totals, Companies, &c. ..	263,022	30,017	6,383	184	2,006	38,590	11,094	7,534	18,628	48·30	4,883	..	1,584	1,365	7,832	2·98	26,460	12,157	27	2,849	10,644	..
Totals, all Supply Authorities	32,823,944	3,501,395	983,152	9,673	83,778	4,577,998	1,653,859	398,274	2,052,133	44·83	1,306,029	206,215	432,547	131,575	2,076,366	6·33	4,128,499	479,967	30,468	262,962	671,438	56,787

(1) Includes Loan Conversion Premium. (2) Not available. (3) Principal repayment (annual instalment). (4) Exchange on overseas interest payments. (5) Loan Conversion Premium (annual payment). (6) £4,812 exchange, plus £20,998 to Reserve Fund. (7) Bad debts, debenture issue costs and debenture discount and commission. (8) Results of operation for six months only (1st April to 30th September, 1934). Hastings Borough electricity department taken over by Hawke's Bay Power Board on 1st October, 1934. (9) After deducting proportion of half the capital charges on King's Wharf steam plant paid by Public Works Department. (10) Combined return for Motueka and Waimea areas. (11) Half capital charges on King's Wharf steam plant paid by Public Works Department. (12) No returns received. (13) Not yet actively functioning. (14) License delegated to Westland Power, Ltd.

(*a*) Includes cost of power purchased and/or generated; also wages, stores, and fuel (if any). (*b*) Includes cost of management, insurance, &c.

TABLE XI.—FINANCIAL STATISTICS FOR YEAR ENDED 31ST MARCH, 1935.

(For revenue statistics, &c., see Table X.)

Supply Authority.	Appropriations for Year ended 31st March, 1935 (after paying Working-expenses and Statutory Capital Charges).									Accumulated Reserves and Funds.							
	Renewal Fund.	General Reserve Fund.	Accident Insurance Fund.	Relief of Rates (Local Authorities).	Payment of Dividends (Companies).	Capital Expenditure out of Revenue.	Miscellaneous Payments.	Unappropriated Surplus.	Total.	Depreciation.		Renewal.		Sinking Fund.		General and Other Reserves.	
										Reserve.	Funds.	Reserve.	Funds.	Reserve.	Funds.	Reserve.	Funds.
PUBLIC WORKS DEPARTMENT.	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
1. Arapuni-Mangahao-Waikaremoana	..	..	..	..	..	..	..	..	..	959,086	..	..	..	55,930	..	..	..
2. Coleridge-Waitaki	..	..	..	..	..	..	..	16,670(13)	16,670	323,600	..	..	..	270,554	1,669	241,419	..
Totals, Public Works Department	..	..	..	..	..	..	..	16,670	16,670	1,282,686	..	..	..	326,484	1,669	241,419	..
ELECTRIC-POWER BOARDS.																	
1. Ashburton	1,169	..	..	..	..	..	69	820	2,058	8,833	2,139	3,100	3,100	3,708	3,099	..	..
2. Auckland	..	45,453	..	..	..	..	2,448	..	47,901	579,277	..	31,107	..	1,067,309	1,044,644	360,293	..
3. Banks Peninsula	..	..	..	..	..	..	..	..	..	..	5,015	..	..	2,663	2,663	8,700	..
4. Bay of Plenty	..	..	..	..	..	3,494	..	1,798	5,292	8,083	..	..	..	9,262	9,662	17,004	..
5. Buller(8)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Cambridge	..	..	..	..	..	..	..	668	668	1,710	1,710	..	..	12,937	7,578	3,661	..
7. Central Hawke's Bay	..	..	..	..	..	..	30	1,805	1,835	18,798	13,909	1,231	..	953	953	600	1,231
8. Central Waikato	..	..	..	..	..	..	600	1,708	2,308	27,906	24,705	6,056	5,804	22,798	23,058	17,869	10,418
9. Dannevirke	..	..	..	..	..	502	200	1,826	2,528	18,533	14,309	..	..	15,898	18,788	7,941	..
10. Franklin	..	..	..	..	..	..	4,660	478	5,138	25,000	25,000	..	..	19,987	19,987	17,538	8,888
11. Golden Bay	..	..	..	..	..	159	50	..	209	1,787	..	..	..	1,561	1,561	1,185	..
12. Grey	..	..	..	..	..	2,793	..	..	2,793	3,847	1,496	..	..	29,628	31,987	9,537	3,276
13. Hawke's Bay	..	..	..	..	..	..	530	3,240	3,770	8,221	6,150	..	..	21,534	21,534	12,863	..
14. Horowhenua	..	95	200	..	..	..	19	2,214	2,528	28,851	27,408	..	..	894	894	39,991	13,995
15. Hutt Valley	..	..	..	..	..	2,000	..	2,238	4,238	65,447	65,447	5,779	5,779	18,286	19,786	23,857	..
16. Lake Wakatipu(8)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17. Malvern	..	..	..	..	..	..	..	..	..	3,988	..	..	..	5,113	5,803	..	..
18. Manawatu-Oroua	..	..	..	..	..	..	..	2,849	2,849	33,886	12,154	..	..	60,313(4)	55,364	172	..
19. Marlborough	..	..	..	..	..	..	10	2,754	2,764	20,126	3,031	..	..	28,841	35,841	..	..
20. North Auckland(8)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21. North Canterbury	..	..	..	..	..	47	88	1,070	1,205	6,597	1,416	..	..	8,779	6,882	10,203	..
22. Opunake	768	..	..	..	..	..	..	1,178	1,946	1,900	1,900	..	..	1,488	1,488	15,273	..
23. Otago Central	..	..	..	..	..	..	..	795	795	3,320	790	..	..	3,582	3,582	9,324	..
24. Otago	..	..	..	..	..	..	..	7,402	7,402	27,397	..	..	..	31,410	30,743	..	..
25. Poverty Bay	..	3,000(1)	..	..	..	94	305	234	3,633	15,000	3,970	..	..	33,062	37,357	12,406	300
26. Reefton(8)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27. South Canterbury	..	..	..	..	..	..	..	1,840	1,840	10,904	1,610	..	..	24,661	27,646	13,000	..
28. South Taranaki	..	1,000	..	..	..	2,000	376	1,466	4,842	6,312	6,312	637	..	14,614	14,614	15,545	8,317
29. Southland	..	..	..	..	..	..	..	..	..	21,340	8,484	..	..	375,467(5)	365,479	82,888	..
30. Springs-Ellesmere	..	..	..	..	..	..	..	3,012	3,012	7,696	7,779	..	..	6,845	7,845	12,970	..
31. Taranaki	..	..	409	..	..	1,898	15	184	2,506	16,096	9,106	..	..	2,616	2,616	13,981	..
32. Tararua	..	..	..	..	..	1,419	..	611	2,030	15,193	8,172	584	584	20,504	22,254	2,165	..
33. Tauranga	..	1,000	..	..	..	..	28	59	1,087	9,471	8,225	..	..	5,018	1,247	6,688	5,660
34. Te Awamutu	..	220	..	..	..	175	..	3,344	3,739	7,048	5,848	..	..	1,191	2,191	28,163	..

(For Notes, see page 94.)

Table XI.—Financial Statistics for Year ended 31st March, 1935—*continued.*

(For revenue statistics, &c., see Table X.)

Supply Authority.	Appropriations for Year ended 31st March, 1935 (after paying Working-expenses and Statutory Capital Charges).									Accumulated Reserves and Funds.							
	Renewal Fund.	General Reserve Fund.	Accident Insurance Fund.	Relief of Rates (Local Authorities).	Payment of Dividends (Companies).	Capital Expenditure out of Revenue.	Miscellaneous Payments.	Unappropriated Surplus.	Total.	Depreciation.		Renewal.		Sinking Fund.		General and Other Reserves.	
										Reserve.	Funds.	Reserve.	Funds.	Reserve.	Funds.	Reserve.	Funds.
Electric-power Boards—*continued.*	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
35. Teviot	..	952	..	..	..	..	..	..	952	2,674	742	..	..	7,893	7,570	75	..
36. Thames Valley	..	500	..	..	..	..	..	3,506	4,006	20,414	19,492	..	..	110,032	115,282	8,151	6,469
37. Waimea	..	..	..	..	..	..	..	377	377	..	..	..	..	..	..	1,300	..
38. Wairarapa	..	..	..	..	..	..	1,700	1,364	3,064	19,494	14,216	..	..	22,601	24,683	34,330	15,694
39. Wairere	..	..	..	..	..	..	..	38	38	2,265	2,093	..	..	2,934	3,038	500	..
40. Wairoa	..	..	..	..	..	..	..	1,873	1,873	2,959	1,443	..	..	2,217	2,217	1,270	..
41. Waitaki	..	..	..	..	..	..	200	1,772	1,972	16,511	16,511	..	..	26,163	23,302	12,840	..
42. Waitemata	..	..	..	..	..	..	332	5,398	5,730	21,692	18,160	..	..	66,464	71,029	22,578	10,005
43. Waitomo	..	..	..	..	..	2,331	..	156	2,487	2,600	2,314	..	..	9,671	10,441	376	..
44. Wanganui-Rangitikei	..	1,500(2)	..	..	..	..	1,253	4,933	7,686	35,322	23,127	..	..	11,620	12,936	55,393	..
45. Westland(9)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals, Power Boards	1,937	53,720	609	..	..	16,912	12,913	63,010	149,101	1,126,498	364,183	48,494	15,267	2,110,517	2,097,644	880,630	84,253
Other Local Authorities.																	
1. Bluff Borough Council	..	..	..	62	..	394	..	..	456	1,824	1,824	..	..	1,253	1,283	79	..
2. Christchurch City Council	10,000	18,463(12)	..	..	..	..	..	..	28,463	450,969	..	35,000	25,000	156,800	156,800	286,921(12)	..
3. Dunedin City Council	35,823	..	..	20,165	..	3,908	1,000	..	60,896	207,966	..	230,682	230,682	233,806	233,806	1,422	..
4. Hamilton Borough Council	..	..	..	4,388	..	..	6,745	1,805	12,938	13,253	13,253	..	..	20,858	20,858	19,794	12,194
5. Hastings Borough Council (11)	..	..	..	..	..	1,186	..	2,750	3,936	..	..	..	..	..	..	..	..
6. Havelock North Town Board	..	..	..	..	..	..	..	381	381	..	..	..	..	8,921	8,921	..	..
7. Heathcote County Council	..	..	..	..	..	..	..	1,104	1,104	..	..	..	..	..	7,297	..	..
8. Inglewood Borough Council	..	..	..	649	..	..	..	..	649	..	14	..	..	..	4,164	..	..
9. Invercargill City Council	..	..	..	10,055	..	1,458	304	..	11,817	20,428	20,428	..	..	15,772	15,772	27,068	..
10. Kaiapoi Borough Council	..	..	..	..	..	..	119	358	477	2,548	1,301	1,460	..	2,134	2,134	..	..
11. Kaikoura County Council	..	..	..	..	..	..	..	..	..	..	..	..	..	146	980	..	..
12. Kamo Town Board	..	..	..	..	..	57	..	..	57	..	..	..	..	..	52	..	211
13. Kaponga Town Board	..	..	..	..	..	..	..	140	140	1,373	..	..	..	3,526	3,526	..	..
14. Lyttelton Borough Council	..	..	..	..	..	446	..	1,384	1,830	764	764	..	..	1,155	1,155	..	..
15. Mangaweka Town Board	..	..	..	..	..	..	..	103	103	..	..	..	..	797	797	..	..
16. Manunui Town Board	..	..	..	..	..	..	..	58	58	276	..	..	..	339	379	..	..
17. Murchison County Council	..	..	..	..	..	257	..	..	257	..	..	..	..	2,763	..	..	..
18. Napier Borough Council	..	..	..	5,853	..	1,360	140	4,184	11,537	22,988	17,270	10,683	..	16,473(6)	12,684	1,101	..
19. Nelson City Council	..	..	..	1,000	..	1,278	..	988	3,266	13,386	..	17,395	13,908	3,547	3,547	14,600	..
20. New Plymouth Borough Council	..	10,250	..	..	..	..	..	11,509	21,759	16,181	16,181	..	..	20,336	20,336	96,469	21,325
21. Ohakune Borough Council	..	..	..	441	..	44	73	..	558	961	74	..	..	4,474	4,474	..	..
22. Palmerston North City Council	..	7,282	..	6,000	..	2,128	2,190	3,506	21,106	34,202	34,202	..	..	14,194	18,103	80,586	..
23. Patea Borough Council	..	..	..	839	..	436	325	38	1,638	291	291	..	..	678	678	5,437	..
24. Picton Borough Council	..	..	..	..	..	..	..	..	..	2,642	2,242	..	..	2,389	2,389	2,299	..
25. Queenstown Borough Council	..	..	..	..	..	..	..	277	277	1,152	642	..	..	..	..	..	..

(For Notes, see page 94.)

Table XI.—Financial Statistics for Year ended 31st March, 1935—*continued.*

(For revenue statistics, &c., see Table X.)

Supply Authority.	Appropriations for Year ended 31st March, 1935 (after paying Working-expenses and Statutory Capital Charges).									Accumulated Reserves and Funds.							
	Renewal Fund.	General Reserve Fund.	Accident Insurance Fund.	Relief of Rates (Local Authorities).	Payment of Dividends (Companies).	Capital Expenditure out of Revenue.	Miscellaneous Payments.	Unappropriated Surplus.	Total.	Depreciation.		Renewal.		Sinking Fund.		General and Other Reserves.	
										Reserve.	Funds.	Reserve.	Funds.	Reserve.	Funds.	Reserve.	Funds.
OTHER LOCAL AUTHORITIES—*continued.*	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
26. Raetihi Borough Council	..	..	..	150	..	341	47	223	761	871	820	..	..	6,149	6,427	..	..
27. Rangiora Borough Council	..	..	..	..	..	..	..	1,398	1,398	1,061	644	..	..	1,643	1,643	..	..
28. Riccarton Borough Council	..	..	..	..	..	470	..	1,194	1,664	3,623	2,965	..	..	1,644	1,644	9,523	..
29. Ross Borough Council(10)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30. Rotorua (Tourist Department)	..	2,081	..	..	..	..	..	..	2,081	18,000	18,000	..	..	19,363	19,363	3,337	532
31. Stratford Borough Council	..	..	..	2,635	..	..	..	..	2,635	1,631	1,381	..	..	1,240	1,490	..	..
32. Sumner Borough Council	..	..	..	820	..	..	..	3	823	1,758	1,360	..	..	1,158	1,158	..	..
33. Taihape Borough Council	..	..	..	2,011	..	..	..	..	2,011	3,732	3,224	..	..	3,341	3,341	..	..
34. Taumarunui Borough Council	..	..	..	1,200	..	644	..	1,125	2,969	4,712	4,712	..	..	2,478	2,924	10,215	..
35. Tauranga Borough Council	..	..	..	2,265	..	1,834	..	1,775	5,874	6,331	4,606	..	..	12,819	12,819	31,270	10,070
36. Te Aroha Borough Council	..	..	..	..	..	317	..	740	1,057	2,312	1,962	..	..	2,479	2,479	..	..
37. Te Puke Borough Council	75	..	..	632	..	..	..	476	1,183	3,479	3,479	568	..	..	..	2,450	..
38. Thames Borough Council	..	..	..	..	..	..	1,000	1,180	2,180	1,502	1,174	..	..	396	396	8,215	..
39. Timaru Borough Council	..	..	..	1,500	..	2,958	..	370	4,828	..	..	..	..	54,418	54,418	526	..
40. Uawa County Council	..	..	..	..	..	..	..	131	131	..	..	..	..	..	..	605	..
41. Waimairi County Council	..	..	..	..	..	1,732	..	..	1,732	10,972	..	..	..	7,783	7,798	29,954	..
42. Wairoa Borough Council	..	..	..	..	..	135	199	1,078	1,412	1,013	1,013	..	..	1,398	1,398	..	..
43. Waitara Borough Council	..	..	..	..	..	414	..	81	495	1,222	931	..	..	3,570	3,570	325	..
44. Wellington City Council	..	43,054(3)	..	17,500	..	997	1,587	14,377	77,515	83,375	..	159,306	158,277	241,332(7)	73,825	288,210	99,822
45. Westport Borough Council	..	..	..	1,000	..	675	..	..	1,675	3,147	2,788	..	..	7,235	7,235	1,066	..
46. Whakatane Borough Council	..	..	..	..	..	..	1,088	1,262	2,350	140	140	..	..	957	1,269	..	..
47. Whangarei Borough Council	..	..	..	2,944	..	618	..	..	3,562	6,417	6,417	..	..	2,174	2,260	47,849	..
Totals, other Local Authorities	45,898	81,130	..	82,109	..	24,087	14,817	53,998	302,039	946,502	164,102	455,094	427,867	881,938	725,592	969,321	144,154
COMPANIES, ETC.																	
1. Alderton Utility Co.	..	..	..	..	..	..	..	148	148	..	..	..	..	..	..	..	..
2. Kanieri Electric, Ltd.	..	483	..	..	..	660	..	..	1,143	..	..	..	..	..	..	7,218	..
3. Reefton Electric Light and Power Co., Ltd.	..	..	..	..	937	..	101	101	1,139	..	..	..	..	..	..	1,015	..
4. P. Spender (Rawene)	..	..	..	..	..	..	..	121	121	..	..	..	..	..	..	..	..
5. Wilson's (N.Z.) Portland Cement, Ltd.	..	..	..	..	..	..	..	9,606	9,606	..	..	..	..	..	..	..	..
6. Westland Power, Ltd.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals, Companies, &c.	..	483	..	..	937	660	101	9,976	12,157	..	..	..	..	..	..	8,233	..
Totals, all Supply Authorities	47,835	135,333	609	82,109	937	41,659	27,831	143,654	479,967	3,355,686	528,285	503,588	433,134	3,318,939	2,824,905	2,099,603	228,407

(1) Includes £2,000 to "Load Development Reserve." (2) Insurance Reserve. (3) £35,054 written off old buildings and plant; £8,000 annual payment on old Tramway Power Station Account. (4) £13,889 of this amount has been applied in the reduction of loans. (5) £9,988 of this amount has been applied in the reduction of loans. (6) £2,997 of this amount has been applied in the reduction of loans. (7) £167,507 of this amount has been applied in the reduction of loans. (8) Not yet actively functioning. (9) License delegated to Westland Power, Ltd. (10) No returns received. (11) Taken over by Hawke's Bay Power Board on 1st October, 1934. (12) £8,463 transferred to Suspense Account. (13) To Sinking Fund.

TABLE XII.—AVERAGES COMPILED FROM TABLES IX AND X FOR YEAR ENDED 31ST MARCH, 1935.

(For Summary of Revelant Totals from above-named Tables see Table B below.)

SUPPLY AUTHORITY.	Ratio of Consumers to Population in Area of Supply.	CAPITAL OUTLAY.			REVENUE (AVERAGES).							WORKING-COSTS.		CAPITAL CHARGES.		TOTAL COSTS.		Consumers per Route-mile of Line.	Average Maximum Demand per Consumer
		Per Capita.	Per Route-mile of Line.	Per £1 of Revenue.	Per Unit sold.	Per Unit sold (Retail Supply).	Per Unit sold (Retail Domestic Supply).	Per Capita.	Per Retail Consumer.	Per Kw. of Maximum Demand.	Per Route-mile of Line.	Per Unit sold.	Per Kw. of Maximum Demand.	Per Unit sold.	Per Kw. of Maximum Demand.	Per Unit sold.	Per Kw. of Maximum Demand.		
		(e)			(f)	(h)		(k)	(l)	(m)	(m)	(n)		(n)		(n)		(p)	(q)
PUBLIC WORKS DEPARTMENT.	%	£	£	£	d.	d.	d.	£	£	£	£	d.	£	d.	£	d.	£	No.	Kw.
1. Arapuni-Mangahao-Waikaremoana	..	..	7,100	12·05	0·33	..	..	..	..	6·34	589	0·056	1·086	0·280	5·42	0·336	6·51	..	..
2. Coleridge-Waitaki	..	..	6,700	19·46	0·40	..	..	..	..	6·95	344	0·061	1·080	0·309	5·42	0·370	6·50	..	..
Average, Public Works Department ..	..	..	6,960	13·85	0·34	..	..	..	..	..	502	0·057	..	0·285	..	0·340	..	..	..
ELECTRIC-POWER BOARDS.																			
1. Ashburton	21·05	17·88	368	7·19	2·04	2·04	2·96	2·54	11·83	25·80	51	0·96	12·12	1·02	13·00	1·98	25·12	4	0·46
2. Auckland	23·05	15·34	3,060	5·55	1·08	1·12	2·76	2·80	10·78	17·90	550	0·60	9·96	0·41	6·80	1·01	16·76	46	0·67
3. Banks Peninsula	24·80	25·10	497	9·06	1·89	1·89	1·87	2·85	11·18	27·30	55	1·29	18·70	1·09	15·72	2·38	34·42	5	0·41
4. Bay of Plenty	17·90	22·27	740	5·03	1·08	1·08	2·68	4·61	24·75	29·23	147	0·59	15·90	0·39	10·54	0·98	26·44	6	0·88
5. Buller(a)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Cambridge	25·43	18·39	593	5·95	1·07	1·07	..	3·22	12·14	23·27	100	0·72	15·65	0·36	7·80	1·08	23·45	8	0·52
7. Central Hawke's Bay	13·60	12·22	641	6·50	1·36	1·36	..	1·91	13·82	26·92	99	0·69	13·62	0·58	11·43	1·27	25·05	7	0·51
8. Central Waikato	25·00	18·18	549	6·03	1·14	1·14	2·99	3·04	12·06	25·80	91	0·65	14·60	0·46	10·48	1·11	25·08	8	0·47
9. Dannevirke	20·93	16·95	660	7·50	1·70	1·70	4·46	2·32	10·80	35·20	88	0·79	16·36	0·81	16·78	1·60	33·14	8	0·31
10. Franklin	21·80	17·00	519	6·55	0·94	0·94	2·21	2·87	11·93	20·70	79	0·56	11·90	0·37	7·97	0·93	19·87	7	0·59
11. Golden Bay	30·90	23·12	462	6·87	1·69	1·69	5·28	3·40	10·89	20·19	67	0·68	8·13	0·94	11·23	1·62	19·36	6	0·54
12. Grey	23·90	21·40	1,670	8·84	1·24	1·24	2·65	2·50	10·12	19·85	189	0·44	7·08	0·73	11·72	1·17	18·80	19	0·51
13. Hawke's Bay	38·50	20·60	1,017	4·97	0·77	1·08	2·47	2·91	7·44	16·71	205	0·50	10·80	0·24	5·18	0·74	15·98	19	0·39
14. Horowhenua	25·15	13·13	697	5·17	1·14	1·14	2·75	2·61	10·10	21·40	135	0·75	14·00	0·36	6·77	1·11	20·77	13	0·47
15. Hutt Valley	25·90	8·37	1,285	4·07	1·16	1·16	2·41	2·08	7·95	20·50	316	0·82	14·50	0·30	5·34	1·12	19·84	40	0·39
16. Lake Wakatipu(a)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17. Malvern	13·18	13·74	377	9·45	2·93	2·93	..	1·52	11·03	40·75	40	2·18	30·32	1·58	22·05	3·76	52·37	4	0·27
18. Manawatu-Oroua	12·80	12·87	823	6·11	0·78	1·27	..	1·71	13·26	19·56	135	0·46	11·63	0·29	7·40	0·75	19·03	8	0·43
19. Marlborough	19·10	22·53	1,178	10·62	1·70	1·70	3·17	2·16	11·10	32·10	111	0·50	9·40	1·07	20·40	1·57	29·80	10	0·35
20. North Auckland(a)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21. North Canterbury	21·15	16·28	393	6·00	1·28	1·46	2·34	2·44	11·25	20·35	66	0·84	13·40	0·41	6·43	1·25	19·83	5	0·47
22. Opunake	18·86	21·50	720	8·69	1·97	1·97	4·00	2·48	13·10	25·18	83	0·78	10·01	0·89	11·34	1·67	21·35	6	0·52
23. Otago Central	26·30	24·47	525	8·10	1·22	1·22	3·27	3·10	11·48	26·67	65	0·44	9·67	0·72	15·73	1·16	25·40	6	0·43
24. Otago	22·60	16·70	493	7·30	1·94	1·94	5·60	2·30	10·13	28·30	68	0·93	13·56	0·66	9·66	1·59	23·22	7	0·36
25. Poverty Bay	20·60	12·91	845	5·43	1·56	1·56	2·57	2·40	11·55	27·83	156	0·90	16·05	0·58	10·35	1·48	26·40	13	0·42
26. Reefton(a)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27. South Canterbury	16·40	13·10	433	5·94	0·95	1·35	2·54	1·65	9·75	16·82	73	0·57	10·12	0·37	6·52	0·94	16·64	5	0·33
28. South Taranaki	15·38	9·78	889	5·85	1·58	1·65	1·50	1·66	10·50	20·40	152	0·75	9·62	0·64	8·31	1·39	17·93	14	0·51
29. Southland	20·15	32·60	655	12·00	1·60	1·98	3·50	2·61	11·36	20·20	55	0·47	5·90	1·51	19·00	1·98	24·90	4	0·45
30. Springs-Ellesmere	20·50	12·89	500	5·30	1·55	1·55	3·32	2·45	11·81	23·70	94	0·93	14·10	0·48	7·44	1·41	21·54	8	0·50
31. Taranaki	10·50	21·30	1,290	11·16	1·08	1·42	3·36	1·60	14·92	18·80	116	0·35	6·10	0·68	11·88	1·03	17·98	6	0·58
32. Tararua	20·00	19·55	751	6·98	1·77	1·77	4·00	2·83	14·02	36·40	108	0·87	18·04	0·76	15·56	1·63	33·60	8	0·38
33. Tauranga	14·50	14·37	337	5·34	1·30	1·30	2·48	2·80	18·53	..	63	0·79	..	0·50	..	1·29	..	3	..
34. Te Awamutu	24·10	24·20	588	6·21	1·24	1·24	3·85	3·93	16·13	24·73	95	0·68	13·65	0·42	8·25	1·10	21·90	6	0·65
35. Teviot	23·00	32·20	853	9·42	0·36	0·76	1·55	2·82	12·05	7·80	91	0·12	2·58	0·19	4·14	0·31	6·72	6	0·93
36. Thames Valley	21·05	22·30	992	6·70	1·09	1·14	3·00	3·21	15·08	25·90	148	0·57	13·47	0·50	11·80	1·07	25·27	9	0·55
37. Waimea	20·65	8·94	653	7·41	5·25	5·25	5·11, 7·10	1·27	5·84	44·65	88	3·80	32·25	1·52	12·93	5·32	45·18	15	0·16
38. Wairarapa	25·10	18·10	679	6·94	1·32	1·32	3·19	2·67	10·40	26·75	98	0·75	15·30	0·52	10·52	1·27	25·82	9	0·39
39. Wairere	17·10	23·38	400	9·21	0·97	0·97	..	2·65	14·85	13·55	43	0·49	6·89	0·51	7·14	1·00	14·03	3	1·10
40. Wairoa	6·62	11·91	700	5·67	0·89	1·36	3·40	1·28	18·33	14·44	124	0·67	10·95	0·10	1·62	0·77	12·57	4	0·90
41. Waitaki	19·07	8·96	443	5·67	1·19	1·19	1·74	1·62	8·30	18·87	78	0·67	10·70	0·47	7·40	1·14	18·10	9	0·44
42. Waitemata	22·60	9·28	706	5·42	1·27	1·27	3·02	1·74	7·58	24·80	130	0·74	14·40	0·46	9·00	1·20	23·40	17	0·31
43. Waitomo	19·63	15·23	899	5·55	1·54	1·54	2·90	2·77	13·99	23·70	162	0·86	12·65	0·49	7·19	1·35	19·84	12	0·62
44. Wanganui-Rangitikei	20·00	10·07	691	5·18	1·32	1·37	1·75	1·98	9·42	23·40	133	0·68	12·13	0·57	10·08	1·25	22·21	14	0·41
45. Westland(b)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Average, Power Boards	21·20	15·98	836	6·42	1·25(g)	1·28	..	2·44	10·85	..	130	0·71(o)	..	0·56(o)	..	1·27(o)	..	11	..

(For notes see page 97.)

TABLE XII.—AVERAGES COMPILED FROM TABLES IX AND X FOR YEAR ENDED 31ST MARCH, 1935—*continued.*

(For Summary of Relevant Totals from above-named Tables see Table B below.)

SUPPLY AUTHORITY.	Ratio of Consumers to Population in Area of Supply.	CAPITAL OUTLAY.			REVENUE (AVERAGES).							WORKING-COSTS.		CAPITAL CHARGES.		TOTAL COSTS.		Consumers per Route-mile of Line.	Average Maximum Demand per Consumer.
		Per Capita.	Per Route-mile of Line.	Per £1 of Revenue.	Per Unit sold.	Per Unit sold (Retail Supply).	Per Unit sold (Retail Domestic Supply).	Per Capita.	Per Retail Consumer.	Per Kw. of Maximum Demand.	Per Route-mile of Line.	Per Unit sold.	Per Kw. of Maximum Demand.	Per Unit sold.	Per Kw. of Maximum Demand.	Per Unit sold.	Per Kw. of Maximum Demand.		
				(*e*)	(*f*)	(*h*)		(*k*)	(*l*)	(*m*)	(*m*)	(*n*)		(*n*)		(*n*)		(*p*)	(*q*)
OTHER LOCAL AUTHORITIES.	%	£	£	£	d.	d.	d.	£	£	£	£	d.	£	d.	£	d.	£	No.	Kw.
1. Bluff Borough Council	29·30	4·29	730	1·57	2·24	2·24	4·89	2·84	9·35	18·10	465	1·76	14·20	0·36	2·88	2·12	17·08	50	0·52
2. Christchurch City Council	31·05	8·12	2,283	3·52	0·90	0·97	1·87	2·30	7·15	13·40	651	0·61	9·11	0·20	2·99	0·81	12·10	88	0·51
3. Dunedin City Council	29·10	17·33	2,830	7·05	0·94	1·06	1·02	2·36	7·61	14·04	402	0·22	3·35	0·47	7·04	0·69	10·39	48	0·54
4. Hamilton Borough Council	28·80	3·76	1,061	1·56	1·72	1·72	3·84	2·43	8·40	25·30	680	0·85	12·46	0·29	4·25	1·14	16·71	81	0·33
5. Hastings Borough Council(*e*)	29·30	..	..	..	2·14	2·14	1·75	..	..	..	..	..	..	..	..	..	..	66	0·30
6. Havelock North Town Board	25·40	22·40	1,587	7·52	1·89	1·89	3·09	2·98	11·70	30·90	211	0·91	14·98	0·78	12·78	1·69	27·76	18	0·38
7. Heathcote County Council	21·00	2·81	545	1·52	1·22	1·22	..	1·87	8·81	15·69	358	0·90	11·57	0·21	2·72	1·11	14·29	41	0·56
8. Inglewood Borough Council	32·55	6·84	1,112	2·26	1·81	1·81	3·55	3·70	9·29	27·70	492	1·49	22·90	0·42	6·41	1·91	29·31	53	0·34
9. Invercargill City Council	26·85	6·55	1,743	2·94	2·33	2·56	..	2·30	7·96	26·05	594	1·36	15·12	0·45	5·08	1·81	20·20	71	0·32
10. Kaiapoi Borough Council	27·90	6·25	759	3·42	2·04	2·04	1·50	1·87	6·55	25·03	222	1·32	16·17	0·46	5·65	1·78	21·82	34	0·26
11. Kaikoura County Council	24·90	16·15	2,036	6·46	9·78	9·78	10·50	2·60	10·03	45·00	315	8·63	39·70	3·43	15·80	12·06	55·50	31	0·22
12. Kamo Town Board	19·50	3·61	433	2·52	4·00	4·00	6·50	1·44	7·37	17·96	172	2·88	12·94	0·88	3·94	3·76	16·88	23	0·41
13. Kaponga Town Board	32·20	15·00	346	3·64	2·25	2·25	4·50	4·19	13·38	23·60	95	1·76	18·50	0·46	4·76	2·22	23·26	7	0·54
14. Lyttelton Borough Council	22·70	3·09	1,168	1·85	1·81	1·81	2·40	1·69	7·35	25·00	630	1·14	15·74	0·16	2·26	1·30	18·00	86	0·29
15. Mangaweka Town Board	27·25	13·38	555	5·91	1·65	1·65	3·00	2·86	8·32	28·45	94	1·70	29·45	0·20	3·43	1·90	32·88	11	0·29
16. Manunui Town Board	19·30	3·72	633	3·78	7·52	7·52	7·52	1·02	5·11	33·55	168	4·98	22·25	2·28	10·16	7·26	32·41	33	0·15
17. Murchison County Council	34·60	29·60	925	6·97	3·28	3·28	3·00	4·30	12·28	30·17	133	1·67	15·43	1·26	11·65	2·93	27·08	11	0·40
18. Napier Borough Council	23·35	8·58	3,820	3·66	1·29	1·29	2·45	2·35	10·04	27·85	1,045	0·62	13·33	0·34	7·27	0·96	20·60	104	0·36
19. Nelson City Council	24·45	9·68	2,420	4·45	3·42	3·44	4·00	2·14	8·43	30·30	543	1·91	16·98	1·21	10·70	3·12	27·68	61	0·27
20. New Plymouth Borough Council	30·30	16·89	1,104	5·19	1·13	1·19	2·00	3·29	10·20	18·47	213	0·51	8·32	0·30	4·91	0·81	13·23	20	0·53
21. Ohakune Borough Council	24·20	4·65	563	2·70	2·89	2·89	5·00	1·72	7·12	33·15	209	1·29	14·73	1·12	12·90	2·41	27·63	29	0·22
22. Palmerston North City Council	24·57	9·53	2,805	4·04	1·11	1·11	0·89	2·39	9·73	20·20	695	0·54	9·86	0·16	2·86	0·70	12·72	72	0·48
23. Patea Borough Council	20·70	9·57	1,077	4·20	2·08	2·08	..	2·31	11·03	28·30	257	1·03	14·00	0·25	3·41	1·28	17·41	23	0·39
24. Picton Borough Council	26·80	11·34	1,588	5·54	5·65	5·65	5·40	2·08	7·64	39·20	286	4·04	28·10	2·50	17·40	6·54	45·50	38	0·19
25. Queenstown Borough Council	28·55	14·50	1,865	8·55	3·10	3·10	..	1·80	5·94	20·40	218	1·14	7·53	1·57	10·31	2·71	17·84	37	0·29
26. Raetihi Borough Council	8·89	4·92	791	5·01	1·34	2·23	3·69	0·94	9·98	17·00	158	0·67	8·60	0·50	6·34	1·17	14·94	14	0·40
27. Rangiora Borough Council	30·50	4·70	758	1·84	2·14	2·14	4·00	2·58	8·36	28·50	412	1·32	17·57	0·29	3·83	1·61	21·40	49	0·29
28. Riccarton Borough Council	26·50	4·06	1,240	2·02	1·08	1·08	1·50	2·06	7·59	17·80	614	0·81	13·30	0·13	2·22	0·94	15·52	81	0·43
29. Ross Borough Council(*d*)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30. Rotorua (Tourist Department)	38·00	13·98	1,220	4·02	2·12	2·12	1·81(*r*)	3·59	9·15	28·08	304	1·18	15·68	0·78	10·25	1·96	25·93	33	0·37
31. Stratford Borough Council	29·45	9·72	2,085	2·76	1·49	1·49	2·74	3·52	11·94	24·20	755	0·85	13·81	0·33	5·40	1·18	19·21	63	0·49
32. Sumner Borough Council	27·90	4·06	1,523	2·66	1·04	1·04	1·79	1·53	5·47	17·74	572	0·76	12·99	0·14	2·31	0·90	15·30	105	0·31
33. Taihape Borough Council	23·45	4·25	1,043	2·08	2·34	2·34	2·44	2·10	8·74	24·40	503	0·87	9·42	0·60	6·48	1·47	15·90	58	0·34
34. Taumarunui Borough Council	17·00	11·42	4,830	6·85	2·55	2·54	..	1·74	9·40	30·10	706	0·86	10·16	0·97	11·45	1·83	21·61	72	0·30
35. Tauranga Borough Council	25·72	39·86	2,490	8·17	0·59	0·94	0·93	2·99	10·83	6·48	305	0·17	1·90	0·26	2·89	0·43	4·79	16	..
36. Te Aroha Borough Council	28·20	6·27	858	2·12	1·89	1·89	3·84	2·97	10·48	29·90	405	1·42	22·51	0·21	3·39	1·63	25·90	39	0·25
37. Te Puke Borough Council	30·90	11·77	1,048	3·20	1·47	1·47	2·78	3·73	11·90	25·60	328	0·72	12·63	0·28	4·90	1·00	17·53	28	0·47
38. Thames Borough Council	24·70	6·14	1,310	3·12	1·78	1·78	3·50	1·98	7·98	30·60	421	1·17	20·00	0·21	3·68	1·38	23·68	53	0·26
39. Timaru Borough Council	23·70	5·55	1,693	3·77	1·57	1·57	1·88	2·04	8·57	19·35	620	1·02	12·50	0·36	4·43	1·38	16·93	72	0·44
40. Uawa County Council	24·50	15·69	2,092	6·04	15·93	15·93	17·00	2·75	10·60	74·20	346	8·26	38·40	6·60	30·70	14·86	69·10	33	0·14
41. Waimairi County Council	26·20	4·71	428	2·85	0·94	0·94	0·94	1·67	6·31	16·70	150	0·57	10·00	0·31	5·45	0·88	15·45	24	0·38
42. Wairoa Borough Council	27·55	4·37	765	1·27	1·10	1·10	1·88	3·50	12·48	17·75	601	0·80	12·92	0·13	2·18	0·93	15·10	48	0·70
43. Waitara Borough Council	27·60	3·86	604	1·94	2·06	2·06	4·05	2·04	7·20	28·90	311	1·27	17·76	0·58	8·08	1·85	25·84	43	0·25
44. Wellington City Council	29·35	9·02	3,175	3·68	1·30	1·42	1·40	2·51	7·43	14·42	862	0·78	8·63	0·23	2·51	1·01	11·14	103	0·58
45. Westport Borough Council	20·55	7·84	1,732	5·14	2·37	2·37	3·50	1·53	7·42	23·90	337	0·86	8·67	0·91	9·13	1·77	17·80	45	0·31
46. Whakatane Borough Council	26·10	18·50	527	5·32	1·49	1·49	4·50	3·49	13·32	23·00	99	0·44	6·85	0·51	7·82	0·95	14·67	7	0·58
47. Whangarei Borough Council	27·00	8·92	2,035	4·06	2·02	2·01	3·00	2·16	7·88	24·40	502	1·25	15·10	0·39	4·71	1·64	19·81	62	0·31
Average, other Local Authorities	27·40	9·92	1,970	4·20	1·25(*g*)	1·28	..	2·36	8·10	..	469	0·67(*o*)	..	0·34(*o*)	..	1·01(*o*)	..	54	..

(For notes see page 97.)

TABLE XII.—AVERAGES COMPILED FROM TABLES IX AND X FOR YEAR ENDED 31ST MARCH, 1935—*continued.*

(For Summary of Relevant Totals from above-named Tables see Table B below.)

SUPPLY AUTHORITY.	Ratio of Consumers to Population in Area of Supply.	CAPITAL OUTLAY.			REVENUE (AVERAGES).							WORKING-COSTS.		CAPITAL CHARGES.		TOTAL COSTS.		Consumers per Route-mile of Line.	Average Maximum Demand per Consumer.
		Per Capita.	Per Route-mile of Line.	Per £1 of Revenue.	Per Unit sold.	Per Unit sold (Retail Supply).	Per Unit sold (Retail Domestic Supply).	Per Capita.	Per Retail Consumer.	Per Kw. of Maximum Demand.	Per Route-mile of Line.	Per Unit sold.	Per Kw. of Maximum Demand.	Per Unit sold.	Per Kw. of Maximum Demand.	Per Unit sold.	Per Kw. of Maximum Demand.		
				(*e*)	(*f*)	(*h*)		(*k*)	(*l*)	(*m*)	(*m*)	(*n*)		(*n*)		(*n*)		(*p*)	(*q*)
COMPANIES, ETC.	%	£	£	£	d.	d.	d.	£	£	£	£	d.	£	d.	£	d.	£	No.	Kw.
1. Alderton Utility Co.	20·40	21·05	527	6·76	0·73	0·73	1·53	3·12	15·30	10·00	78	0·35	4·77	0·24	3·33	0·59	8·10	5	1·53
2. Kanieri Electric, Ltd.	28·30	32·10	3,210	6·96	0·64	2·66	3·16	2·36	7·93	14·26	462	0·36	8·00	0·24	5·20	0·60	13·20	28	..
3. Reefton Electric Light and Power Co., Ltd. ..	30·10	5·90	887	2·15	6·00	6·00	6·00	2·80	9·13	36·60	412	4·05	24·75	..	..	4·05	24·75	45	0·25
4. P. Spender (Rawene)	17·66	..	..	..	11·83	11·83	15·00	2·43	13·18	58·25	699	8·28	40·75	2·03	10·00	10·31	50·75	53	0·23
5. Wilson's (N.Z.) Portland Cement, Ltd. ..	33·40	10·00	2,070	6·99	0·33	2·20	3·85	2·63	7·87	5·92	296	0·09	1·69	..	..	0·09	1·69	4	..
6. Westland Power, Ltd.	3·28	18·87	1,321	11·22	0·97	..	1·50	1·16	..	7·90	118	0·74	5·98	0·44	3·62	1·18	9·60	2	..
Average, Companies, &c.	16·50	29·40	1,777	7·23	0·53(*g*)	2·79	..	3·60	10·20	..	246	0·33(*o*)	..	0·14(*o*)	..	0·47(*o*)	..	10	..
Average, all Supply Authorities, 1935 ..	23·60	22·60	1,512	7·32	1·17(*g*)	1·22	..	2·48	9·80	..	206	0·69(*o*)	..	0·69(*o*)	..	1·38(*o*)	..	16	..
,, 1934 ..	23·50	21·27	1,443	6·87	1·24	1·26	..	2·43	9·60	..	210	..	..	..	..	..	..	16	..
,, 1933 ..	22·95	22·10	1,512	6·94	1·28	1·34	..	2·54	10·50	..	218	..	..	..	..	..	..	16	..
,, 1932 ..	22·08	21·68	1,500	7·08	..	..	..	2·56	11·63	..	211	..	..	..	..	..	..	15	..
,, 1931 ..	21·47	20·84	1,586	6·68	..	..	..	2·62	12·20	..	210	..	..	..	..	..	..	15	..

NOTES.—(*a*) Not yet actively functioning. (*b*) License delegated to Westland Power, Ltd. (*c*) Results of operation from 1st April, 1934, to 30th September, 1934. Taken over by Hawke's Bay Power Board on 1st October, 1934. (*d*) No return received. (*e*) Capital outlay divided by revenue from sale of electricity retail plus bulk for resale. (*f*) Revenue from retail plus bulk sales divided by units sold, including bulk supply where given. (*g*) Revenue from retail sales divided by units sold retail to consumers. (*h*) Revenue from retail sales less revenue from traction and/or mining loads divided by units sold retail less units supplied for traction and/or mining loads. (*k*) Gross revenue excluding rates and bulk supply for resale. (*l*) Revenue from retail sales less revenue from traction and/or mining loads. (*m*) Revenue from retail plus bulk sales. (*n*) Total units sold including bulk supply where given. (*o*) Total units sold retail to consumers. (*p*) To nearest whole number. (*q*) Excludes maximum demand of bulk consumers. (*r*) Includes revenue from domestic water-heating.

TABLE A.

Traction, Mining, &c., Returns for Year ended 31st March, 1935.

Supply Authority.	Type of Load.	Units sold.	Revenue.
PUBLIC WORKS DEPARTMENT.		No.	£
Coleridge-Waitaki	Traction (N.Z.R.; Christchurch Trams)	10,113,010	19,453
POWER BOARDS.			
Auckland	Traction	18,941,520	61,868
Wanganui-Rangitikei	Traction	1,059,145	2,613
Totals	..	20,000,665	64,481
CITIES AND BOROUGHS.			
Dunedin	Traction	4,797,646	11,342
Wellington	Traction	10,101,189	33,671
Invercargill	Traction	608,478	2,028
New Plymouth	Traction	779,350	1,800
Totals	..	16,286,663	48,841
COMPANIES.			
Kanieri Electric, Ltd.	Mining	3,796,280	5,932
Wilson's (N.Z.) Portland Cement, Ltd. ..	Cement-manufacture ..	6,996,891	5,329
Westland Power, Ltd.	Mining	1,500,000*	3,674
Totals	..	12,293,171	14,935
Totals for above Supply Authorities	..	58,693,509	147,710

* Estimated figures.

TABLE B.

Summary of Totals from Tables IX and X.

——	Public Works Department.	Power Boards.	Other Local Authorities.	Companies.	Totals, all Supply Authorities.
	No.	No.	No.	No.	No.
Population	..	884,513	557,685	8,950	1,451,148
Consumers	354	187,634	152,869	1,477	342,334
Units sold retail to consumers	52,095,544	402,693,303	247,736,100	13,592,417	716,117,364
Less units consumed by traction, mining, &c., loads	10,113,010	20,000,665	16,286,663	12,293,171	58,693,509
Net units sold retail	41,982,534	382,692,638	231,449,437	1,299,246	657,423,855
Route-miles of lines	1,854	16,895	2,810	148	21,707
	£	£	£	£	£
Capital outlay	12,903,410	14,120,490	5,537,022	263,022	32,823,944
Revenue (retail sales)	84,042	2,101,551	1,285,785	30,017	3,501,395
Revenue (bulk sales)	847,475	96,864	32,430	6,383	983,152
Revenue (retail plus bulk sales)	931,517	2,198,415	1,318,215	36,400	4,484,547
Revenue from retail sales, less revenue from traction, mining, &c., loads	64,589	2,037,070	1,236,944	15,082	3,353,685
Gross revenue excluding rates	940,863	2,252,109	1,346,436	38,590	4,577,998
Gross revenue less revenue from bulk sales ..	93,388	2,155,245	1,314,006	32,207	3,594,846
Working-costs	156,010	1,184,325	693,170	18,628	2,052,133
Capital charges	778,611	937,985	351,938	7,832	2,076,366
Total costs	934,621	2,122,310	1,045,108	26,460	4,128,499

Table XIII.—Retail Selling-rates for Electrical Energy for Year ending 31st March, 1935.

Supply Authority.	Lighting. (Net.)	Heating. (Net.)	Power. (Net.)
Public Works Department.			
1. Arapuni-Mangahao-Waikaremoana ..	Bulk supply only: £2 10s. per kv.a. of maximum demand per quarter for first 200 kv.a.; £2 per kv.a. of maximum dem and per quarter for next 4,800 kv.a.; £1 15s. per kv.a. of maximum demand per quarter for next 15,000 kv.a.; £1 6s. 3d. per kv.a. of maxim um demand for quarter for all over 20,000 kv.a.		
2. Coleridge-Waitaki			
Electric-power Boards.			
1. Ashburton	8d. to 1d.	3d. to 1d.	3d. to $\frac{3}{4}$d.
2. Auckland	Domestic, 4d., 3d., 1d., and $\frac{3}{4}$d.; commercial, 4d. and 2d.; advertising signs, £1 per kw. of M.D. per month (5 p.m. to sunrise). All less 10 per cent.	Domestic, 4d., 3d., 1d., and $\frac{3}{4}$d.; commercial cooking, 1$\frac{1}{2}$d. (7 a.m.–10 p.m.); $\frac{1}{2}$d. (10 p.m.–7 a.m.). Water-heating: Domestic, £12 12s. per kw. per annum. Alternative domestic and commercial rate, $\frac{1}{2}$d. (thermostat control). All less 10 per cent.	2$\frac{1}{2}$d., 1$\frac{1}{2}$d., an d 1d. Alternative rate: 8s. per kv.a. of M.D. per month, plus $\frac{5}{8}$d. per unit. Both less 10 per cent.
3. Banks Peninsula	10d., 7d., 3d.. 2d., and 1$\frac{1}{2}$d. Less 7$\frac{1}{2}$ per cent.	3d., 2d., 1$\frac{1}{2}$d., $\frac{3}{8}$d., and $\frac{3}{10}$d. Less 7$\frac{1}{2}$ per cent.	3d., 2d., and 1$\frac{1}{2}$d. Less 7$\frac{1}{2}$ per cent.
4. Bay of Plenty	9d. to 5d.	4d. to 0·25d.	3d. to 0·6d.
5. Buller(1)	..	..	..
6. Cambridge	6·175d.	3d., 1$\frac{1}{2}$d., and $\frac{3}{4}$d. Less 5 per cent.	3d., 1$\frac{1}{2}$d., and $\frac{3}{4}$d. Less 5 per cent.
7. Central Hawke's Bay	Domestic, 8$\frac{1}{2}$d. and 3d.; commercial, 7$\frac{1}{2}$d.	3d. and $\frac{1}{2}$d.	3d. and 1d.
8. Central Waikato	5d. Less 5 per cent.	Heating and cooking: 1$\frac{1}{2}$d., less 5 per cent. Water-heating: 12s. and 16s. per 100 w. per annum off peak; £1 2s. per 100 w. per annum unrestricted. Both less 5 per cent.	2$\frac{1}{2}$d. unrestricted; 2$\frac{1}{2}$d. and 1$\frac{1}{2}$d. off peak. Less 5 per cent.
9. Dannevirke	7d. and 6d.	3d. and 1$\frac{1}{2}$d.	3d. and 1d.
10. Franklin	General rate, 5d. Community lighting: £2 16s. per 100 w. lamp, £3 8s. per 150 w. lamp, £4 10s. per 200 w. lamp, per annum. All less 10 per cent.	Domestic heating, power, and cooking, with range, 1$\frac{1}{2}$d. and 1d. Water-heating, 15s. per 100 w. per annum off peak: 20s. per 100 w. per annum unrestricted. All less 10 per cent.	General rate: 2$\frac{1}{2}$d. and 2d. Field pumps: $\frac{1}{4}$ h.p. £3; $\frac{1}{3}$ h.p., £3 10s.; $\frac{1}{2}$ h.p., £4; 1 h.p., £8 10s. per annum. All less 10 per cent.
11. Golden Bay	9d.	4$\frac{1}{2}$d., 3d., and 1d.	4$\frac{1}{2}$d., 3d., and 1d.
12. Grey	6d.	1d.	2d.
13. Hawke's Bay	Country: 7d., 2d., and 1$\frac{1}{4}$d. (domestic); 7d., 5d., and 4d. (commercial) Hastings: 6d., 2d., and 1$\frac{1}{4}$d. (domestic); 6$\frac{1}{2}$d., 2$\frac{1}{2}$d., and 1$\frac{1}{2}$d. (commercial); 1s. 3d. per 100 w. per month for community lighting	Country: 7d., 2d., 1$\frac{1}{4}$d. (domestic); 2d., 1$\frac{1}{2}$d., and 1d. (commercial). Domestic water-heating, £1 per 100 w. per annum (21 hours) Hastings: Domestic cooking, 1$\frac{1}{4}$d.; domestic water-heating, £10 per kw. per annum (24 hours)	Country: 3d., 1$\frac{1}{2}$d., and 1$\frac{1}{4}$d. Hastings: 2$\frac{1}{2}$d. and 1$\frac{1}{4}$d. 3d. and 1d. for consumption of 1,000 units or more per month and 5 year contract.
14. Horowhenua	5$\frac{1}{2}$d. and 4d.	Cooking and heating, 3$\frac{1}{2}$d. and 1$\frac{3}{8}$d. Water-heating, 15s. per 100 w. per annum off peak; £1 per 100 w. per annum unrestricted	Milking motors: 2$\frac{1}{2}$d. and 2d. Industrial motors: 3d. and 2d. Pumping motors: $\frac{1}{4}$ h.p., £3 10s.; $\frac{1}{2}$ h.p., £4 10s. per annum.
15. Hutt Valley	6d. and 4d. Less 16$\frac{2}{3}$ per cent.	3d., 2d., and 1$\frac{1}{2}$d. Less 16$\frac{2}{3}$ per cent.	3d., 2d., and 1$\frac{1}{2}$d. Less 16$\frac{2}{3}$d. per cent.
16. Lake Wakatipu(1)	..	..	..
17. Malvern	(9d. to 1d., plus 25 per cent.) Less 10 per cent.	(9d. to 1d., plus 25 per cent.) Less 10 per cent.	(3d., plus 25 per cent.) Less 10 per cent.
18. Manawatu-Oroua	7d.	3$\frac{1}{2}$d. and 1$\frac{1}{2}$d.; 3d., 2$\frac{1}{2}$d., and 1$\frac{3}{4}$d.	3$\frac{1}{2}$d., 3d., and 1$\frac{3}{4}$d.
19. Marlborough	8d., 2$\frac{1}{2}$d., 2d., and 1$\frac{1}{2}$d.	Domestic, 8d., 2$\frac{1}{2}$d., 2d., and 1$\frac{1}{2}$d.; commercial, 3d. and 1$\frac{1}{2}$d: water-heating, 8 p.m. to 6.30 a.m., 9s. 6d. per 100 w. per annum.	General rate: 4d., 2$\frac{1}{2}$d., and 2d. Milking motor 4$\frac{1}{2}$d., 2d., and 1$\frac{1}{2}$d.

(For notes see p. 101.)

TABLE XIII.—RETAIL SELLING-RATES FOR ELECTRICAL ENERGY FOR YEAR ENDING 31ST MARCH, 1935—*continued*.

Supply Authority.	Lighting. (Net.)	Heating. (Net.)	Power. (Net.)
ELECTRIC-POWER BOARDS—*continued*.			
20. North Auckland(1)	..	..	..
21. North Canterbury	8d., 3d., 2d., and 1½d.	3d., 2d., 1½d., 1d., ½d., and ¼d.	3d., 2d., 1½d., 1d., 0·9d., and ½d.
22. Opunake	9d. to 1½d. Less 10 per cent.	3d. to 1½d. Less 10 per cent.	4d. to 2d. Less 10 per cent.
23. Otago Central	£10 per kw. per annum, plus 4d. to 1d. per unit.	Heating and cooking: £1 per kw. per annum of maximum demand. Water-heating: £12 continuous, £6 restricted, per kw. per annum	£2 per h.p. per annum, plus 4d. to 1d. per unit.
24. Otago	9d.	4d., 3d., and 1½d.	4d., 2d., and 1¼d.
25. Poverty Bay	Domestic: Borough, 6d.; country, 7d. Commercial: Borough 6d. and 5d.; country, 7d. and 6d.	3½d. Domestic cooking, 3d., 2d., and 1d.; water-heating, £1 per 100 w. per annum off peak; 16s. per 100 w. per annum off peak (dairy-sheds)	General rate: 2½d., 2¼d., and 2d. Farm power, 3½d.
26. Reefton(1)	..	..	..
27. South Canterbury	Domestic, 7d., 3d., and 1d.; commercial, 7d., 5d., and 4d.	Domestic, 7d., 3d., and 1d.; commercial, 3d.; cooking, 2d. and 1d.; water-heating, with range, 13s. 4d., without range, 16s. 8d. per month for first kw., 6s. 8d. per month for each additional kw. (20 to 22 hours per day)	General rate, 3d., 2d., and 1d.; milking motors, £3 per h.p. per annum, plus 2d. per unit.
28. South Taranaki	5¾d.	2½d., 1½d., and 1d.	2¾d., 2½d., 1¾d., 1½d., and 1d.
29. Southland	7d., 4d., 2½d., and 1½d. (6d. Mataura Area.)	Cooking, 1d.; water-heating, ⅝d. (Gore Area ½d.)	7d., 4d., 2½d., and 1½d.
30. Springs-Ellesmere	6d. and 2d.	3d. to ½d.	3d. to ½d.
31. Taranaki	7d.	3½d. and 1½d.	3d. and 1d.
32. Tararua	8d.	1½d. and 1d.	4d. and 0·4d.
33. Tauranga	Domestic, 5½d., 3d., and 1d. Alternative rate, where range and water-heater installed, £8 per annum, plus ½d. per unit for all units metered; commercial, 8d.	Domestic, as for lighting; commercial, 1½d.; water-heating, 26s. per 100 w. per annum up to 500 w.; 22s. per 100 w. per annum for excess. Alternative water-heating rate, ½d. per unit (metered)	Motors under 5 h.p., 3d., 2½d., and 1½d.; field-pumps, ½ h.p., 6s. 8d. per month; ¾ h.p., 10s. per month; 6s. 8d. per month for each ½ h.p. up to 2 h.p.
34. Te Awamutu	6d.	2d. and 1½d.	3d., 2d., and 1½d.
35. Teviot	£10 per kw., plus 3d. to ½d. per unit	10s. per kw., plus 3d. to ½d. per unit; water-heating, £10 continuous, £6 intermittent, per kw. per annum	£1 13s. per h.p. per annum, plus 3d. and 1d. per unit over 99 units.
36. Thames Valley	7d.	3d. and 1d.	3d. and 0·5d.
37. Waimea	Motueka Area, 9d.; Waimea Area, 10d.	Motueka Area, 3d.; Waimea Area, 3½d.	Motueka Area, 3d.; Waimea Area, 3½d.
38. Wairarapa	6d.	3d. to ¾d.	3d., 1d., and ¾d.
39. Wairere	9d., 2d., ¾d., and 1d.	9d., 2d., ¾d., and 1d. Water-heating, 24s. to 12s. 7d. per 100 w. per annum, depending on size of heater element	General rate, 4½d.; milking motors, 3½d., 2d., and ¾d.; pumping, 5s. per month for ¼ h.p.
40. Wairoa	9d., 3d., 2d., and 1d., plus 10 per cent.	9d., 3d., 2d., and 1d., plus 10 per cent. Water-heating, 1,000 w. £1 12s. 6d. per quarter; 500–600 w., £1 2s. 6d. per quarter. Both plus 10 per cent.	General rate, 3d., 2d., and 1½d.

(For notes see p. 101.)

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Table XIII.—Retail Selling-rates for Electrical Energy for Year ending 31st March, 1935—*continued.*

Supply Authority.	Lighting. (Net.)	Heating. (Net.)	Power. (Net.)
Electric-power Boards—*continued.*			
41. Waitaki	4½d.	1½d. to ¼d.	2½d. to ⅜d.
42. Waitemata	6d. Less 20 per cent.	Domestic, 3d. and 1¾d. Less 20 per cent. Water-heating 20-hour service, £1, 8-hour night service, 6s., per 100 w. per annum. Both less 20 per cent.	General rate, 3d., 2¼d., and 1¾d.; milking motors, £6 16s. per h.p. per annum, plus 2¼d. per unit. Both less 25 per cent.
43. Waitomo	7d.	3d., 1½d., and 1d.	2½d. to 1½d.
44. Wanganui-Rangitikei	Domestic, 5d., 1½d., and 1d.; commercial, 5d., 4d., and 3d. Community lighting (5.30 p.m. to 11 p.m.) 4s. per 100 w. per month; advertising signs (sunset to 11 p.m.) £3 10s. per 100 w. per annum	Domestic, 5d.,1½d., 1d.; water-heating, with range or milking motor, 15s., without range or motor, £1 per 100 w. per annum (20 hours per day); night rate (11 p.m. to 7 a.m.), half ordinary rates	General rate, 3d., 2d., 1½d., and 1d.; milking motors, with condenser 1½d., without condenser, 3d. per unit.
45. Westland(2)	..	..	..
Other Local Authorities.			
1. Bluff Borough Council	7d. and 4d.	2d.	3d., 1 7/8d., 1d., and 1 1/16d. wholesale.
2. Christchurch City Council	Domestic, 4d. and ¾d.; commercial, 5d. and 1d. Both less 10 per cent.	Domestic, 4d. and ¾d.; commercial, 2d. net; domestic water-heating, ⅓d. (10 p.m. to 7 a.m.); 1d. (unrestricted); alternative unrestricted, £1 per 100 w. per annum; bake ovens, ⅓d. night, 1¼d. day. All less 10 per cent.	General rate, 1¼d. and ½d. Less 10 per cent.
3. Dunedin City Council	4½d. and ¾d.	1½d. and ½d.	1½d. and ½d. to ⅙d.
4. Hamilton Borough Council	Domestic, 5d., 1½d., and 1d.; commercial, 5d., 4d., and 3d.	Domestic, 5d., 1½d., and 1d.; water-heating, 19s. per 100 w. per annum off peak, £1 per 100 w. per annum unrestricted; 6s. per 100 w. per annum night rate	2d., 1½d., and 1d.
5. Hastings Borough Council(3)	..	..	..
6. Havelock North Town Board	7d.	2d.	2d.
7. Heathcote County Council	5½d., 5d., and 4d.	1d.	3d., 2d., and 1d.
8. Inglewood Borough Council	6d.	2d. and 1¼d.	2d. and 1¼d.
9. Invercargill City Council	6½d. to 1½d.	2d.	3d. to ¾d.
10. Kaiapoi Borough Council	6d. (summer); 4d. (winter)	1½d. to 1d.	2d. to 1d.
11. Kaikoura County Council	10½d.	10½d.	6d.
12. Kamo Town Board	8½d.	3½d.	3½d., 3d., and 2½d.
13. Kaponga Town Board	8d.	4d. to 1d.	5d. to 2d.
14. Lyttelton Borough Council	4½d.	1d.	3d. to 1d.
15. Mangaweka Town Board	7d.	2½d. to 1½d.	4d. to 3d.
16. Manunui Town Board	9d.	4½d.	4½d.
17. Murchison County Council	8d. and 3d.	3d. and 1d.	3d. and 2d.
18. Napier Borough Council	6d. to 1½d.	3d., to 1½d. and 1d.	3d. to 1½d. Less 12½ per cent.
19. Nelson City Council	6d.	4d., 3d., and 2d.	3d., 2d., and 1½d.
20. New Plymouth Borough Council	7d. and 6d.	2d. and 1d.	2d. and 1d. and Special.
21. Ohakune Borough Council	8d. and 6d. (Community lighting, £3, £1·8, and £1·2 per 100 w. per annum)	3d. and 1d. (Water-heating, £4 per 600 w. per annum)	3d.
22. Palmerston North City Council	Domestic, 6d., less 16⅔ per cent.; commercial, 6d., less 12½ per cent.	Domestic, 1½d., less 16⅔ per cent.; commercial, 1½d., less 12½ per cent.	3d. to 1¾d. Less 12½ per cent.
23. Patea Borough Council	7d. and 6d.	4d. and 1¾d.	3·6d. to 1d.
24. Picton Borough Council	8d.	4d., 3d., and 2d.	4d.

(For notes see page 101.)

Table XIII.—Retail Selling-rates for Electrical Energy for Year ending 31st March, 1935—*continued.*

Supply Authority.	Lighting. (Net.)	Heating. (Net.)	Power. (Net.)
Other Local Authorities—*continued.*			
25. Queenstown Borough Council ..	6d.	6d.	3d.
26. Raetihi Borough Council	8d.	2d.	1d.
27. Rangiora Borough Council ..	6d. and 2d. Less 7½ per cent.	2½d. and 1½d. Less 7½ per cent.	3d. and ½d. Less 7½ per cent.
28. Riccarton Borough Council ..	6d. and ⅞d. Less 10 per cent.	⅞d. Less 10 per cent.	1½d. Less 10 per cent.
29. Ross Borough Council(4)	..	..	..
30. Rotorua (Tourist Department) ..	6½d. and 5d.	3d. and 1d. Water-heating, ½d.	3d., 1d., and ½d.
31. Stratford Borough Council	7d. to 2d.	2d. to 1d.	2d. to 1d.
32. Sumner Borough Council	4d.	1d. and ½d. (Water-heating rate from 6s. 8d. to 25s. per month)	1d.
33. Taihape Borough Council	7·2d.	1·5d. (Domestic water-heating, £2 per kw. per annum)	2d.
34. Taumarunui Borough Council ..	7d.	Domestic, 3d. and 1d.; commercial, 2d. and 1d.; water-heating (with range), £6 per annum for 500 w., £1 per annum for each additional 100 w. (off peak)	3d. to 0·9d.
35. Tauranga Borough Council ..	5d.	1d.	2d. and 1d.
36. Te Aroha Borough Council.. ..	6½d. and 5d.	3d. and 1d.	3d. and ½d.
37. Te Puke Borough Council	7d.	Domestic, 2d. and 1d.; commercial, 2½d. and 1¼d.; water-heating, £1 2s. 5d. (off peak), £1 12s. 10d. (unrestricted), per 100 w. per annum	2½d. and 1¼d.
38. Thames Borough Council	8d.	3d. to 1½d.	3d. to ½d.
39. Timaru Borough Council	7d. to 4d. Less 10 per cent.	3d to 1½d. Less 10 per cent.	2½d. to 0·6d. Less 10 per cent.
40. Uawa County Council	17d.	11d.	11d.
41. Waimairi County Council	3d. and 1½d.	2d., 1d., ½d., ⅓d., and ¼d.	2d., 1d., ½d., and ⅓d.
42. Wairoa Borough Council	5d.	3d., 1¼d., 1d., and ½d.	3d. and 1½d.
43. Waitara Borough Council	7d.	3d., 2d., and 1d.	3d. and 1d.
44. Wellington City Council	Domestic, 4d. and ¾d.; commercial, 4½d. to 2½d., less 15 per cent., 5d. and 1d. (demand)	Domestic, 4d. and ¾d.; commercial, 2d., less 10 per cent.; water-heating, £10 per kw. per annum (24 hours, thermostat control), night rate (10.30 p.m. to 7.30 a.m.), 6d. per 100 w. per month	3d., 2½d., 2d., and 1½d. Less ½d. per unit, less 10 per cent. on net account.
45. Westport Borough Council ..	6d. and 5d.	3d. and 1d.	3d., 2½d., and 2d.
46. Whakatane Borough Council ..	9d.	1½d.	3½d., 2½d., and 1½d.
47. Whangarei Borough Council ..	5d.	1½d. and 1d.	3d., 2½d., 2d., and 1d.
Companies, etc.			
1. Alderton Utility Co.	Meters	not installed. Charges according to installed capacity.	
2. Kanieri Electric, Ltd.	6d.	1d.	3d. to 1d.
3. Reefton Electric Light and Power Co., Ltd.	9d.	4d.	3d. and 1½d.
4. P. Spender (Rawene)	15d.	..	9d.
5. Wilson's (N.Z.) Portland Cement, Ltd.	5½d. and 5d.	1½d.	3d. and 2½d.
6. Westland Power, Ltd.	9d. and 6¾d.	3d. to 1½d. Less 25 per cent.	4d. to ½d. Less 25 per cent. to 10 per cent.

Notes.—(1) Not yet actively functioning. (2) License delegated to Westland Power, Ltd. (3) Taken over by Hawke's Bay Power Board on 1st October, 1934. (4) No returns received.

Table XIV.—Return of Electric Ranges, Water-heaters, and Milking-machines connected to Electric-supply Systems as at 31st March, 1935.

Supply Authority.	Number of Consumers.			Ranges.					Water-heaters.			Milking-machines.		
	Domestic.	Commercial.	Total.	2 to 5 Kilowatts.	5 Kilowatts and over.	Total Number.	Total Kw.	Percentage of Number of Domestic Consumers.	Number.	Total Kilowatts.	Percentage of Total Number of Consumers.	Number.	Horse-power.	Not yet electrified.
Public Works Department														
1. Arapuni-Mangahao-Waikaremoana ..	249	8	257	12	118	130	1,014	52·20	130	148	50·60	.	..	..
2. Coleridge-Waitaki	61	36	97	33	49	82	401	..	106	129	..	2	6	..
Totals, Public Works Department..	310	44	354	45	167	212	1,415	..	236	277	..	2	6	..
Electric-power Boards.														
1. Ashburton	3,342	485	3,827	69	826	895	5,669	26·78	495	978	12·93	79	112	25
2. Auckland	41,951	9,997	51,948	..	5,537	5,537	38,759	13·19	11,610	6,385	22·40	279	558	..
3. Banks Peninsula	944	60	1,004	58	153	211	1,271	22·35	197	298	19·60	202	153	12
4. Bay of Plenty	1,339	224	1,563	57	481	538	3,230	40·17	1,075	788	68·80	588	917	..
5. Buller(1)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Cambridge	..	..	1,526	14	169	183	1,043	..	519	393	34·00	359	484	8
7. Central Hawke's Bay	1,023	610	1,633	5	187	192	1,288	18·76	265	265	16·23	89	174	..
8. Central Waikato	4,253	499	4,752	40	309	349	2,122	8·20	1,339	813	28·20	1,309	2,275	350
9. Dannevirke	2,173	467	2,640	7	209	216	1,443	9·94	511	359	19·36	390	547	..
10. Franklin	3,462	264	3,726	200	573	773	3,793	22·32	1,569	941	42·10	1,290	1,688	..
11. Golden Bay	301	70	371	15	25	40	188	13·28	51	40	13·75	74	80	11
12. Grey	2,731	478	3,209	..	260	260	1,765	9·52	168	172	5·24	9	7	..
13. Hawke's Bay	5,731	746	6,477	50	598	648	5,233	11·30	645	403	9·96	180	260	..
14. Horowhenua	3,334	978	4,312	..	639	639	4,007	19·16	1,076	676	25·00	955	983	..
15. Hutt Valley	11,075	704	11,779	120	1,852	1,972	11,472	17·80	1,563	1,807	13·27	70	112	..
16. Lake Wakatipu(1)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17. Malvern	663	2	665	15	132	147	937	22·17	67	113	10·07	6	10	..
18. Manawatu-Oroua	4,552	440	4,992	..	849	849	4,739	18·65	1,604	975	32·15	1,125	1,879	..
19. Marlborough	2,348	424	2,772	150	350	500	2,669	21·29	305	220	11·00	95	158	..
20. North Auckland(1)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21. North Canterbury	1,735	180	1,915	67	214	281	1,665	16·19	187	306	9·77	80	128	..
22. Opunake	840	120	960	..	91	91	460	10·83	120	76	12·50	255	430	..
23. Otago Central	749	195	944	6	133	139	790	18·55	149	152	15·80	73	56	..
24. Otago	4,025	30	4,055	13	352	365	2,126	9·06	324	318	7·99	89	144	..
25. Poverty Bay	4,045	990	5,035	..	983	983	6,382	24·30	600	420	11·92	137	140	..
26. Reefton(1)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27. South Canterbury	3,486	552	4,038	67	592	659	4,218	18·90	459	696	11·35	161	226	23
28. South Taranaki	..	..	3,077	111	186	297	1,499	..	392	257	12·74	438	690	202
29. Southland	..	..	9,750	14	1,560	1,574	11,070	..	504	605	5·17	1,264	2,511	..
30. Springs-Ellesmere	2,285	248	2,533	37	229	266	1,690	11·64	146	169	5·76	133	225	..
31. Taranaki	1,172	1,140	2,312	8	327	335	2,374	28·58	828	533	35·80	899	1,672	..
32. Tararua	1,481	139	1,620	50	176	226	1,367	15·25	362	230	22·35	348	495	..
33. Tauranga	1,206	91	1,297	37	212	249	1,607	20·64	615	344	47·40	493	811	63

(For notes, see page 104.)

TABLE XIV.—RETURN OF ELECTRIC RANGES, WATER-HEATERS, AND MILKING-MACHINES CONNECTED TO ELECTRIC-SUPPLY SYSTEMS AS AT 31ST MARCH, 1935—*continued.*

Supply Authority.	Number of Consumers.			Ranges.					Water-heaters.			Milking-machines.		
	Domestic.	Commercial.	Total.	2 to 5 Kilowatts.	5 Kilowatts and over.	Total Number.	Total Kw.	Percentage of Number of Domestic Consumers.	Number.	Total Kilowatts.	Percentage of Total Number of Consumers.	Number.	Horse-power.	Not yet electrified.
ELECTRIC-POWER BOARDS—*continued.*														
34. Te Awamutu	1,573	296	1,869	26	225	251	1,515	15·95	586	402	31·35	622	991	30
35. Teviot	353	61	414	7	131	138	857	39·30	109	92	26·30	..	..	..
36. Thames Valley	6,658	805	7,463	50	809	859	5,732	12·90	2,624	1,755	35·20	2,452	4,447	60
37. Waimea	..	..	1,765	20	21	41	165	..	10	6	0·57	1	1	..
38. Wairarapa	4,039	854	4,893	50	402	452	3,091	11·19	716	601	14·64	450	778	28
39. Wairere	289	53	342	4	96	100	632	34·60	159	90	46·50	..	..	..
40. Wairoa	297	68	365	31	81	112	596	37·71	124	67	34·00	139	134	2
41. Waitaki	3,150	567	3,717	61	538	599	4,006	19·01	587	784	15·80	33	51	..
42. Waitemata	..	..	10,287	58	1,591	1,649	9,849	..	1,809	1,184	17·58	352	410	..
43. Waitomo	980	329	1,309	26	172	198	1,246	20·20	298	188	23·80	175	284	..
44. Wanganui-Rangitikei	..	..	10,478	..	1,182	1,182	7,132	..	1,498	1,108	14·30	642	904	..
45. Westland(2)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals, Power Boards	..	..	187,634	1,543	23,452	24,995	159,697	..	36,265	26,009	19·32	16,335	25,925	814
OTHER LOCAL AUTHORITIES.														
1. Bluff Borough Council	406	92	498	5	3	8	25	1·97	1	2	0·20	..	..	..
2. Christchurch City Council	..	..	29,493	1,000	4,343	5,343	32,588	..	5,305	5,765	18·00	18	33	..
3. Dunedin City Council	20,289	6,495	26,784	121	1,297	1,418	8,244	6·97	2,125	2,272	7·93	107	189	..
4. Hamilton Borough Council	3,220	1,238	4,458	9	124	133	840	4·13	227	162	5·10	..	..	..
5. Hastings Borough Council(6)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Havelock North Town Board	278	29	307	54	4	58	237	20·86	19	13	6·20	..	..	..
7. Heathcote County Council	1,256	3	1,259	96	321	417	2,326(5)	33·20	318	295	25·25	4	5	..
8. Inglewood Borough Council	364	59	423	3	25	28	185	7·69	22	21	5·20	2	3	..
9. Invercargill City Council	..	..	5,639	10	94	104	606	..	1	1	..	..	..	..
10. Kaiapoi Borough Council	405	69	474	39	20	59	269	14·56	7	7	1·48	..	..	..
11. Kaikoura County Council	110	47	157	..	..	..	..	..	..	..	..	..	..	..
12. Kamo Town Board	..	..	117	..	..	..	..	..	..	..	..	..	..	..
13. Kaponga Town Board	314	56	370	9	13	22	89	7·00	43	27	11·62	1	1	..
14. Lyttelton Borough Council	724	133	857	7	63	70	443	9·66	38	44	4·44	107	206	28
15. Mangaweka Town Board	84	29	113	1	14	15	82	17·85	15	7	13·30	1	3	..
16. Manunui Town Board	143	21	164	..	..	..	..	..	..	..	..	10	9	..
17. Murchison County Council	152	21	173	7	4	11	38	7·23	11	7	6·35	2	1	..
18. Napier Borough Council	3,438	931	4,369	31	144	175	1,117	5·09	615	386	14·07	19	27	3
19. Nelson City Council	2,200	733	2,933	..	..	..	..	..	2	3	..	..	..	..
20. New Plymouth Borough Council	5,425	935	6,360	193	804	997	5,000	18·37	1,148	692	18·06	362	684	..
21. Ohakune Borough Council	360	110	470	7	10	17	78	4·72	15	10	3·19	5	4	2
22. Palmerston North City Council	4,687	1,168	5,855	71	570	641	3,850	13·67	1,364	866	23·30	3	6	..
23. Patea Borough Council	310	62	372	15	21	36	163	11·61	26	16	7·00	10	10	5
24. Picton Borough Council	310	65	375	1	1	2	11	0·64	..	..	..	..	..	..
25. Queenstown Borough Council	..	..	257	2	7	9	62	..	..	..	..	..	..	..

(For notes, see page 104.)

TABLE XIV.—RETURN OF ELECTRIC RANGES, WATER-HEATERS, AND MILKING-MACHINES CONNECTED TO ELECTRIC-SUPPLY SYSTEMS AS AT 31ST MARCH, 1935—*continued*.

Supply Authority.	Number of Consumers.			Ranges.					Water-heaters.			Milking-machines.		
	Domestic.	Commercial.	Total.	2 to 5 Kilowatts.	5 Kilowatts and over.	Total Number.	Total Kw.	Percentage of Number of Domestic Consumers.	Number.	Total Kilowatts.	Percentage of Total Number of Consumers.	Number.	Horse-power.	Not yet electrified.
OTHER LOCAL AUTHORITIES—*continued*.														
26. Raetihi Borough Council	314	86	400	2	13	15	93	4·77	28	22	7·00	21	31	..
27. Rangiora Borough Council	556	85	641	3	50	53	344	9·53	43	55	6·71	..	..	..
28. Riccarton Borough Council	1,339	119	1,458	35	302	337	2,130	25·16	360	326	24·70	..	..	..
29. Ross Borough Council(3)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30. Rotorua (Tourist Department)	1,519	570	2,089	90	130	220	1,075	14·48	267	233	12·78	67	111	..
31. Stratford Borough Council	836	239	1,075	7	174	181	901	21·65	165	149	15·35	2	3	..
32. Sumner Borough Council	..	..	1,045	44	101	145	866	..	104	88	9·95	1	3	..
33. Taihape Borough Council	422	153	575	1	10	11	58	2·61	17	17	2·96	1	5	..
34. Taumarunui Borough Council	616	319	935	6	26	32	180	5·19	33	26	3·53	22	20	..
35. Tauranga Borough Council	746	283	1,029	91(4)	245(4)	336(4)	2,016(4)	45·04	436(5)	175	42·40	..	..	..
36. Te Aroha Borough Council	507	227	734	4	47	51	354	10·05	36	44	4·91	7	15	..
37. Te Puke Borough Council	194	109	303	9	26	35	193	18·04	51	30	16·82	6	8	..
38. Thames Borough Council	905	255	1,160	4	19	23	133	2·54	46	28	3·97	..	..	..
39. Timaru Borough Council	3,323	941	4,264	..	431	431	2,819	12·97	335	310	7·86	..	..	..
40. Uawa County Council	84	14	98	..	..	..	..	..	..	..	..	..	..	..
41. Waimairi County Council	3,226	185	3,411	53	733	786	4,507	24·36	767	718	22·50	15	23	..
42. Wairoa Borough Council	432	243	675	11	143	154	1,067	35·64	177	96	26·20	..	..	..
43. Waitara Borough Council	423	94	517	6	33	39	239	9·21	31	24	6·00	1	2	..
44. Wellington City Council	25,794	10,881	36,675	184	1,522	1,706	10,879	6·61	2,592	3,382	7·07	..	..	..
45. Westport Borough Council	614	249	863	..	13	13	92	2·11	28	23	3·25	1	2	..
46. Whakatane Borough Council	346	137	483	9	81	90	522(5)	26·01	96	61	19·86	8	8	..
47. Whangarei Borough Council	1,537	625	2,162	34	159	193	1,173	12·55	125	75	5·78	11	20	..
Totals, other Local Authorities	..	..	152,869	2,274	12,140	14,414	85,894	..	17,039	16,478	11·15	814	1,432	38
COMPANIES, ETC.														
1. Alderton Utility Co.	44	7	51	10	16	26	124	59·09	24	14	47·00	5	4	1
2. Kanieri Electric, Ltd.	540	167	707	11	47	58	348	10·74	31	34	4·38	..	..	..
3. Reefton Electric Light and Power Co., Ltd.	279	82	361	..	..	..	..	..	2	2	0·55	1	2	..
4. P. Spender (Rawene)	32	21	53	..	..	..	..	..	..	..	..	..	..	..
5. Wilson's (N.Z.) Portland Cement, Ltd.	130	37	167	4	1	5	16	3·84	6	4	3·59	23	49	..
6. Westland Power, Ltd.	125	13	138	2	18	20	109	16·00	32	42	23·20	20	40	150
Totals, Companies, &c.	1,150	327	1,477	27	82	109	597	9·48	95	96	6·43	49	95	151
Totals, all Supply Authorities, 1935	..	..	342,334	3,889	35,841	39,730	247,607	..	53,635	42,860	15·66	17,200	27,458	1,003
,, 1934	..	..	334,593	3,378	32,713	36,081	225,240	..	50,272	39,559	15·02	16,992	26,428	1,344*
,, 1933	..	..	322,997	2,198	31,525	33,998	..	..	48,070	38,832	14·80	15,913	25,953	1,330*
,, 1932	..	..	309,360	2,054	29,919	31,973	..	..	45,796	37,444	14·83	14,163	25,220	1,046*
,, 1931	..	..	300,809	1,838	27,642	29,480	..	..	42,803	34,757	14·30	13,656	24,205	840

(1) Not yet actively functioning. Bay Power Board on 1st October, 1934.
(2) License delegated to Westland Power, Ltd.
(3) No returns received.
(4) Last year's figures. No returns received.
(5) Estimated. No returns received.
(6) Taken over by Hawke's
* Increase accounted for by improvement in collection of statistics.

TABLE XV.—SAMOAN ADMINISTRATION (APIA).—STATISTICS FOR YEAR ENDING 31ST MARCH, 1935.

Installed in December, 1928.

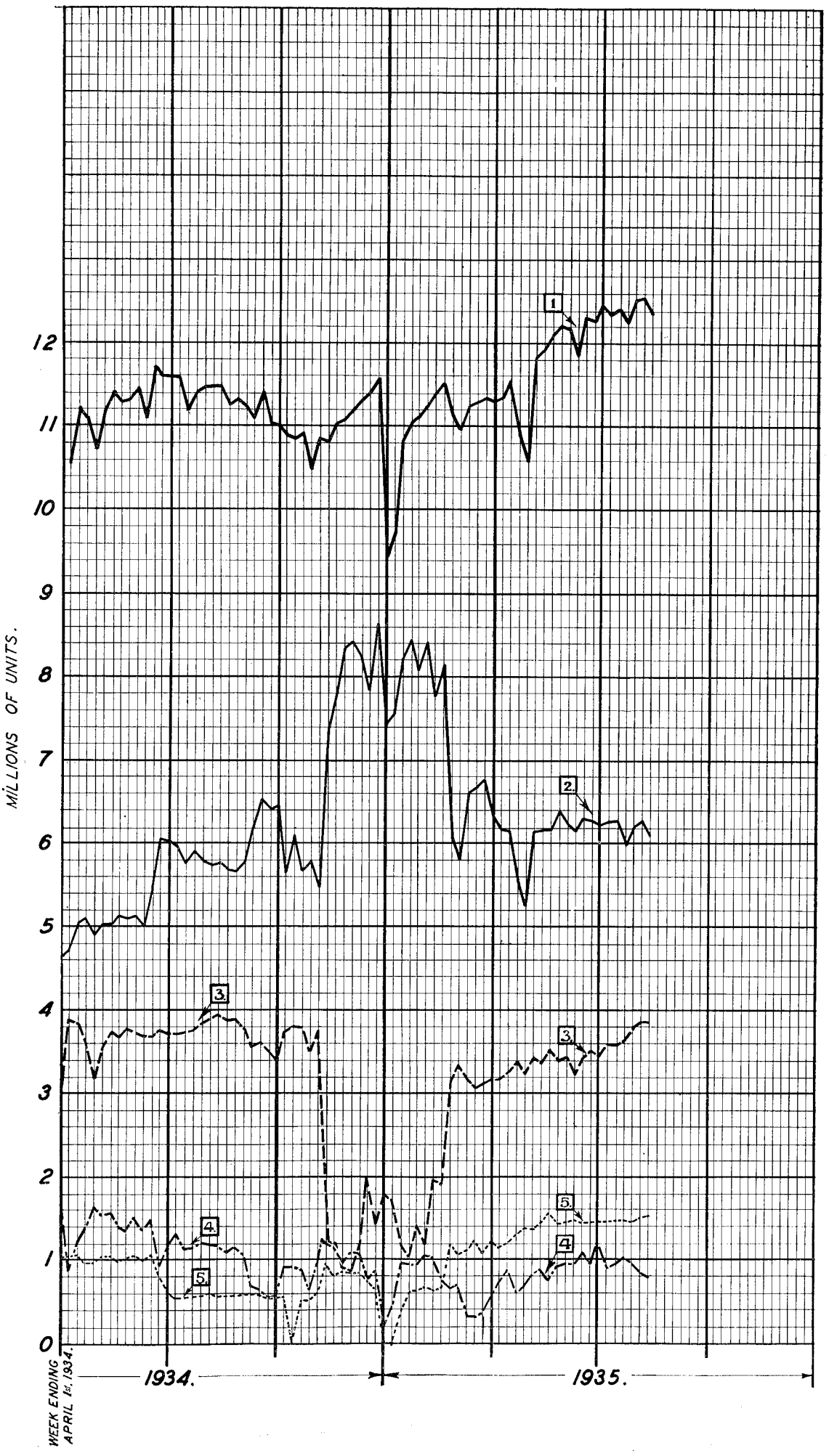
Statistical.		Financial.	
			£
Capacity	80 kw.	Capital outlay	21,563
Static head	192 ft.	Revenue from sale of electricity	3,548
Generating voltage	2,200 volts.	Revenue, miscellaneous	330
Supply voltage	220/110 volts.	Working-expenses	1,053
Number of consumers (domestic)	214	Capital charges	1,228
Number of consumers (commercial)	74	Total annual costs	2,281
Units generated	200,911	Profit	1,597
Units sold	164,912	Accumulated Depreciation Reserve	7,895
Units non-productive	17·9 per cent.		d.
Maximum load	70 kw.	Average revenue per unit sold	5·20
Connected load	234 kw.	Average working cost per unit sold	1·53
Average load factor	32·9 per cent.	Average total cost per unit sold	3·30
Demand factor	29·8 per cent.		£
Route-miles of reticulation—		Capital outlay per £1 of revenue	6·35
Overhead	10¼		Per Cent.
Underground	6¾	Ratio working-expenses to gross revenue	29·75
		Ratio capital charges to capital outlay	5·68
		Ratio profit to capital outlay	7·38

NORTH ISLAND POWER SYSTEM.

UNITS GENERATED PER WEEK.

CURVES:

1. *NORTH ISLAND SYSTEM.*
2. *ARAPUNI POWER STATION.*
3. *WAIKAREMOANA POWER STATION.*
4. *MANGAHAO POWER STATION.*
5. *HORAHORA POWER STATION.*



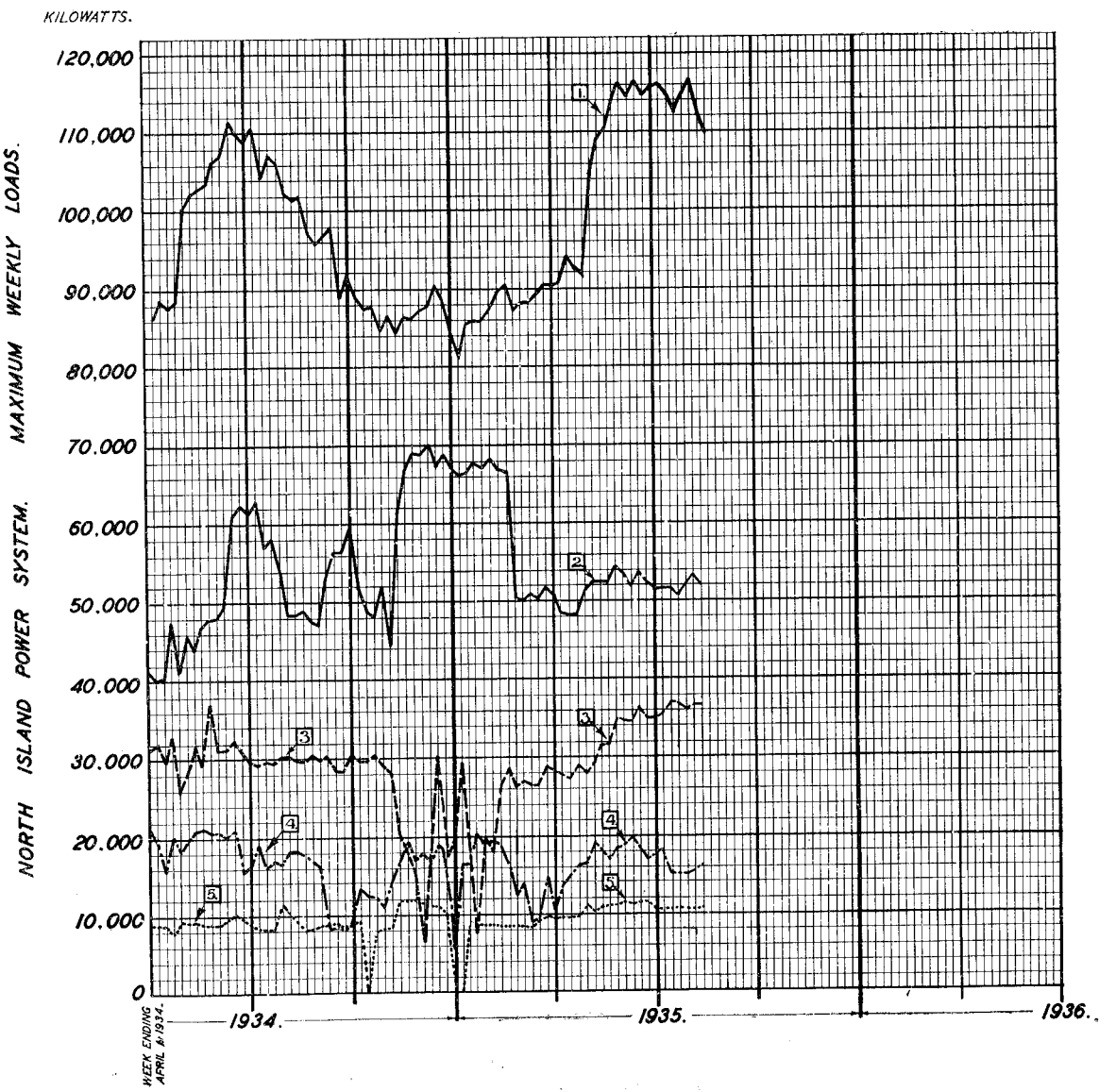
NORTH ISLAND POWER SYSTEM.

MAXIMUM WEEKLY LOADS.

CURVES:

1. *NORTH ISLAND SYSTEM.*
2. *ARAPUNI POWER STATION.*
3. *WAIKAREMOANA POWER STATION.*
4. *MANGAHAO POWER STATION.*
5. *HORAHORA POWER STATION.*

PLANT-CAPACITY INSTALLED: MAIN PLANT, 122,600 kw.; STANDBY PLANT, 5,250 kw.

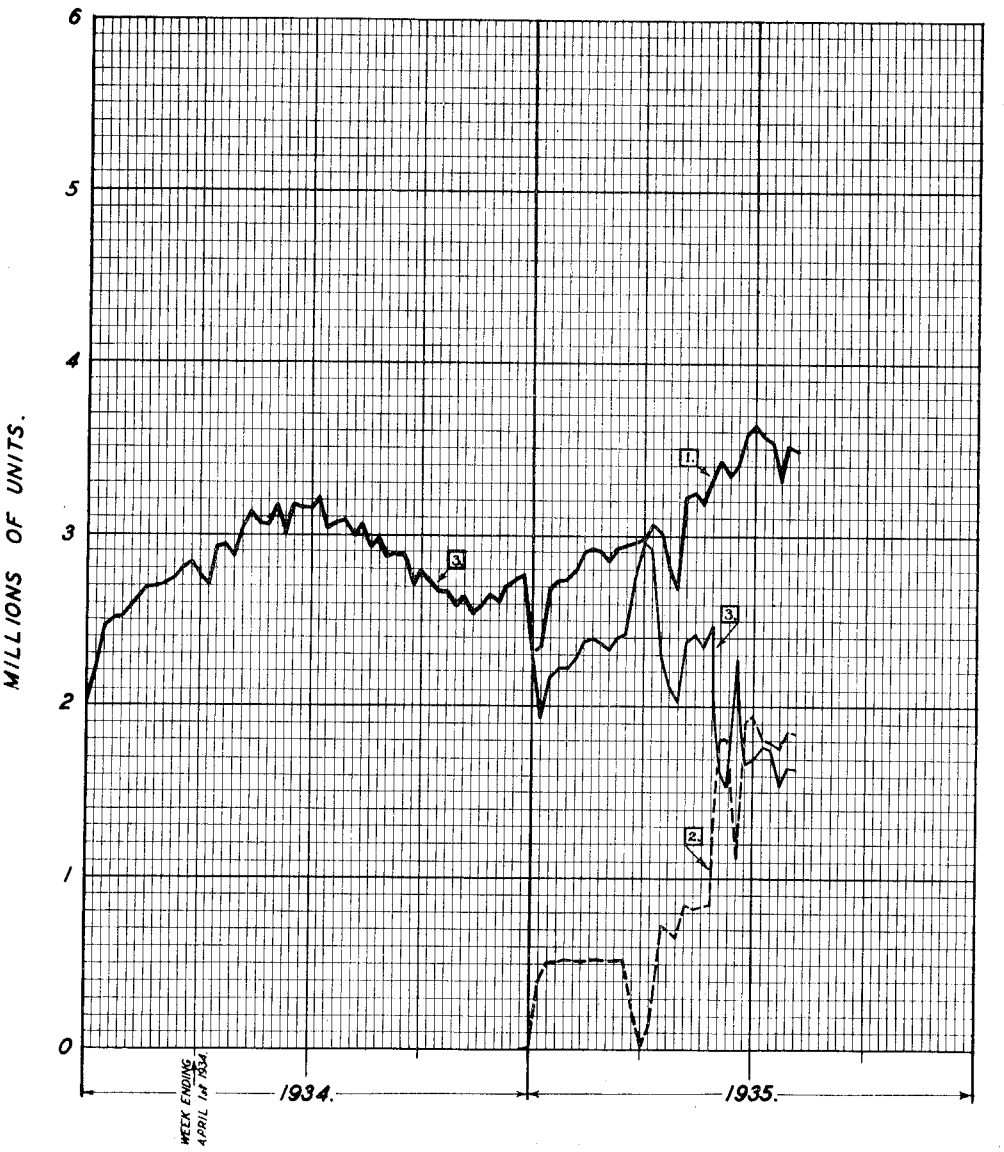


LAKE COLERIDGE-WAITAKI POWER SYSTEM.

UNITS GENERATED PER WEEK.

CURVES:

1. COLERIDGE-WAITAKI SYSTEM.
2. WAITAKI POWER STATION.
3. COLERIDGE POWER STATION.



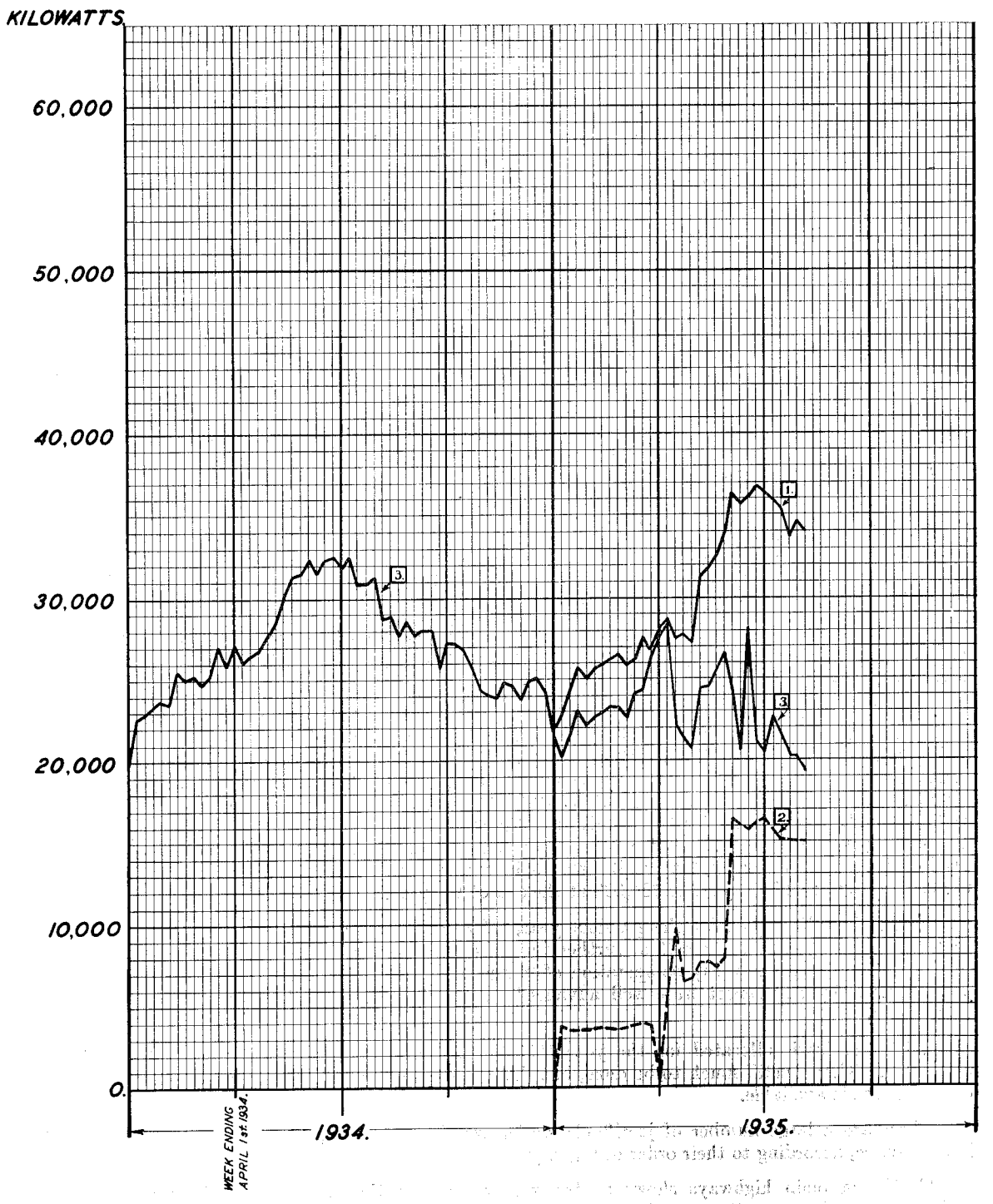
LAKE COLERIDGE-WAITAKI POWER SYSTEM.

MAXIMUM WEEKLY LOADS.

CURVES:

1. *COLERIDGE-WAITAKI SYSTEM.*
2. *WAITAKI POWER STATION.*
3. *COLERIDGE POWER STATION.*

PLANT-CAPACITY INSTALLED: MAIN PLANT, 64,500 kw.; STANDBY PLANT, 5,760 kw.



APPENDIX E.

ELEVENTH ANNUAL REPORT OF THE MAIN HIGHWAYS BOARD.

The Main Highways Board to the Minister of Public Works, Wellington.

Sir,—

In accordance with the requirements of section 24 of the Main Highways Act, 1922, the Main Highways Board has the honour to submit its eleventh annual report for presentation to Parliament.

The report covers the period from the 1st April, 1934, to the 31st March, 1935, though a number of matters referred to are carried beyond the latter date for convenience and completeness of record.

General.

The present length of main highways maintained or subsidized by the Main Highways Board is 11,560 miles. Formerly the main highways system was classified into primary and secondary groups for the principal reason that secondary highways were subject to subsidies for maintenance works only. However in process of time, and especially during the period of financial stringency, necessary works on secondary highways, other than maintenance in character, had to be faced, and these were subsidized from highways funds in the same way as in the case of primary highways, with the result that no good purpose was being served by retaining the classifications.

The Board has therefore abolished the distinctions between primary and secondary main highways, and throughout this report and appendices the system is dealt with comprehensively.

The total expenditure for the financial year ended on the 31st March, 1935, amounted to £1,943,814, compared with £1,346,026 for the year immediately preceding.

The expenditure from the Revenue Fund for the year 1934–35 was £1,618,331, as compared with £1,147,731 for 1933–34 and £1,185,700 for 1932–33. These figures include a number of charges against the Revenue Fund under the authority of the Finance Acts of 1932, 1932–33, and 1934, which are not directly related to matters covered by the Main Highways Act, 1922.

The amounts expended from the Revenue Fund on actual maintenance of the main highways (including repairing of earthquake and flood damage) during the past four years were as follow: 1931–32, £849,734; 1932–33, £600,324; 1933–34, £674,026; 1934–35, £932,675. The Board's standard subsidy for maintenance works is £3 for £1.

The expenditure from the Construction Fund for the year 1934–35 was £325,483, as compared with the following amounts spent during the preceding four years: 1930–31, £711,250; 1931–32, £384,145; 1932–33, £159,323; 1933–34, £198,295.

It will be noted that last year's expenditure showed a substantial increase over that for the year 1933–34. This is due chiefly to the facts that special attention was given to the important matter of bridge-construction, and that a certain amount of reconstruction and dustless surfacing, which had been deferred for financial reasons, was completed or commenced. It has been the policy of the Board to subsidize sealing-work at the rate of £2 for £1, although preparation of surfaces as apart from sealing usually carried a £3 for £1 subsidy, but the standard rate of assistance for both preparation and sealing was increased to £3 for £1 as from the 1st April, 1934. The higher expenditure has resulted in the reduction of the credit balance in the Board's Revenue Account from £182,000 at the commencement of the year to £34,000 at the end of the year.

In the Board's report for the previous year, reference was made to the anticipated increase in highways operations as the result of further funds becoming available. The Board has pleasure in reporting that, with the ready co-operation of many local authorities, its proposals for the financial year covered by this report were well advanced, as will be seen from the accompanying detailed tabulations.

With the funds allocated for the year 1935–36 improvement of the highways system will be continued. There is still much to be done, but the rate of progress will be dependent on the amount of finance made available.

There are a large number of justifiable works awaiting attention, and these will be considered in due course, according to their order of urgency.

Traffic on main highways shows a steady increase, and the inevitable result will be heavier maintenance and a necessity for safer roads. The principal factors in considering highways improvements are the possibility of reducing maintenance costs and the desirability of providing safe conditions for travelling, according to the nature and amount of traffic.

LEGISLATION.

New legislation affecting the Board during the past financial year has been—

Section 16 of the Finance Act (No. 2), 1934, extended authority to retain in the Consolidated Fund for the year 1934–35 a sum not exceeding £500,000 out of the net revenue derived from motor-spirits taxation and otherwise payable to the Main Highways Revenue Fund. The application of this authority was subject to consideration being given to the proper requirements of the Main Highways Revenue Fund, so that the amount which in the opinion of the Minister of Finance was necessary for those requirements would not be reduced.

The amount retained pursuant to this legislation was £321,754.

Section 4 of the Finance Act (No. 3), 1934, empowered the Minister of Finance to borrow further amounts not exceeding a total of £1,000,000 for reconstruction or construction of main highways. Under the Main Highways Act, 1922, the original loan authority was for a total of £3,000,000, so that in effect this has now been increased to £4,000,000.

Section 4 reads as follows :—

" (1) In addition to all moneys which the Minister of Finance has heretofore been authorized to borrow for the purposes of the construction or reconstruction of main highways, the said Minister may for those purposes borrow, on the security of and charged upon the public revenues of New Zealand, such sums of moneys as he thinks fit, not exceeding in the aggregate the sum of one million pounds.

" (2) The sums so borrowed shall bear interest at such rate as the Minister of Finance prescribes.

" (3) All moneys borrowed under the authority of this section shall, as and when borrowed, be paid into the Public Account to the credit of the Main Highways Construction Fund established under the Main Highways Act, 1922, and may from time to time be applied accordingly in accordance with appropriations by Parliament.

" (4) This section shall be deemed to be an authorizing Act within the meaning of the New Zealand Loans Act, 1932, and the moneys herein authorized to be borrowed shall be borrowed under and subject to the provisions of that Act accordingly."

Section 28 of the Finance Act (No. 3), 1934, authorized the payment to local authorities out of the Main Highways Revenue Fund of subsidies in respect of rates levied on certain farm lands, to be applied in relief of the ratepayers affected.

The full text of section 28 is as follows :—

" (1) This section applies with respect to—

" (*a*) All lands situated within any county and used exclusively or principally for agricultural, horticultural, or pastoral purposes :

" (*b*) All lands situated within any road district in a county in which the Counties Act, 1920, is in full force, and used exclusively or principally for agricultural, horticultural, or pastoral purposes :

" (*c*) All urban farm lands (within the meaning of the Urban Farm Land Rating Act, 1932), included as at the twenty-eighth day of February, nineteen hundred and thirty-five, in any farm-land roll under that Act.

" (2) To every local authority that for the year ending the thirty-first day of March, nineteen hundred and thirty-five, has made and levied on its own account any rates on lands with respect to which this section applies there shall in accordance with this section be paid a subsidy equal to twelve and one-half per centum of the total amount of the rates so made and levied by that local authority on those lands.

" (3) The subsidy payable to any local authority pursuant to this section shall, not later than the thirty-first day of March, nineteen hundred and thirty-five, be paid out of the Main Highways Revenue Fund without further appropriations than this section.

" (4) For the purpose of enabling effect to be given to the foregoing provisions of this section every local authority that is entitled to receive a subsidy thereunder shall, as soon as practicable after the passing of this Act, furnish to the Minister of Finance, in a form to be approved by him, a statement, certified as correct by the Chairman pursuant to a resolution of the local authority showing—

" (*a*) In the case of lands that are not included in a farm-land roll—

" (i) The aggregate amount of the rates made and levied by the local authority on its own account for the current financial year on all the rateable property in its district ; and

" (ii) In respect of rateable property in its district that is not used exclusively or principally for agricultural, horticultural, or pastoral purposes, the name of the owner and occupier of any such property, its rateable value, and the total amount of the rates made and levied on its own account in respect thereof for the current financial year :

" (*b*) In the case of lands that are included a farm-land roll, the aggregate amount of the rates made and levied by the local authority on its own account for the current financial year on all lands included in that roll.

"(5) Every local authority that receives a subsidy under the foregoing provisions of this section shall grant to the ratepayers concerned a rebate or refund, as the case may require, of an amount equal to twelve and one-half per centum of the rates made and levied by it on its own account for the current financial year on any land with respect to which this section applies."

The total amount of subsidies paid from the Main Highways Revenue Fund during the year 1934–35 under the authority of the foregoing legislation was £178,246.

Finance.

The actual income of the Board's Revenue Fund from external sources for the year 1934–35 amounted to £1,419,473. The table below shows how this amount is made up, and the corresponding figures for previous years are also shown :—

—	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.
	£	£	£	£	£	£	£	£	£	£	£
Transfer from Consolidated Fund	35,000	35,000	35,000	35,000	35,000	35,000	†	†	†	†	†
Proceeds of tax on tyres and tubes collected through the Customs Department	161,986	223,699	188,450	219,658	196,747	155,722	129,188	84,649	63,253	62,979	91,693
Registration and license fees of motor-vehicles, &c.	268,178	78,038*	283,963	303,861	341,017	378,135	397,139	372,224	354,216	354,444	355,990
Motor-spirits tax ..	..	..	..	130,461	730,414	873,369	1,219,209	1,231,202	644,126	669,868	970,506
Mileage-tax ..	..	..	..	..	..	..	..	..	..	1,133	1,284
Totals ..	465,164	336,737	507,413	688,980	1,303,178	1,442,226	1,745,536	1,688,075	1,061,595	1,088,424	1,419,473

* This low figure was due to delay in the issue of number-plates for motor-vehicles. † Further transfers abolished by amending legislation.

The receipts from the Customs tax on tyres and tubes show a marked increase on the corresponding amounts for the past three years.

Registration, license fees, &c., totalled approximately £1,500 more than for the preceding year, although the amounts received from this source for the last three years have remained almost constant.

The proceeds from the motor-spirits tax were very much higher for the year ended 31st March, 1935. The amount shown in the above table excludes the sum of £321,754, which was retained in the Consolidated Fund in terms of section 16 of the Finance Act (No. 2), 1934.

The amount thus retained, together with the special farm-lands subsidy (referred to under Legislation), which involved the payment of £178,246 from the Highways Revenue Fund, make up £500,000, so that in effect the actual position was similar to that which existed last year, when £500,000 was wholly retained in the Consolidated Fund.

As has been pointed out on previous occasions, the quantity of petrol imported into New Zealand is probably the most reliable index of the volume of the Dominion's motor traffic, with which is closely associated the cost of road maintenance. The gross importations of motor-spirit since 1926 have been as follow :—

	Gallons.		Gallons.
1926 (January to December)	44,800,000	1931 (January to December)	61,800,000
1927 ,,	48,000,000	1932 ,,	58,400,000
1928 ,,	54,500,000	1933 ,,	55,400,000
1929 ,,	62,400,000	1934 ,,	64,600,000
1930 ,,	68,300,000		

It will be noted that the importations of motor-spirit for the calendar year of 1934 were much greater than for the previous three years. As a matter of fact, the figures for the last calendar year have only once previously been exceeded—in 1930.

For the year ended 31st March, 1935, the summarized expenditure under the Revenue Fund was as follows :—

	Expenditure. £
Maintenance works—	
North Island	610,356
South Island	322,319
Administration and general charges	44,434
Loan charges (including commutation of toll-gate charges and Hutt Road fees)..	281,871
Subsidies on rates..	181,105
Special subsidy on farm-land rates (Finance Act (No. 3), 1934).. ..	178,246
	£1,618,331

An analysis of the expenditure by the Board and by local authorities on actual maintenance, as distinct from interest on loans and other overhead charges, is shown in the tabulation below :—

——	Board's Contribution.	Local Authorities' Contribution.	Total.	Percentage Board's Contribution to Total.	Percentage Local Authorities' Contribution to Total.
	£	£	£		
North Island	610,356	154,306	764,662	79·82	20·18
South Island	322,319	72,248	394,567	81·69	18·31
Total	932,675	226,554	1,159,229	80·46	19·54

An analysis of the actual expenditure by the Board on maintenance in each Island, as compared with the number of motor-vehicles in each Island at the 31st March shows the following comparisons for the last ten years :—

——	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.	1934–35.
North Island—										
Maintenance expenditure	65·27	64·86	67·51	66·13	62·30	59·23	62·31	62·84	63·80	65·44
Motor-vehicles ..	61·41	61·86	62·19	63·08	63·63	63·84	63·77	63·78	63·94	64·31
South Island—										
Maintenance expenditure	34·73	35·14	32·49	33·87	37·70	40·77	37·69	37·16	36·20	34·56
Motor-vehicles ..	38·59	38·14	37·81	36·92	36·37	36·16	36·23	36·22	36·06	35·69

An analysis of the Board's expenditure and the expenditure by local authorities under the Construction Fund shows the following position :—

——	Board's Contribution.	Local Authorities' Contribution.	Total.	Percentage of Board's Contribution to Total.	Percentage of Local Authorities' Contribution to Total.
	£	£	£		
North Island	198,969	39,971	238,940	83·27	16·73
South Island	126,514	18,004	144,518	87·54	12·46
Totals	325,483	57,975	383,458	84·88	15·12

The following tabulation shows the amount which has been provided by the Board and the local authorities for expenditure on both maintenance and construction during the last ten years :—

——	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.	1933–34	1934–35.
	£	£	£	£	£	£	£	£	£	£
Maintenance by Board ..	279,404	438,762	523,581	756,399	1,049,249	872,577	849,734	600,324	674,026	932,675
Maintenance by local authorities	185,015	276,349	269,065	284,526	375,849	317,839	215,568	168,466	187,735	226,554
Construction by Board ..	421,880	540,362	449,904	936,148	1,007,957	667,902	361,969	159,323	198,295	325,483
Construction by local authorities	142,761	255,860	262,538	214,155	203,148	150,984	94,973	43,181	55,997	57,975
Totals	1,029,060	1,511,333	1,505,088	2,191,228	2,636,203	2,009,302	1,522,244	971,294	1,116,053	1,542,687
Percentages.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Maintenance by Board ..	60·2	61·4	66·0	72·7	73·6	73·3	79·8	78·1	78·2	80·5
Maintenance by local authorities	39·8	38·6	34·0	27·3	26·4	26·7	20·2	21·9	21·8	19·5
Construction by Board ..	74·7	67·9	63·1	81·4	83·3	81·6	79·2	77·6	77·0	84·9
Construction by local authorities	25·3	32·1	36·9	18·6	16·7	18·4	20·8	22·4	23·0	15·1

The maintenance figures in the above table exclude indirect charges such as supervision, interest, &c., but include the cost of earthquake restoration.

It will be noticed that both maintenance and construction expenditure show an increase on the figures for the last few years.

The following statement shows the total expenditure by the Board in each Island from both funds for the financial year ended 31st March, 1935. The figures include administration charges :—

—	Expenditure on Maintenance.	Expenditure on Construction.	Total Expenditure in each Island.	Percentage of Expenditure in each Island.	Percentage of Motor-taxation derived from each Island.
	£	£	£		
North Island	639,434	198,969	838,403	64·36	68·47
South Island	337,675	126,514	464,189	35·64	31·53
Totals	977,109	325,483	1,302,592	100·00	100·00

MAINTENANCE.

The Board's first duty is to maintain all highways to a reasonable standard, and while it is impossible to keep all gravel surfaces at the 100-per-cent. mark all the year round, there is no doubt that the highway surfaces have improved year by year as a result of the Board's activities.

The Board does not hesitate to call on any local authority to effect any maintenance that is considered necessary, but it is noticed that the occasions on which it is necessary to take up with maintaining authorities cases of apparent neglect are becoming fewer each year. As highway funds are supplying directly or indirectly practically the whole cost of highway maintenance there is no excuse for neglect of maintenance. Attention was drawn to this financial position in last year's report.

One of the most-neglected items of maintenance in the past has been the painting of steel bridges, and it is pleasing to note that most of the local authorities are giving this work the serious attention that it requires.

Many important items of major maintenance have been carried out. Many bridges have been repaired in order to extend their lives till such time as their renewal can be faced, while a few have been converted into permanent structures. For instance, the Taipo River Bridge of four 110 ft. spans, which was originally built with steel cylinders and a timber superstructure, has had the timber trusses removed and replaced with steel-plate girders and a reinforced concrete deck.

A matter which is giving the Board some concern is the rapid development that is taking place in motor-vehicle design. It appears that the designed speed of motor-vehicles has been substantially increased during the last few years, and this means that in the interests of public safety reasonable improvements in alignment and visibility must still be continued.

As in the past, care is being given to smoothness of surface where bituminous maintenance surfaces are being applied. In certain cases where pavements have been down six or seven years and have become uneven and wavy under traffic impact, smoothing coats have been applied with good results. In other cases where the unevenness has been caused by swamp subsidence, the depressions have been taken out with premixed emulsions and aggregate.

The season has been an abnormally bad one for the carrying out of work. Most districts suffered a prolonged dry spell of weather, and, while this assisted most phases of the work, it produced much ravelling on the traffic compacted surfaces, and in many cases necessitated the postponement of sealing operations.

On the other hand, in the North Auckland area floods were frequent, and the Board was faced with considerable extra expenditure for the replacement of gravel on the surfaces, the removal of slips, and the restoration of many bridges that were washed away.

The average expenditure on maintenance per mile per annum on the whole main highways system by the Board and local authorities since 1924 is shown in the following table :—

Year.	Average Expenditure per Mile per Annum. £	Year.	Average Expenditure per Mile per Annum. £
1924–25	51·7	1930–31	103·1
1925–26	73·2	1931–32	92·5
1926–27	111·9	1932–33	70·7
1927–28	119·9	1933–34	78·6
1928–29	100·1	1934–35	100·3
1929–30	128·6		

SURFACING.

During the last financial year 204 miles of dustless surfacing, including 27 miles of road-mix or plant-mix and 172 miles of surface-sealing, were carried out.

The programme for the year was for 300 miles of dustless surfacing. A considerable mileage was completed immediately after 31st March, but is not included in the past year's figures.

There is also a considerable mileage of metalled surface reconstructed and prepared ready for sealing during the coming season. The seal coats on these sections were deferred because engineers indicated that further traffic compaction was desirable to ensure a good job. In the meantime the surfaces are being carefully maintained.

Most districts experienced a particularly dry summer, and very little assistance was derived from rain in aiding compaction. However, funds which were not spent in sealing were diverted to further surface preparation.

The Board prefers to see winter preparation undertaken so that compaction for several months under traffic in the wet season can be carried out; but financial considerations often prevent this.

Surface-sealing has for the most part been adopted in the provision of dustless surfaces, as this method of treatment is all that can generally be economically justified under present traffic densities. As traffic increases the thickness of pavements can always be built up in stages.

The surface treatment has been somewhat varied to suit local conditions and local preferences, and no hard and fast practice has been laid down. By far the greatest proportion of the work has been for a first coat of No. 1 tar followed by a coat of bitumen.

In order of preference the work carried out would fall into the following class :—

1st Coat.	2nd Coat.
No. 1 tar.	Bitumen.
No. 1 tar.	Asphaltic road oil.
No. 1 tar.	No. 2 tar.
Asphaltic road oil.	Asphaltic road oil.
Cold tar primer.	Asphaltic road oil.
Cold tar primer.	Cold emulsion.
Cold emulsion.	Cold emulsion.

The Board encourages the use of tar, as a local product, where tar can be economically justified. Unfortunately most of our gas-works are of the vertical-retort type, so that the tar produced is mainly suitable for priming and first-coat work only.

The road-mix and plant-mix surfacing was carried out principally in the Canterbury and Wellington Districts. This type of work is particularly suitable where the local gravels are abundant and the subgrades consist of gravel and river silt. A dry climate also suits this type of construction, and the cost is very little more than the ordinary two-coat sealing work. In fact, when alternative tenders were called, some tenders for plant-mix were lower than some submitted for sealing.

Construction.

The expenditure from the Construction Fund for the year 1934–35 was £325,483, an increase of about 54 per cent. on the expenditure for the preceding year.

The table below shows the extent and types of work carried out on main-highways system by the Board and local authorities since the Board commenced active operations in 1924.

Year.	Formation and Widening.	Gravelling and Metalling.	Tar and Bituminous Sealing.	Road-and-Plant-mix Bituminous Surfacing.	Bituminous Macadam (Penetration).	Bituminous Concrete.	Portland-cement Concrete.	Bridges.
	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Ft.
1924–25.. ..	19	63	6	..	6	..	..	2,434
1925–26.. ..	45	88	16	..	45	4	6	5,168
1926–27.. ..	174	151	35	..	38	12	16	6,408
1927–28.. ..	173	133	83	..	34	..	6	7,760
1928–29.. ..	224	185	122	..	51	14	11	9,482
1929–30.. ..	173	179	133	..	39	31	12	7,547
1930–31.. ..	130	128	95	..	41	14	9	11,175
1931–32.. ..	139	69	129	..	32	9	3	4,062
1932–33.. ..	56	45	72	..	8	..	..	3,178
1933–34.. ..	44	28	75	..	7	..	1	4,988
1934–35.. ..	113	69	172	27	3	..	2	6,641
Totals ..	1,290	1,138	938	27	304	84	66	68,843

Bridges.

In past years when it was necessary to give settlers access in the shortest time for the least possible initial outlay, many of the bridges now included in the highways system were built of local softwoods. These are all due for replacement. It is also found that quite a few of the bridges built of imported hardwoods are suffering from premature decay. These hardwood bridges are those which were built during the war period, when the quality of the timber supplied was not nearly as good as normally.

Realizing the importance of maintaining vital traffic links, the Board undertook a vigorous programme of bridge replacement.

Including those already in hand at the beginning of the year, funds were provided for 260 bridges.

Of these, 128 were completed during the year. A further 123 are at various stages of progress towards completion, and many have been completed since the 31st March, 1935, the notable ones being the Balclutha Bridge, which was opened by the Minister of Public Works on the 6th April, 1935, the

Tuki Tuki River Bridge at Waipukurau, which was opened by the Minister on the 26th June, 1935, and the Fitzherbert Bridge over the Manawatu River, which was opened by His Excellency the Governor-General on the 20th July, 1935.

The Board has pursued its policy of renewing practically all bridges in reinforced concrete, which can be built under modern conditions for practically the same cost as timber bridges.

The reduction in the cost of reinforced-concrete bridges has been brought about by three factors :—

(*a*) By the adoption of higher unit-working stresses made possible by improved technique and workmanship :

(*b*) By standardization where possible, although each bridge-site must be considered by itself :

(*c*) By simplification of structural details.

Many simple span bridges with beam spans up to 40 ft. are being built for from 10s. to 12s. per square foot of deck.

The Board has given consideration to bridge widths, and decided that in view of present traffic and probable future requirements these widths should be increased. The following standards have been adopted :—

——	Bridges less than 60 ft. in Length.	Bridges more than 60 ft. in Length.
Heavy-traffic Highways—		
Width between kerbs	24 ft.	22 ft. to 24 ft.
Medium-traffic Highways—		
Width between kerbs	20 ft.	20 ft.
Lighter-traffic Highways—		
*Width between kerbs	10 ft. or 12 ft.	8 ft., 10 ft., or 12 ft.

* These widths are adopted only in special circumstances where the traffic is extremely light and further development unlikely.

Traffic Census.

During the year a traffic census was taken at some 360 points throughout the main-highways system. The periods covered by the census were 25th to 31st August, 1934, and 25th to 31st January, 1935. These dates were specially selected to avoid peak periods of traffic and therefore give a reasonably correct picture of what are the general intensities.

The information so gained has proved invaluable to the Board in deciding what justification there is for sealing, improving, widening, and shortening any highway on which work is contemplated. The question of bridge-width, too, can readily be decided by a reference to traffic intensity.

In a few years' time it will be necessary to take another traffic census, and the information then obtained will be compared and studied in conjunction with the number of registered motor-vehicles and population so that the trend of traffic will be disclosed.

Contact with Local Authorities.

Since submitting its last annual report the Board has visited all highways districts in the North Island, and has conferred with the local authorities which are particularly interested in the control of the main-highways system in those districts. A number of special works were inspected, local problems were discussed, and several programmes for future works were considered in conference.

It is gratifying to be able to report that local authorities generally were found to be alive to the particular requirements of main-highways administration within their respective areas.

It is of interest to note that the number of County Councils which have abolished the riding system of accounts is steadily increasing. Generally speaking, the Board has experienced fewer difficulties in financial matters when dealing with these particular local authorities than is the case where the interests of particular ridings are allowed to obtrude.

During recent years developments in methods of transport and improved facilities for intercommunication have so changed conditions that it has become increasingly necessary to adopt a wider outlook in the administration of affairs which previously were considered to be of purely local consequence.

Elimination of Level Railway-crossings on Main Highways.

Further discussions have taken place with the Railway Department with a view to the commencement of a programme for the elimination of level crossings.

The Unemployment Board has also become interested in the matter, for, although work of this nature does not yield a particularly high percentage of labour, it would provide an outlet for certain skilled labour that is otherwise difficult to place.

An agreement between the Main Highways Board, the Unemployment Board, and the Railways Board was reached in August, 1935, as to the proportions which these authorities should find towards the cost of eliminating particular railway crossings on main highways, in order of urgency and as may from time to time be approved as part of a general programme for the next three years.

The programme will be financed as follows: Main Highways Board and local authorities, 50 per cent. ; Unemployment Board, $33\frac{1}{3}$ per cent. ; and Railways Board, $16\frac{2}{3}$ per cent.

In the meantime fifty of the most important crossings are being investigated, and from these twenty-four have been selected with a view to a commencement being made during the current year.

It is necessary to consider each crossing on its merits. Bad visibility is only one of the factors. Many accidents happen where visibility is good on all quadrants. From a study of accidents, traffic intensity on road and rail plays an equally important part.

The methods of eliminating the crossings will be by erecting overbridges or constructing subways, or deviating the highway, according to the circumstances of each case.

Acquisition of Gravel Deposits, etc.

It has been apparent to the Board for some time that local authorities have adopted the practice of obtaining stone, gravel, or other material for highways purposes from privately owned sources and of paying royalty for such supplies instead of invoking their statutory powers for taking land or material.

The Board realizes that there may be occasions when under the particular circumstances the payment of a small royalty might be the most satisfactory basis of settlement, but it has found that the tendency has been for royalty payments to increase until they became the rule rather than the exception.

One feature of the royalty system is that a landowner might receive in that way a return far greater than the real value of the land.

The Board therefore deemed it necessary to remind local authorities of the rights which have been specially given to them by statute, so that in the public interests they might obtain supplies of gravel, &c., for public works without exploitation.

It is recognized that the statutory powers not only give the local authority certain privileges, but they also confer rights upon the landowner, so that both parties receive reasonable protection.

Continuous supplies of metal must be available for the efficient maintenance of main highways, and local authorities have been requested to investigate the possibility of securing more or less permanent suitable deposits for future requirements.

The Board has intimated that in approved cases it will acquire metal deposits for the use of either local authorities, or itself, for purely highway works.

Where ample supplies are obtainable from working quarries at satisfactory prices, it is not intended to purchase or acquire special areas.

Advances to Local Authorities.

During the year ended 31st March, 1935, the Board has continued to advance money to those local authorities who were unable to raise their share of particular works which the Board wished to have undertaken, and a considerable increase in the amount advanced will be noticed, a total of fourteen agreements having been entered into during the year under review, as compared with four for the previous year. These advances amounted to £18,938 10s. 9d. The total amount of principal outstanding at the 31st March, 1935, in respect of all the advances made to that date, was £74,939 7s.

Traffic Control.

The traffic-control groups previously inaugurated have continued in operation throughout the year, with the exception of the Waimairi Group, which was disbanded during May, 1934. The Rotorua Group was also disbanded during June, 1935. In both cases the inspectors previously employed by these groups have been taken on by the Board as full-time men.

In addition, one new group was inaugurated during the year under the control of the Waitomo County Council, and a further group has been inaugurated since 31st March under the control of the Piako County Council. The Board itself at present employs seven full-time traffic inspectors, one of whom was appointed on the 1st July, 1935, as well as a number of part-time officers.

The Board obtained a machine which has been adapted for testing loadometers, and, in addition to the regular testing of its own instruments, has offered to carry out tests of similar instruments belonging to local authorities interested in traffic supervision and control.

In return for these services a scale charge is made according to the nature of the particular test or repairs. Local authorities are taking full advantage of this facility, which not only reduces expense and inconvenience, but also ensures that the public interests are better served.

Signposting, Centre-line Marking, etc.

Signposting and centre-line marking in connection with main highways have been subsidized throughout the year under review on the current basis of £3 for £1. During the past year the Board's subsidies on signposting amounted to £1,459 5s. 8d., while the subsidies paid up to 31st March, 1935, totalled £9,697 17s. 1d.

In addition to marking centre-lines at curves on dustless surfaces, steps have been taken to define the limits of the traffickable width by the placing of white posts, the painting of approach fences to bridges, and the painting of side fences and objects along the road, whether it be paved or gravelled. Where this practice has been adopted, users of the highways have expressed their appreciation of this means of providing a safety factor when driving at night or during periods of fog.

Plant.

A considerable increase in the value of plant purchased and hired to local authorities on the hire-purchase system was again noted during the year. The purchases for 1934–35 amounted to £9,166, as against £3,368 for 1933–34 and £1,117 for 1932–33. The total value of plant purchased on this system since its inauguration amounts to £177,704, of which sum only £14,576 remained outstanding at the 31st March, 1935.

The items purchased during the year under review were—For Board : Power grader, 1 ; tractors, 7 ; motor-cars, 2 ; electric motor, 1 ; motor-lorries, 8 ; barge, 1 ; steam boiler, 1 ; bitumen boiler, 1 ; machine sprayer, 1 ; crusher, 1 ; concrete mixers, 2 ; road planers, 7 ; winch, steam, 1 ; loadometers, 2 pairs. For local authorities : Motor-trucks, 6 ; loadometers, 1 pair ; power-graders, 6.

Testing of Highway Materials.

The Petrological Laboratory has continued the testing of road-metal and similar materials from a number of sources, details of the standard tests being given in Table 6 appended to this report. Tests have also been carried out to give abrasion factors for metal chips.

During the coming year it is hoped to carry out tests on the subgrade soils, and for this purpose the Board recently purchased an Andrews kinetic elutriator.

The Dominion Analyst has carried out, on the Board's behalf, numerous tests of tar, bitumen, road-oil, and emulsion for surfacing-work. In order to facilitate these examinations, a latest pattern Saybolt-Furol viscometer was purchased by the Board.

Examination for Foremen and Overseers of Road Construction.

The ninth examination for foremen and overseers of road construction was held on the 30th October, 1934, when forty-three candidates presented themselves. There were sixteen examination centres scattered throughout the Dominion, according largely to the requirements of the examinees. The requirements for a pass in the examination are kept to a fairly high standard, both in the interests of the Board, and those, who having passed, can feel that they have a certificate which carries some weight. Three candidates passed in both papers, while ten obtained a partial pass by satisfying the necessary requirements in respect of only one paper. Also, two candidates completed the examination by passing in that paper in which they had previously failed. Before issuing certificates of competency in respect of the examination, the Board requires evidence to be submitted that the candidate has had reasonable practical experience in modern roadwork, and, as some who had passed both papers were not considered sufficiently qualified in this respect, only three certificates were issued directly as a result of the examination. The cases of those candidates from whom certificates have been withheld will be reviewed when these men can produce evidence of adequate practical experience. During the year four certificates were issued to candidates who had passed previous examinations, and who have satisfied the Board in this latter respect, these candidates being G. L. K. Drew, P. B. Lattey, W. I. Gardiner, and J. A. Sissons.

The names of the candidates who passed or completed a pass at their examination are as follows, those to whom a certificate was issued being indicated by an asterisk : *Carson, W., Collins, D. A., *McKeown, D. J., *Sissons, J. A., *Williams, E. M., Williscroft, V. L.

Magnetic Truck.

The Board's magnetic truck which was acquired for the purpose of clearing highways of puncture-producing materials has been in operation during the past year throughout the South Island. In January last the machine was temporarily withdrawn from service for purposes of general overhaul and reinstatement of electrical equipment. During the nine months ended 31st December, 1934, 1,491 miles of highway were swept as against 2,243 miles in the previous full year, and the material lifted amounted to 4,853 lb., compared with 4,486 lb. for 1933–34. The yield per mile was therefore 3·25 lb., compared with 2 lb. for 1933–34 and 2·26 lb. for 1932–33.

Annual Review of Main Highways.

In accordance with the requirements of section 11 of the Main Highways Act, 1922, the Board made another review of the main highways system during the year. Recommendations for the declaration of additional main highways, totalling approximately 1,084 miles, were received from the District Highways Councils, together with recommendations for the revocation of 80 miles. As a result of the review, roads involving a length of 644 miles 9 chains were declared, while 55 miles 48 chains of main highway were revoked.

Particulars of these are as under :—

No. 1 Highway District.—Whakapara–Russell : A length of 36 miles 8 chains was declared, thus extending the Whakapara–Matheson's Bridge Highway to Russell.

Kaikohe–Donnelly's Crossing : This road, comprising a length of 32 miles 64 chains, was declared a main highway.

Pamapuria–Mangonui : A length of 1 mile 12 chains was declared, and 7 miles 20 chains of the Victoria Valley – Mangonui Highway were revoked.

Kaitaia–Motukaraka via Broadwood : A length of 4 miles was declared, thus extending the Kaitaia–Kohukohu via Broadwood Main Highway to Motukaraka.

Oakleigh–Paparoa : This road, a length of 26 miles 64 chains, was declared as a main highway.

Wellsford–Leigh : A length of 6 miles 40 chains was declared, thus extending the Wellsford–Pakiri Main Highway to Leigh.

No. 2 Highway District.—Tapu–Kaimarama : This road, a length of 24 miles 40 chains, was declared a main highway.

Drury–Awhitu via Waiuku : A length of 8 miles 30 chains was declared, thus extending the Drury–Waiuku main highway to Kohekohe.

Ngatea–Turua : This road, a distance of 2 miles 56 chains, was declared a main highway.

Whitford–Maraetai : This road, a distance of 8 miles 14 chains, was declared a main highway.

Putaruru–Tapapa : The whole of this road, 3 miles 60 chains, was declared a main highway.

Hubbards Highway : This road, a length of 1 mile 60 chains, was declared a main highway.

Ostend Wharf Highway : This road, a length of 67 chains, was declared a main highway.

Ostend–Onetangi : This road, a length of 3 miles 54 chains, was declared a main highway.

Morrinsville–Ngarua : This road, a length of 8 miles, was declared a main highway.

Taupiri–Morrinsville : This road, a length of 17 miles 40 chains, was declared a main highway.

Ngaruawahia–Whatawhata : This road, a length of 10 miles 18 chains, was declared a main highway.

Hobsonville Highway : This road, a length of 4 miles 50 chains, was declared a main highway.

No. 3 Highway District.—Gisborne–Opotiki via Coast : The Opotiki – East Cape Highway was extended by 9 miles 40 chains, and the name of the highway was altered to Gisborne–Opotiki via Coast.

Whakatane Station Highway : This road, a length of 2 miles 50 chains, was declared a main highway.

No. 4 Highway District.—Gisborne–Opotiki via Coast : This highway was extended by a length of 3 miles 43 chains, which junctions with the No. 3 District length described above.

Tolaga–Tauwhareparae : This highway was extended by a further 3 miles 30 chains.

Puha–Whatatutu : A length of 1 mile 40 chains was declared, thus extending the Puha–Mangatu Main Highway to Whatatutu.

Takapau–Ihungia : This highway was extended by a further 2 miles.

No. 5 Highway District.—Waiohiki–Pakowhai : This road, a length of 3 miles 70 chains, was declared a main highway.

Takapau Saleyards Highway : This road, a length of 36 chains, was declared a main highway.

Takapau West Highway : This road, a length of 72 chains, was declared a main highway.

Rokai–Umutaoroa–Dannevirke : The whole of this road, a length of 7 miles 69 chains was declared a main highway. It was later revoked, and the Norsewood–Whetukura Highway was extended by 8 miles 16 chains to Te Uri.

Freelands Highway : This road, a distance of 4 miles 30 chains, was declared a main highway.

Nuhaka–Waikokopu : This road, a distance of 6 miles 50 chains, was declared a main highway.

Rotorua–Waikaremoana : A length of 13 miles 55 chains, situated in Wairoa County, was declared a main highway.

No. 6 Highway District.—Kawhia Harbour Highway : This road, a distance of 17 miles, was declared a main highway.

Otorohanga–Maihiihi : This road, a distance of 9 miles 30 chains, was declared a main highway.

Otorohanga–Honokiwi : The route of this highway was altered by the declaration of 53 chains and the revocation of 39 chains in the Otorohanga Town District.

Kururau–Taumarunui : This road, a distance of 20 miles, was declared a main highway.

Otunui Highway : This highway, totalling a length of 11 miles 40 chains, situated in the Taumarunui County, was revoked.

No. 7 Highway District.—Eltham–Hawera via Keteonetea : A length of 5 miles 56 chains of road was declared, thus extending the Turuturu Main Highway to Eltham.

Ohanga Highway : This road, a length of 1 mile 10 chains, was declared a main highway.

Inglewood–Everett : This road, a length of 3 miles 70 chains, was declared a main highway.

Waitara–Huirangi : This road, a length of 2 miles 16 chains, was declared a main highway.

Ohawe–Skeet : this road, a length of 6 miles 40 chains, was declared a main highway.

Rahotu–Kahui : This road, a length of 6 miles, was declared a main highway.

Cheal Highway : This road, a distance of 4 miles 32 chains, was declared a main highway.

No. 8 Highway District.—Waitotara Valley Highway : This highway, situated in the Patea County, was extended by a further 10 miles to the western end of the Waitotara River Bridge at Piraunui.

Blueskin Highway : The whole of this road, a length of 3 miles 60 chains, was declared a main highway.

Onepuhi Highway : This road, a distance of 3 miles 70 chains, was declared a main highway.

No. 9 Highway District.—Waitarere Beach Highway : The whole of this road, a length of 4 miles 40 chains, was declared a main highway.

Paraparaumu Beach Highway : This road, a distance of 2 miles 20 chains, was declared a main highway.

Milson's Line Highway : The whole of this road, a distance of 2 miles 35 chains, was declared a main highway.

Rangiotu–Rongotea : This road, a length of 9 miles 40 chains, was declared a main highway.

Pohangina Valley – Apiti : This highway, situated in the Pohangina County, was extended by a further 13 miles to the Apiti Post-office.

No. 10 Highway District.—Pongaroa–Akitio : This highway, situated in the Akitio County, was extended by a further 10 miles 40 chains, and now terminates at the southern end of the Akitio Bridge at Akitio.

Pope's Head – Hinakura : This road, a distance of 10 miles, was declared, and 5 miles of the Martinborough–Masterton via Gladstone main highway were revoked in exchange.

Blairlogie–Langdale : The whole of this road, a distance of 9 miles, was declared a main highway.

No. 11 Highway District.—Seddon–Marama : This road, a distance of 7 miles 32 chains, was declared a main highway.

Korere–Tophouse : This road, a distance of 21 miles 12 chains, was declared a main highway.

Queen Victoria Street – Motueka Wharf Highway: The whole of this road, comprising a distance of 1 mile 33 chains, was declared a main highway.

Central Takaka Highway: A length of 66 chains was declared a main highway.

No. 12 Highway District.—Mokihinui Bridge – Seddonville: This road, a distance of 1 mile 60 chains, was declared a main highway.

Ngahere – Haupiri Junction: This road, a length of 13 miles 32 chains, was declared a main highway.

Kumara – Haupiri Junction: The section of this road from Kumara to Mitchell, a length of 14 miles 48 chains, was declared a main highway.

Inangahua Junction – Weheka: The route of this highway in the township of Reefton was altered by the declaration of Church and Bridge Streets, a distance of 60 chains, and the revocation of Potter, Victory, and Sinnamon Streets, a distance of 26 chains. One mile 40 chains in the Westland County were revoked.

Forks–Okarito: This road, a length of 5 miles, was declared a main highway.

Ahaura–Haupiri: The whole of this highway, a length of 23 miles 38 chains, was revoked.

No. 13 Highway District.—Domett – Hurunui Mouth: This road, a length of 4 miles 60 chains, was declared a main highway.

Hawarden – Waitohi Gorge: This road, a length of 9 miles, was declared a main highway.

No. 14 Highway District.—Christchurch – New Brighton via Page's Road: To conform with an alteration to the Heathcote County Boundary, 26 chains of this road were declared a main highway.

Teddington – Port Levy: This road, a distance of 8 miles 26 chains, was declared a main highway.

Leeston – Lake Ellesmere: This road, a distance of 3 miles 45 chains, was declared a main highway.

Waimakariri Bridge – Bennetts via Mandeville: The whole of this road, a length of 8 miles 45 chains, was declared a main highway.

Christchurch–Motukarara via Sumner and Lyttelton: This highway was extended by 1 mile 36 chains.

Woodend Pound Highway: The whole of this road, a distance of 55 chains, was declared a main highway.

Papanui–Harewood: This road, a length of 2 miles 30 chains, was declared a main highway.

No. 15 Highway District.—Chertsey–Kyle: This road, a distance of 11 miles 60 chains, was declared a main highway.

Gapes Valley – Pleasant Point: This road, a distance of 10 miles 67 chains, was declared a main highway.

Albury–Burke: A length of 12 miles was declared a main highway.

Otaio–Hunters: This road, a distance of 10 miles 20 chains, was declared a main highway.

No. 16 Highway District.—Kyeburn–Middlemarch: 21 miles 10 chains of this road in the Maniototo County were declared a main highway.

No. 17 Highway District.—Kyeburn–Middlemarch: 10 miles 20 chains of this road in the Taieri County were declared a main highway.

Balclutha–Wangaloa: A length of 4 miles 35 chains was declared, thus extending the Balclutha–Kaitangata Highway to Wangaloa.

Balclutha–Lawrence: A length of 15 miles was declared, thus extending the Balclutha–Tuapeka Mouth Highway to Lawrence.

No. 18 Highway District.—Tuatapere–Clifden–Orawia: The Tuatapere–Clifden Highway was extended by a distance of 6 miles 16 chains to Orawia.

Waikawa–Papatowai: This road, a length of 8 miles 50 chains, was declared a main highway.

North Invercargill – Waikiwi: This road, a distance of 1 mile 62 chains, was declared a main highway.

West Plains Highway: This road, a length of 4 miles 58 chains, was declared a main highway.

Otama Highway: This road, a distance of 4 miles 36 chains, was declared a main highway.

Mokotua Highway: This road, a length of 2 miles 44 chains, was declared a main highway.

In March, 1934, the boundaries of the No. 2 District were altered to include the Ostend Road district, thus enabling two highways in that district to be declared. The boundaries of the Nos. 11 and 13 Districts were also altered by the transferring of Awatere County from No. 13 District to No. 11 District.

The total declarations of main highways between the 1st April, 1934, and the 31st March, 1935, amounted to 1,167 miles 46 chains, and the total length of highways revoked during that period was 515 miles 34 chains. These figures include adjustments and corrections to the highways system which were more or less of a formal nature.

Milford Sound Main Highway: The Government decided, without any recommendation from the Main Highways Board, to declare as a main highway the road which is being constructed to Milford Sound. Financial provision for the current year's working programme, as from the date of declaration, 21st May, 1935, has been included in the Highways Estimates. Appreciable assistance is being received from the Unemployment Board, and it is estimated that the amount required from highways funds to complete formation of the highway portion will be in the vicinity of £120,000. It is anticipated that construction will be finished towards the end of 1937.

Progress Report.

The following statement shows the more important construction work carried out under the control of the Board during the year ended 31st March, 1935 :—

Waipapakauri–Maungatapere :—

Awanui Bridge : The erection of this bridge was delayed by floods, but at the end of the year all piles had been driven, and the structure has since been completed.

Johnson's Culvert : A 6 ft. by 4 ft. concrete culvert has been completed.

Waihou River Bridge : The erection of this concrete bridge, of five 40 ft. spans, was commenced.

Omapere–Kaikohe : This 4 m. clay section has been metalled.

Mill Bridge : A timber truss bridge was replaced by a 7 ft. by 6 ft. concrete culvert.

Kaitaia–Motukaraka.—Onetoke Bridge : The erection of this bridge, of three 40 ft. and two 15 ft. spans in steel and concrete, is nearing completion.

Waimate–Kaeo–Mangonui.—Webber's Bridge : The existing timber bridge has been replaced by a new structure of two 35 ft. spans. in steel and concrete, with hardwood deck.

Lake Omapere – Maungaturoto :—

Dawson's Bridge : The erection of this bridge, of one 40 ft. span in steel and concrete, was carried out.

Hikurangi Town District : This section of 2 m. 23 ch. was sealed in two coats.

Whakapara Flooding : The erection of a concrete floodway and embankment, north of Whakapara, has been commenced.

Whangarei–Dargaville :—

Whangarei–Maungatapere : 3 m. of formation was completed, and 2 m. of base-course metal laid.

Tangowahine Bridge : The erection of this 180 ft. steel and concrete bridge was completed. 6 ch. of approaches were formed and metalled.

Kirikopuni Bridge : A contract was let for the erection of this bridge, and work is in hand.

Piritaka and Murdoch's Creek Bridges : These timber structures were replaced by reinforced concrete culverts, 8 ft. by 7 ft. and 5 ft. by 5 ft. respectively.

Mangawai–Kaiwaka.—Hakarau Bridge : This bridge, of one 40 ft. and two 30 ft. spans in steel and concrete construction, was completed. 10 ch. of approaches were formed and metalled.

Auckland–Maungaturoto :—

Massey Road – Orewa : 1 m. 57 ch. has been widened, and 1 m. 44 ch. of base-course metal laid.

Orewa Bridge : The erection of this reinforced concrete bridge of one 64 ft., two 55 ft., and two 18 ft. spans, with approaches, has been completed.

Orewa–Waiwera : A deviation 41 ch. in length has been formed, 1 m. 37 ch. widened, and base-course sandstone placed over a distance of 6 m. 27 ch.

Grutt's Bridge : This 30 ft. span concrete structure, with its approaches, has been completed.

Puhoi Bridge : The erection of this bridge, comprising one 62 ft. and two 48 ft. spans in reinforced concrete, has been completed.

Warkworth–Dome : 69 ch. was widened, and 3 stream diversions constructed. The erection of Grimmer's Bridge has been commenced.

Warkworth Town District : 63 ch. was sealed in one coat.

Wellsford – Te Hana : 1 m. 29 ch. was widened, and base-course metal laid.

Kaiwaka–Maungaturoto—Coates's Bridge : The existing timber structure was replaced by a 4 ft. pipe culvert, and a deviation constructed.

Waitemata County, Albany Bridge : A contract was let for the erection of this bridge, consisting of two 22 ft. approach spans and a central arch span of 71 ft., all in reinforced concrete.

Great South Road :—

Franklin County : The concrete paving of 2 m. 52 ch. of the Papakura–Runciman section was completed.

Between Runciman and St. Stephen's College, 1 m. 49 ch. has been re-formed, metalled, and sealed ; 2 m. 9 ch. has been formed and metalled ; and the remaining 1 m. 16 ch. has been formed, with the exception of a short length at Ramarama.

On the Pokeno section 24 ch. at the north end has been re-formed, metalled, and sealed. The section from Pokeno Bridge southwards, a length of 84 ch., has been surfaced with bituminous macadam.

A contract has been let and construction work commenced on Slippery Creek Bridge.

Waikato County : The approaches to the Mangawara Bridge, 14½ ch. in length, were surfaced in bituminous macadam.

Ngaruawahia Borough : A contract has been let for the reconstruction and sealing of 2 m. 12 ch.

Waipa County : Hamilton–Ngaruawahia Section : Two contracts for the reconstruction, metalling, and sealing of this section have been let ; and 4 m. 56 ch. of subgrade, 3 m. 59 ch. of waterbound macadam, and 3 m. 35 ch. of one-coat sealing have been completed from Hamilton Borough northwards.

Hamilton–Ohaupo Section : Tenders have been called for the reconstruction, metalling, and sealing of 7 m. 37 ch. of this length.

Te Awamutu – Otorohanga Section : A contract has been let for the construction of the Puniu Deviation and bridge approaches, covering a total length of 2 m. 12 ch.

Takapuna–Junction Auckland–Maungaturoto Main Highway.—1 m. of formation and metalling was carried out.

Auckland–Helensville–Waiwera :—

Waitemata County : An extensive reconstruction programme was commenced, covering the following works :—

On the section between Henderson and Lincoln Bridge, formation and base-course metalling were completed over a length of 1 m. 15 ch.

Formation was completed over a length of 1 m. on Anderson's Deviation, in preparation for metalling and sealing.

Preparation for sealing 62 ch. of the Kumeu–Huapai section was completed, and a contract let for the seal-coat.

On the section between Vercoe's culvert and Helensville, spall base-course metalling is in hand.

On the Helensville–Waiwera section, the metalling of the clay length is in hand.

A contract was let for the erection of a reinforced concrete bridge over the Punganui Stream, and work is in progress.

A contract was also let for the erection of Wright's Bridge.

Helensville Town District : The reconstruction of a length of 43 ch. was carried out.

Kumeu–Albany : A contract was let for the construction of the Riverhead Bridge, 246 ft. in length.

Pokeno–Waihi :—

Franklin County—Mangatawhiri Stream Diversion : During the year, the excavation of the canal from 4 m. 32 ch. to 5 m. 17 ch. was completed, and the length from 5 m. 17 ch. to 5m. 24 ch. was completed to half-width. The stopbank from 4 m. 32 ch. to 5 m. 12 ch. was completed, and the deviation to the Mangatawhiri Valley Road formed and metalled.

Hauraki Plains County—Parry's and Wilson's Road Corners : Formation of improved curvature at these two points has been completed.

Ohinemuri County : Between Paeroa and Waihi, reconstruction and other improvements, particularly the regrading of Turner's Hill and Tarariki Hill, have been carried out. A length of 20 ch. adjoining the Paeroa Borough was sealed.

Pipiroa–Coromandel.—Thames County—Waikawau Bridge : The construction of this bridge, of two 30 ft. and three 40 ft. spans in reinforced concrete, together with approaches, was carried out.

Kopu–Raglan :—

Thames County : The renewal of the piers and abutments of the Puriri Stream Bridge has been completed.

Ohinemuri County : The length from Hikutaia to the Paeroa Borough has been sealed in one coat. From Paeroa to Te Aroha Borough reconstruction and shouldering are in hand. A length of 3 m. 60 ch., south of Paeroa Borough, was sealed in one coat. The erection of a bridge of 22 ft. span over the Patuwhao Stream has been commenced.

Piako County : A second seal-coat was applied between Te Aroha and Waitoa, a distance of 5 m.

Waikato County : Tar-sealing from Newstead to the top of Hinton's Gully, a length of 2 m. 50 ch., was completed.

Hinton's Gully Deviation : This deviation, covering a length of 71 ch., has been put in hand.

Hamilton–Rotorua.—Matamata County :—

Waihou and Waimakariri Bridges : These 60 ft. span rigid-frame reinforced concrete bridges have been completed.

Tapapa–Mamaku Section : 2 m. 2 ch. was sealed in two coats.

Waitoa–Taupo (No. 2 District) :—

Piako County : Lengths of 2 m. at the northern end, and 2 m. 8 ch. at the southern end, were sealed in two coats.

Matamata County—Mangawhero Stream Bridge : A contract has been let for the construction of this bridge.

Tirau–Tokoroa Section : The construction of a 16 ft. span bridge over the Whakauru Stream has been completed. 1 m. 73 ch., between Tirau and Putaruru, has received a first sealing-coat.

Tokoroa–Atiamuri Section : 58 ch. was sealed in two coats.

Matamata–Tauranga.—Matamata County : Contracts have been let for the erection of the Mangawhero Stream Bridge, and the construction of a deviation and approaches to the bridge.

Papakura–Clevedon.—Manukau County—Black Bridge : The erection of this 35 ft. span bridge has been commenced.

Ellerslie–Howick.—Panmure Road Board : 39 ch. was reconditioned and sealed.

Tahuna–Ohinewai :—

Paiko County : A length of 2 m. was sealed in two coats.

Waikato County : The Nikau Swamp Bridge, a 9 ft. span in timber, has been completed.

Te Aroha – Waharoa.—Piako County : A length of 92 ch. was sealed in two coats.

Orongo–Netherton.—Hauraki Plains County : A 6 ft. concrete pipe culvert has been installed to replace a timber bridge.

Te Awamutu – Barton's Corner.—Waipa County : Humphrey's and Milner's Deviations, total length 21·5 ch., have been completed.

Te Awamutu – Cambridge.—Leamington Town District : 10 ch. was sealed in two coats.

Henderson–Kumeu via Swanson.—Waitemata County : The Taupaki Bridge, of one 26 ft. reinforced concrete span, was completed.

Kaukapakapa – Port Albert.—The erection of the Waitangi Bridge, of two 35 ft. reinforced concrete spans, has been completed. A contract was let and work commenced on the Makarau Bridge.

Waikumete – West Coast.—Glen Eden Town District: A deviation near the railway-station has been carried out.

Te Kauwhata – Waitakaruru.—The construction of Rock's Deviation, 16 ch. in length, near Te Kauwhata, is in hand.

Papatoetoe–Howick:—

Papatoetoe Town District: 13 ch. was sealed in one coat.

Manukau County: The construction of Phillip's culvert of 8 ft. span, 50 ft. long, was completed.

Howick–Manurewa.—Manukau County: The Mangaroa Bridge, of one 85 ft. reinforced concrete arch span, and approaches, was completed. Contracts were let for the erection of Kimpton's Bridge and Hunterville Bridge.

Ngatea–Waharoa via Morrinsville.—Piako County: Two-coat sealing has been applied on two lengths; 30 ch. south of Tahuna, and 32 ch. north of Morrinsville. 2 m. 48 ch. of two-coat sealing was also carried out from Bell's Road to Kiwitahi.

Waitoa–Maukoro.—Piako County: 1 m. 49 ch. of smoothing-coat and 56 ch. of two-coat sealing were applied.

Waihi–Tauranga:—

Tauranga County: 1 m. has been sealed in two coats, and 3 m. 32 ch. in one coat.

Te Mania Bridge, of one 30 ft. span in reinforced concrete, and the Aongatete Stream Bridge, of three 30 ft. spans, have been almost completed.

Tauranga–Whakatane:—

Tauranga County: 2 m. 5 ch. was sealed in two coats of bitumen over a tar-primer, and 1 m. 5 ch. was sealed in one coat. At McLeod's Flat a 14 ft. span wooden bridge was replaced by a 10 ft. by 8 ft. reinforced concrete culvert.

The Kaikokopu Stream Bridge, of one 40 ft. span, and the Otamarakau Bridge, of two 30 ft. spans, in reinforced concrete, were completed.

Whakatane County: The approaches to the Hauane Bridge were formed and metalled. In Te Puke Borough, 1 m. 50 ch. was sealed in two coats.

Gisborne–Whakatane via Motu (No. 3 District):—

Whakatane County: A contract has been let for the erection of an 8 ft. by 6 ft. reinforced concrete culvert to replace Roberts's Bridge, and the work is well in hand, the highway being deviated for 34 ch. to improve the alignment. At Douglas Hill, a 25 ch. deviation was formed and metalled.

Opotiki County: A contract has been let for the renewal of the Nukuhou Bridge, 70 ft. long, in reinforced concrete.

The Petipeti Stream Bridge, of two 30 ft. steel-joist spans on hardwood piles, has been completed, together with 5½ ch. of approaches.

Hamilton–Rotorua (No. 3 District)—Rotorua County: 4 m. has been sealed.

Rotorua–Napier (No. 3 District):—

A contract has been let for the erection of the Wharepapa and Mangakara Bridges, each of one 45 ft. span, in reinforced concrete, and the work is in hand.

45 ch. of oiled pumice surfacing near the Waikato Bridge received a seal coat of bitumen.

Waitoa–Taupo (No. 3 District).—A contract is in progress for the renewal of the Maungaharakeke Stream Bridge, of one 30 ft. span, in reinforced concrete.

Rotorua–Whakatane:—

Rotorua Borough: 25 ch. has been sealed in two coats.

Rotorua County: The Puarenga Stream Bridge, of one 40 ft. span in reinforced concrete, is almost completed; and a contract has been let for the renewal of the Waingaiti Bridge.

Whakatane County: Seccombe's Bridge has been replaced by a 4 ft. pipe culvert, and a deviation 14 ch. long formed. A contract has been let for the renewal of Reid's Drain Bridge. The Maungaroa Bridge is being replaced by a reinforced concrete culvert.

Gisborne–Opotiki via Coast (No. 3 District):—

Raukokore Bridge Protection: A 100 ft. groyne across an overflow channel is being erected.

The Kereu Bridge has been extended by nine 25 ft. spans, to cover a new course of the river.

Rotorua–Tauranga (Direct):—

8 ch. of sealing was completed at Ngongotaha Village.

Tauranga County: 2 m. 30 ch. has been widened in preparation for metalling.

Gisborne–Opotiki via Motu (No. 4 District):—

Cook County: A contract was let for strengthening foundations and preparing for sealing on a length of 2½ m.

Waikohu County—

Te Karaka Township: Regrading was completed over a length of 56 ch., and the metalling in preparation for sealing is in progress.

Blair's Bridge: This bridge, with its approaches, was completed, the structure comprising one 40 ft. steel joist span with concrete deck.

Gisborne–Wairoa via Morere (No. 4 District):—

Cook County: Bituminous penetration surfacing 8·1 m. to 9·2 m. This work has been completed.

Tauwhatanui Drain Bridge: A 12 ft. reinforced concrete bridge has been erected.

Wharerata Hill: The reconstruction of the section between 22·3 m. and 24·3 m. has been commenced.

Gisborne–Opotiki via Coast (No. 4 District) :—

Cook County : A contract was let for the bituminous surfacing of 2 m. 1 m. 65 ch. of reshaping and metalling was carried out, and a seal-coat applied over 1 m. 40 ch.

Uawa County : The contract for 6 m. of reconstruction and bituminous penetration surfacing has been completed ; this year's work comprising 1 m. 72 ch. of base-course metalling, and 2 m. 28 ch. of the penetration course. Farther north, 58 ch. of two-coat sealing has been carried out.

Waiapu County : Two steel and concrete bridges, of 80 ft. and 40 ft. span, have been erected.

Gisborne–Wairoa via Hangaroa (No. 4 District) :—

Cook County : 1 m. of two-coat sealing has been completed. 70 ch. of reconstruction to improved gradients and curvature has been completed, and a further length of 2 m. is in hand.

A concrete culvert of 10 ft. span has been constructed, to replace a timber bridge at 19·2 m.

Harris Hill : The whole length of 3 m. 24 ch. was regraded and realigned. 1 m. 23 ch. of base-course and 60 ch. of top-course metalling were carried out.

Top-course metal was completed from Tiniroto to the Wairoa County Boundary, a distance of 3 m. 4 ch.

Tokomaru Bay Wharf Highway.—A small bridge has been replaced by a 5 ft. by 4 ft. concrete culvert.

Patutahi–Rere :—

Cook County : At 5·7 m. a timber bridge has been replaced by a double 6 ft. by 6 ft. concrete culvert, and at 7·6 m. a similar bridge by a 3 ft. pipe culvert.

The regrading and realignment of Ngatapa Hill has been commenced ; earthwork is in progress, and 37 ch. of base-course metal has been laid.

Taurangakautuku Highway.—At 2·8 m. a timber bridge has been replaced by a 30 in. concrete pipe culvert.

Napier–Gisborne via Wairoa (No. 5 District) :—

Hawke's Bay County—

Napier Borough – Te Ngaru Crossing : The Napier–Petane section has been improved, to a higher standard than pre-earthquake conditions, by the application of bituminous surfacing on a length of 6 m. 15 ch. ; 3 m. 62 ch. consisting of road-mix, and the balance, including the deck of the Westshore Bridge, being sealed.

Between Petane and Whirinaki 2 m. 76 ch. was metalled, and sealed in two coats.

The highway is now bitumen-surfaced from the Napier Post-office to the Whirinaki Hill, a distance of 11 m. 35 ch. ; 10 ch. of widening and 3 ch. of grade-elevation have been carried out at Tangoio.

Te Ngaru Crossing – Tutira : Between the Elbow Ford and the top of the Waikoau Hill, 1½ m. has been widened, and work is in progress round Lake Tutira.

A 9 ft. by 9 ft. reinforced concrete culvert, 60 ft. long, was put in at the Elbow Ford.

Tutira – Waikare River : 2 m. of widening and curve-improvement have been carried out from the end of the Tutira Straight, and similar work is in hand as far as the Matahoura Gorge.

Wairoa County—

Mohaka Bridge – Morere : A small bridge at Waihua was replaced by a 5 ft. concrete pipe culvert on improved alignment.

Ohinepaka Bridge : A reinforced concrete bridge, 99 ft. long, was completed, together with a small deviation.

Wairoa Borough : 58 ch. of two-coat sealing was carried out.

Napier–Wellington via Wairarapa (No. 5 District) :—

Hawke's Bay County : A contract was let for the construction of the Waitangi Washout Bridge, 800 ft. long, and work has been commenced.

A contract has been let recently for the Waitangi Stream Bridge, 600 ft. in length.

Both these bridges consist of reinforced-concrete beam-spans.

A contract was let for a bridge and culvert at Pakipaki to replace two narrow wooden bridges, and the work is in hand.

A reinforced-concrete culvert, 11 ft. by 5 ft., was put in at Opapa.

A 6 ft. by 4 ft. water-drive, 84 ft. long, was constructed to replace Sutton's Bridge.

Waipukurau Borough : A contract was let for a new reinforced-concrete bridge of twenty 45 ft. spans, with a 22 ft. roadway and 4 ft. footway, over the Tuki Tuki River ; the bridge has now been completed, and was opened for traffic in June of this year.

Waipukurau County : A contract was let for sealing this 4½ m. section in one coat. A length of 1 m. 54 ch. has been completed.

Dannevirke County—Mangatera Hill Deviation : This deviation, 22 ch. in length, which eliminates a hairpin bend, was constructed during the year.

Woodville County : 12 ch. at the approach of the Ngawapurua Bridge was sealed in two coats.

Lengths totalling 1 m. 30 ch. of the eleven-year-old existing sealing were reconstructed and sealed in two coats.

Curvature was materially improved at the Papatawa Railway-crossing.

Petane-Taupo :—

Hawke's Bay County (No. 5 District) : The Maori Gully Deviation, 39 ch. long, which eliminates two wooden bridges, several sharp bends, and a very steep grade, has been completed and metalled. A 6 ft. by 4 ft. water-drive 257 ft. long replaces the bridges.

Taupo County (No. 3 District)—

Mohaka Bridge – Taupo : A timber platform bridge was replaced by a 4 ft. culvert, and a sharp corner improved.

A contract was let for the erection of a new bridge over the Waipunga River, and work is in hand.

Gisborne–Wairoa via Hangaroa (No. 5 District).—Wairoa County—Te Kura Stream Bridge: A reinforced concrete bridge 110 ft. long, with a 56 ft. arch span, was constructed.

Napier–Tuki Tuki via Fernhill:—

Hawke's Bay County: 2 m. 75 ch. of two-coat sealing was carried out, completing a sealed surface from the Hastings Borough to Fernhill.

At the west end of the Tuki Tuki Bridge a deviation of 13 ch., including an 8 ft. by 6 ft. concrete culvert, is being constructed to improve the bridge approach.

Taradale–Rissington:—

Taradale Town District: 32 ch. has been sealed, completing the section.

Hawke's Bay County: Hislop's Bridge has been replaced by a 6 ft. pipe culvert.

Bicknell's Bridge, of one 27 ft. span in steel and concrete, has been completed.

Otane–Tuki Tuki via Elsthorpe.—Hawke's Bay County: The construction of the Oho Bridge and 9 ch. of approaches was carried out. The bridge consists of one 40 ft. span in steel and concrete.

Waipawa–Ongaonga.—1 m. was reconstructed and metalled preparatory to sealing.

Dannevirke–Waipukurau via Porangahau:—

Waipukurau County: 1 m. 55 ch. has been prepared for sealing, and a contract let for the work.

Patangata County: Two small bridges were replaced with 5 ft. and 5 ft. 6 in. concrete pipe culverts, and a contract let for the erection of the Kokomoko Bridge.

Weber County—Waipatiki Deviation: This deviation, 96 ch. in length, has been completed, metalled, and fenced.

Dannevirke County: A length of 3 m. has been metalled in preparation for sealing.

Widening has been undertaken on the 4 m. hill and between 13 m. and 15 m.

Greatford–Woodville (No. 5 District).—Woodville County: A length of 38 ch. of the original sealing was reconstructed and sealed in two coats.

Hastings–Maraekakaho.—An 18 in. pipe culvert was put in at Bridge Pa, on improved alignment, replacing a narrow wooden bridge.

Waipawa–Pourerere:—

Waipawa County: A small timber bridge was replaced by a 2 ft. concrete pipe culvert.

Patangata County: A contract was let for the construction of Logan's Bridge over the Mangamahaki Stream.

Woodville–Tamaki.—Dannevirke County: Widening, metalling, and two-coat sealing have been carried out over a length of 1 m. 49 ch.

Makuri–Ongaha.—Dannevirke County: A bridge at 4·2 m. was replaced with a 2 ft. 6 in. concrete pipe culvert. Widening was undertaken on the hill section of the length 0 m. to 3 m.

Waipukurau–Matamau via Hatuma.—Waipawa County: The reconstruction and sealing of 1 m. through the Takapau Township was carried out.

Mangateretere – Havelock North.—

Havelock North Town District: This 60 ch. section was sealed in two coats.

Hawke's Bay County: This section of 2 m. 72 ch. was metalled, and sealed in two coats. A narrow concrete bridge was widened to 22 ft.

Hastings–Pakipaki.—1 m. 47 ch. was reconstructed, metalled, and sealed in two coats. This completes the sealing of this highway.

Tuki Tuki–Waimarama.—A 3 ft. concrete pipe culvert, 76 ft. long, was put in at Tawse's Corner, and 6 ch. of deviation constructed, improving a dangerous corner. Peach Gully Bridge, of 30 ft. span in steel and concrete, was erected.

A contract has been let for a new bridge at Waipuka.

Mangateretere – Te Awanga.—Two narrow bridges were replaced by 3 ft. concrete-pipe culverts and 40 ch. prepared for sealing.

Petane–Eskdale.—This highway has been improved over a length of 1 m. 20 ch. by widening and cutting back sharp bends, in preparation for metalling and sealing.

Auckland–Wellington via Taranaki (No. 6 District):—

Te Kuiti – Pio Pio Section: Reconstruction and metalling were carried out from 10 m. to 12 m. 30 ch.

Pio Pio – Mahoenui Section: 3 m. 57 ch. near Mahoenui was sealed in one coat.

Te Kuiti Borough: 1 m. 11 ch. on the Awakino Hill received a two-coat seal.

Caves – Lemon Point.—Hangatiki – County Boundary Section: The cutting-back of corners and reconditioning were carried out over a length of 3 m.

Te Kuiti – Bulls via Taumarunui (No. 6 District):—

8 m.: Tangitu Section—

Kurakura Bridge: This bridge, 70 ft. long, in steel and concrete, together with 4 ch. of approaches, was completed.

Mangaiti Turnoff – Mapiu Gates: 1 m. 50 ch. of formation was completed, pumiced, and top-dressed with shingle.

Mapiu Gates – Waimiha Turnoff: 1 m. of formation and 3 m. of metalling were completed.

Tapuiwahine Turnoff – Ohura Turnoff: 2 m. 21 ch. of re-formation and culverting and 4 m. 45 ch. of metalling were completed.

Owhango–Oio Section: 4 m. 45 ch. of formation and culverting was completed.

Stratford–Taumarunui (No. 6 District).—Aukopae Stream Bridge: This bridge, 70 ft. long, in steel and timber, together with 4 ch. of approaches, was completed.

Raurimu – Wade's Landing.—Taurimu Bridge: This bridge, 70 ft. long, in steel and timber, was completed.

Pio Pio–Tatu.—Haparua Stream Bridge: This bridge, 60 ft. long, in steel and timber, together with 5 ch. of approaches, was completed.

National Park – Taupo.—Otukou Deviation: 4 m. 25 ch. of formation and culverting was completed and top-dressed with pumice.

Okahukura–Ohura.—Matiere – Okaroa Road: 3 m. of gravelling on pumice was completed.

Tokirima Highway.—Tokirima Stream Bridge: This bridge, 40 ft. long, in steel and timber, with 2 ch. of approaches, was completed.

Auckland–Wellington via Taranaki (No. 7 District):—

Clifton County: The formation of a short deviation on Mount Messenger, which will improve the worst corner on the section, is in hand.

In the Mimi Valley, a deviation eliminating several sharp curves is in progress, 15 ch. being completed.

56 ch. of a deviation between Urenui Township and the Urenui Stream has been carried out. This deviation will eliminate the steep grade north of the township, and provides for improved grades and alignment over the balance of the section.

1 m. 60 ch. of the Urenui Pa Flat section was sealed in two coats.

Inglewood County: 60 ch. of road-mix smoothing-coat was applied at the north end of the section.

Hawera County: The formation of the Tangahoe Deviation was completed over a length of 32 ch., and a contract has been let for the construction of a 120 ft. reinforced-concrete bridge over the stream.

Lepperton Junction – Hawera via Opunake:—

Taranaki County: Two curves, totalling 31 ch. in length, were reconstructed and surfaced with bitumen.

Egmont County: The construction of the Punehu Stream Bridge, 90 ft. in length, has been completed, also the regrading and bituminous surfacing of 25 ch. of approaches.

New Plymouth – Kaimata.—Inglewood County: A road-mix smoothing-coat has been applied on a 2 m. section, south of Egmont Village.

Opunake–Eltham.—Eltham County—Mangawhero Stream Bridge: A new superstructure, 80 ft. in length, in steel and concrete, has been constructed.

Stratford–Taumarunui (No. 7 District):—

Contracts have been let for the construction of the Raekohua and Makahu Stream Bridges. 352 ft. of a tunnel through the Moki Saddle and the formation of 44 ch. of approaches have been carried out.

The formation of a deviation at the railway crossing on the Stratford side of the Whangamomona Saddle is in hand.

Inland North Highway.—A length of 10 ch. was sealed.

Auckland–Wellington via Taranki (No. 8 District):—

Patea County: Contracts have been let for the realignment of 33 ch. of the Manawapou Hill, 24 ch. of the Whenuakura Hill, and 18 ch. of the Waitotara Hill. 29 ch. has been sealed, and 34 ch. of bituminous surfacing widened.

Waitotara County: 2 m. 44 ch. has been reconstructed, 2 m. 50 ch. metalled, 2 m. 45 ch. sealed in one coat, and a second seal-coat applied over a length of 2 m. 20 ch. An 8 ft. by 6 ft. brick culvert was extended 25 ft.

Rangitikei County: The formation and metalling of Glasgow's Deviation, 24 ch. in length, the re-formation of 2 m. 9 ch., and the metalling of 2 m. 49 ch., including McQuarrie's and Dalvey's Hills, have been completed. The Makirikiri Stream Bridge was reconstructed in reinforced concrete. A first sealing-coat was applied over 3 m. 6 ch., and the second coat over 11 m. 37 ch., completing the sealing of the county section with the exception of Glasgow's Deviation and part of McQuarrie's Hill.

Bulls Town District: 81 ch. was reconstructed, metalled, and sealed.

Te Kuiti – Bulls via Taumarunui (No. 8 District):—

Tohanga Road Section: The improvement of the Ohakune end, comprising 2 m. 41 ch. of reconstruction, the formation of a 17 ch. deviation, and 45 ch. of metalling were carried out.

The Waitangi Stream Bridge, a 20 ft. span in reinforced concrete, has been constructed.

Rangitikei County: 26 ch. of the Maungaraupi deviation was formed and metalled, and 7 ch. of curves reconstructed. 163 ft. of water-tunnel was driven at the Mangaone Bend, south of Taihape.

Bulls Town District: 29 ch. was reconstructed, metalled, and sealed.

Ball Highway.—A length of 15 ch. was sealed.

Kaharoa Highway.—22 ch. near Kura Road junction was sealed.

Kohi Highway.—26 ch. was metalled.

Rangitatau East and Watershed Highway.—The metalling of the 5 m. clay section between Kauarapaoa Road and Ahuahu Road was put in hand, and 26 ch. completed.

Wanganui–Horopito:—

Wanganui County: The reconstruction and metalling of lengths aggregating 2 m. 47 ch. were carried out on the hill section, and lengths of 28 ch. and 1 m. 57 ch. metalled, in preparation for sealing, at Upokongaro and Wanganui.

Raetihi Borough: The realignment of 22 ch., including the replacement of a wooden bridge with a culvert, was completed.

Pipiriki–Raetihi–Ohakune:—

The metalling of the clay section was completed by the laying of $3\frac{1}{2}$ m. of top-course metal.

The 5 m. length at the Pipiriki end, originally surfaced with shell rock spalls, was reconditioned and top-dressed with shingle.

A contract was let for the renewal in reinforced concrete of the Mangateitei Stream Bridge in the Ohakune Borough.

Wanganui–Karioi.—Wanganui County: 120 ft. of water tunnel and 8 ch. of realignment were carried out at 36 m. Reconstruction and metalling of 1 m. at the Wanganui end, preparatory to sealing, is in hand.

Waverley Beach Highway.—Patea County: 10 ch. has been reconstructed, and metalling is in progress.

Rapanui Highway.—95 ch. has been sealed.

Turakina – Cliff Road via Marton.—Rangitikei County: The reconstruction and metalling of 38 ch. of the Ben Nevis Hill, near Turakina, have been completed.

Waitotara Valley.—35 ch. near Parakama Junction has been widened.

Wellington–Auckland via Taranaki (No. 9 District):—

Makara County—

Tawa Flat – Porirua: The Porirua Township Bridge, of one 40 ft. span in steel and timber, was completed.

Porirua–Paremata: 20 ch. of first-coat sealing was carried out. The deviating and metalling of this section over a length of 75 ch. are in hand. Formation has been completed over a length of 55 ch., and 12 ch. metalled.

Hutt County—

Paekakariki–Waikanae: Realignment and widening were effected at Seddon's Corner, Paraparaumu. Between Paekakariki and Paraparaumu, surface depressions caused by swamp subsidence have been levelled up.

Foxton Borough: At the railway crossing at the north end of the Borough, 20 ch. has been reconstructed and sealed.

Manawatu County:—

Himatangi–Sanson: A contract has been let for the road-mix surfacing of 5 m. Contracts were let and work commenced on the Piakatutu and Makowhai Bridges, between Sanson and Bulls.

Wellington–Napier via Wairarapa (No. 9 District):—

Hutt County—Taita Gorge: 1 m. of plant-mix smoothing-coat was applied on the old sealed surface.

Upper Hutt Borough: 20 ch. of the bituminous pavement was widened.

Between Upper Hutt and the Rimutaka Summit, 5 m. 10 ch. of smoothing-coat was laid on existing sealed surfaces.

Awahuri–Mangaweka via Kimbolton:—

Feilding Borough: 25 ch. was sealed in one coat.

Kiwitea County: A contract was let for the reconstruction and sealing of 3 m. 72 ch., commencing at Cheltenham.

Greatford–Woodville (No. 9 District):—

Oroua County: Between Feilding and Halcombe, a length of 75 ch. was sealed in one coat.

The Mangaone Stream Bridge, of two 48 ft. reinforced concrete beam spans, was completed.

Himatangi–Ashhurst via Palmerston North:—

Manawatu County: Between Himatangi and Rangiotu, 6 m. 35 ch. of road-mix surfacing was completed.

Kairanga County: Three curves, totalling 23 ch. in length, between Palmerston North and Ashhurst, were reconstructed and sealed.

Levin – Palmerston North via Shannon:—

Horowhenua County: Preparation for sealing was completed over a length of 25 ch. The Mangaore Stream Bridge at Shannon, comprising two 30 ft. concrete beam spans, is in hand.

Fitzherbert Bridge, Manawatu River, Palmerston North: This reinforced concrete bridge which comprises four 112 ft. bowstring spans and seven 55 ft. beam spans, with 22 ft. roadway and 5 ft. footway, has been in progress, and was completed in July of this year. The southern approach has been formed and metalled on new alignment over a length of 20 ch.

Upper Hutt – Waikanae:—

Hutt County: Widening was continued, 40 ch. being carried out during the year. Metalling was completed over a length of 1 m. 29 ch.

Baigent's Bridge, of one 52 ft. reinforced concrete span, was completed.

Waikanae–Waimea.—Horowhenua County: The realignment and metalling of seven corners, aggregating a length of 15 ch., was completed.

Te Horo – Waihoanga.—Horowhenua County: Preparation and sealing were carried out over a length of 10 ch.

Bunnythorpe–Kairanga.—Kairanga County: 2 m. of one-coat sealing was completed.

Pohangina Valley – Apiti.—Pohangina County: A contract was let for the erection of the Porewa, Te Ekaou, and Opawe Bridges in reinforced concrete.

Wellington–Napier via Wairarapa (No. 10 District):—

Featherston County: Between the Rimutaka Summit and Featherston, 2 m. 42 ch. of smoothing-coat was applied. At the Waiohine Bridge, two permeable boom groynes were constructed for river-training.

Masterton County: Between Mount Bruce Hall and the county boundary, 4 m. 48 ch. of re-formation was completed, including 72 ch. of deviations. 4 m. 28 ch. of this was sealed in one coat.

Between Opaki and Mount Bruce Hall, 4 m. 45 ch. of second-coat sealing was applied. A smoothing-coat was laid on existing penetration pavement between Masterton and the Waingawa River Bridge, a length of 45 ch.

Eketahuna County: 2 m. 39 ch. of preparation and one-coat sealing was completed south of Eketahuna Borough.

Eketahuna Borough: 34 ch. of preparation and one-coat sealing was carried out, completing the surfacing of this highway within the Borough.

Pahiatua County: On this section, north and south of Pahiatua Borough, 5 m. 13 ch. of preparation was completed, and 4 m. 16 ch. sealed in one coat.

Pahiatua–Pongaroa :—

Pahiatua County: In the Makuri Gorge, widening was completed over a length of 24 ch. This work is part of the restoration of earthquake damage which occurred in March, 1934.

Akitio County Section: Contracts were let for the renewal, in reinforced concrete, of Lodge and Gichard's Bridges.

Masterton–Weber via Alfredton :—

Masterton County: Above the Ruamahanga River Bridge, 30 ch. of stop-banking and willow-protection work was carried out. 41 ch. of formation of a deviation was completed, also 58 ch. of widening.

Wangaehu Bridges Nos. 4, 5, and 6, two of 8 ft. and one of 26 ft. span, were constructed in reinforced concrete.

Akitio County: The Pongaroa Township Bridge, comprising two 35 ft. and one 46 ft. concrete beam spans, with a 20 ft. roadway and 4 ft. footway, was completed, with approaches.

Masterton–Castlepoint, via Tinui.—Masterton County: Widening was completed over a length of 55 ch., and formation and metalling of deviations over a length of 13 ch.

The Wangaehu Overflow Bridge No. 1, 18 ft. long, in reinforced concrete, was erected.

Masterton–Stronvar, via Weraiti.—Masterton County: The Parawhaiti Bridge, consisting of one 78 ft. reinforced concrete arch span, was completed.

Greytown–Bidwill's Cutting.—Featherston County: Preparation was completed over a length of 42 ch., and one-coat sealing over a length of 3 m. 22 ch. This highway is now completely sealed.

Martinborough–Awhea.—Featherston County: 1 m. of preparation and first-coat sealing was completed.

Martinborough–Otaraia.—Featherston County: 1 m. of preparation and first-coat sealing was completed.

Kahautara Highway.—Featherston County: 3 m. 40 ch. of preparation for sealing was completed.

Ponotahi Highway :—

Martinborough Borough: 23 ch. of preparation and 43 ch. of first-coat sealing were completed.

Featherston County: 1 m. of preparation and 25 ch. of first-coat sealing were completed.

Rimu Highway :—

Akitio County: The Rakaunui Bridge, comprising one 40 ft. reinforced concrete beam span, was completed. The approaches, consisting of 23 ch. of deviation, were formed and metalled.

Robertson's Bridge, of one 35 ft. reinforced concrete beam span, is in hand.

Te Ore Ore – Bideford.—Masterton County: The Sulphur Wells Bridge, consisting of one 24 ft. reinforced concrete span, and approaches, was completed. A contract was let and work commenced on the Taueru River Bridge.

Mangaone Valley :—

Pahiatua County: The Mangaramarama Bridge, consisting of one 35 ft. reinforced concrete beam span, and approaches, was completed; also Hodgins Bridge, of one 30 ft. span.

Widening was carried out over a length of 20 ch.

Picton–Bluff (No. 11 District) :—

Picton Borough: The existing 22 ch. of sealed surface has been widened, and extended 8 ch.

Blenheim Borough: The Opawa Bridge approach was widened.

Marlborough County.—Dashwood Pass Deviation: This work was finalized during the year by the completion of 4 m. 8 ch. of top-course metalling.

Awatere County—Hog Swamp Bridge Deviation: A contract has been let for the formation of this 20 ch. deviation.

Blenheim–Nelson.—Collins Valley: Re-formation and base-course metalling have been carried out over lengths of 1 m. 35 ch. and 1 m. 10 ch. respectively.

Nelson–Inangahua (No. 11 District) :—

Waimea County—Higgins' Bridge: The construction of this bridge, of one 40 ft. span in steel and concrete, has been completed, together with the formation and metalling of approaches.

Newport's Bridge: Tenders have been called for the erection of this 13 ft. span reinforced concrete bridge.

Moorehouse Creek Bridge: A contract has been let for the erection of this 20 ft. span reinforced concrete bridge.

The two-coat sealing of 50 ch. and 47 ch., at Brightwater and Wakefield respectively, was completed.

Murchison County—Owen River Bridge: The construction of this 164 ft. reinforced concrete bridge has been completed, and the approaches, which include 30 ch. of deviation, are in hand.

Clay Bank Creek Bridge: The construction of this 40 ft. span steel and concrete bridge has been completed, together with the formation of 9 ch. of approaches.

Main's Creek Culvert: The construction of this 8 ft. by 6 ft. concrete culvert has been completed. The contract included the construction of 10 ch. of approaches.

Murchison Township: 15 ch. of two-coat sealing was carried out.

Hope Saddle: 1 m. 4 ch. of re-formation and 15 ch. of base-course metalling were carried out.

Appleby–Motueka via Tasman.—O'Connor's Creek Bridge: A contract has been let for the erection of this 38 ft. span reinforced concrete bridge, and work commenced.

Richmond–Collingwood:—

Waimea County: A contract was let for two sections of two-coat sealing, one of 3 m. 9 ch. and the other of 2 m. 76 ch. The latter has been completed.

Extensive erosion occurred at the west-bank abutment of the Waimea River Bridge at Appleby, necessitating the extension of the bridge by a 30 ft. shore span. This work has been carried out, and 180 ft. of gabion protective work completed above the bridge.

Motueka Borough: A contract was let for two-coat sealing of a length of 4 m. 3 ch., and the work is nearing completion.

Takaka Hill Section: The construction of a deviation 1 m. 49 ch. long and the improvement of the remainder of the section have been put in hand.

Collingwood–Bainham.—Collingwood Township: Tenders have been called for 8 ch. of sealing.

Motueka Wharf Highway.—Motueka Borough: The two-coat sealing of 48 ch. is in hand.

Dashwood–Upcot:—

A stone protection wall up to 15 ft. in height has been installed at Limestone Cutting. The centre groyne at Woodman's Bend was strengthened by the addition of 55 stone crates.

20 ch. of formation at Blarich has been widened.

Nelson–Stoke via Jenkin's Hill.—The two-coat sealing of 1 m. 40 ch. was completed.

Westport–Karamea:—

Glasseye Creek Bridge: The temporary bridge, constructed after the 1929 earthquake, has been replaced by a timber structure of three 20 ft. spans.

Tidal Creek Bridge No. 4: This bridge, consisting of two 16 ft. timber spans, has been completed.

Protective Works at Kongahu Beach: Two experimental case groynes, 5 ch. apart, have been built.

Westport–Mokihinui Section: The improvement of a length of 22 ch. between the Orowaiti Bridge and the Cemetery has been completed. The work comprised widening, easing of a sharp bend, and the protection of the embankment against tidal flow.

Inangahua–Westport:—

Wall replacing Fern Arch Bridge No. 1: This reinforced concrete retaining-wall 56 ft. long, with a maximum height of 18 ft., has been completed.

Wall replacing Fern Arch Bridge No. 2: A similar wall 60 ft. long has been built to replace this bridge.

Gold Point Creek Culvert: A 4 ft. by 40 ft. concrete pipe culvert has been constructed to replace an old timber bridge.

Five Mile Creek Culvert: A reinforced concrete culvert, 6 ft. by 6 ft. by 40 ft. is under construction.

Nelson–Inangahua (No. 12 District):—

Lyell Creek Bridge: The construction of this 120 ft. steel-joist bridge, together with 26 ch. of approaches, has been completed. A weir of gabions and concrete blocks has been built below the bridge to prevent scour.

Flaxbush Creek Bridge: This bridge, consisting of two 35 ft. steel-joist spans, has been completed.

Little Flaxbush Creek Bridge: This 20-ft.-span timber bridge has been constructed on an improved alignment.

Jackson's Creek Culvert: A small timber bridge has been replaced by a 4 ft. by 40 ft. concrete pipe culvert.

Inangahua–Weheka:—

Landing Creek Bridge: A contract was let for the construction of this 105 ft. reinforced concrete bridge.

Deviation near Larry's Creek: This deviation, 36 ch. in length, which will eliminate two railway crossings, is in hand.

Devil's Creek Bridge: The construction of a 40 ft. span reinforced concrete bridge has been commenced.

Mawheraiti River Diversion: A diversion channel, 3 ch. in length, has been cut to prevent flooding of the highway.

Brunner Borough: A length of 3 m. 74 ch. was prepared for sealing.

Boyd's Creek Bridge: This 60 ft. bridge has been widened for two-way traffic.

Greymouth–Omoto: Improvements in alignment and grade are in hand on a 22 ch. length.

Greymouth–Paroa: 3 m. 10 ch. was sealed in two coats.

Three Mile Creek Bridge: This bridge, of three 35 ft. steel-joist spans on concrete pile piers and abutments, has been completed.

Shenandoah Creek Bridge: A 12 ft. by 8 ft. by 28 ft. reinforced concrete culvert has been constructed to replace this bridge.

Flood damage: In February floods caused serious damage to the highway between Kumara and Rimu. Three spans of the Hokitika River Bridge at Kanieri were demolished, and traffic has been deviated via the railway bridge at Hokitika, and Arthurstown Road. A temporary structure is being erected at Kanieri.

Arahura–Hokitika: 2 m. 77 ch. has been sealed in two coats.

Hokitika–Kanieri: 1 m. 76 ch. has been sealed in two coats.

Duske Creek Culvert: An 8 ft. by 8 ft. by 36 ft. reinforced concrete culvert has been constructed to replace a timber bridge.

Gows Creek Culvert: The construction of a 12 ft. by 11 ft. reinforced concrete culvert is in hand.

Hokitika Borough: This section, 1 m. 55 ch. in length, has received a two-coat seal.

Friend's Creek Bridges: The highway is being raised above flood-level over a length of 61 ch., and three reinforced concrete bridges, each 28 ft. long, are being constructed.

Urquhart's Creek Culvert: The construction of a deviation to eliminate a dangerous corner, including an 8 ft. by 8 ft. by 48 ft. reinforced concrete culvert, is in hand.

Hende's Face: Concrete retaining-walls have been constructed to provide greater width on this narrow section.

Arthurs Pass – Kumara:—

McGrath's Creek Bridge: A 42 ft. span steel-joist bridge on concrete abutments has been constructed on an 18 ch. deviation.

Kelly's Creek Bridge: The construction of a reinforced-concrete bridge of three 40 ft. spans is in hand.

Big Wainihinihi River Bridge: The timber bridge has been replaced by a structure consisting of six 40 ft. steel-joist spans on concrete pile piers and abutments. The approaches, 14½ ch. in length, have been completed.

Rangiriri Creek Bridge: The construction of a 22 ft. span reinforced-concrete bridge is in progress.

Westport–Greymouth Coast Road:—

Dirty Mary's Creek Bridge: A bridge consisting of one 40 ft. steel-joist central span and two 20 ft. ironbark land spans has been completed. The construction of approaches, on improved alignment, is nearing completion.

Charleston – Fox's River Section: Improvements comprising widening, forming short deviations, metalling, and installing a number of culverts, have been carried out.

Greymouth–Punakaiki Section: At Rapahoe, a deviation 14 ch. in length, to avoid sea-erosion, has been completed; and at 9¾ m., a deviation 52 chains in length is under construction.

Lawson's Creek Bridge: A 35 ft. reinforced-concrete bridge is in progress.

Reefton–Maruia.—Three groynes, totalling 400 cubic yards of gabion work, have been constructed to prevent river-erosion. Owing to the loss by flood of part of the bridge over the right-hand branch of the Inangahua River, a low-level temporary bridge, 60 ft. in length, has been built.

Kanieri–Koiterangi.—Dimmick Creek Bridge: The construction of a 25 ft. reinforced-concrete bridge is nearing completion.

Lake Kanieri Highway:—

Stripland's Creek Bridge and two 35 ft. spans of the Kanieri River Bridge, which were demolished by floods, have been replaced with temporary structures.

Black Bridge: A water-tunnel replacing this bridge is nearing completion.

Picton–Bluff (No. 13 District):—

Kaikoura County: The Blackmiller Creek Bridge, of one 30 ft. span in reinforced concrete, has been completed.

Kaikoura Township: 72 ch. of second-coat sealing has been carried out.

Waipara–Kaikoura via Culverden.—Waipara County: 60 ch. of sealing was completed.

Waikari-Waitohi.—The Pyramid Valley culvert, 4 ft. by 3 ft. by 35 ft. long, has been constructed.

Picton–Bluff (No. 14 District):—

Kowai County: 15 m. 37 ch. of reconstruction and sealing has been completed.

Rolleston–Rakaia Section: A contract was let for the reconstruction and road-mix plus plant-mix bituminous surfacing of this 19 m. section. The work was completed for a distance of 14 m. by the end of the year, and a further 4 m. has since been carried out.

Christchurch–Akaroa.—Halswell County Boundary – Tai Tapu: 5 m. 29 ch. of reconstruction and two-coat sealing has been carried out.

Christchurch – Governor's Bay.—Two-coat sealing was completed over a distance of 2 m. 20 ch.

Christchurch – New Brighton via Page's Road.—26 ch. was sealed in one coat.

Cashmere–Heathcote.—Two-coat sealing was completed over a distance of 64 ch.

Marshlands – New Brighton.—1 m. 46 ch. was sealed in two coats.

Picton–Bluff (No. 15 District).—Waimate County: Woolshed Gully Bridge.—This bridge, consisting of three 20 ft. spans in reinforced concrete, has been completed.

Ashburton – Junction Darfield – Arundel Main Highway.—60 ch. of first-coat sealing was carried out on the Alford Forest Road, and 27 ch. in the Methven Township.

Timaru–Queenstown (No. 15 District).—Levels County: 8 m. of first-coat sealing was completed.

Deep Creek – Waihao Downs – Dip Creek.—Waimate County: Second-coat sealing was completed over a distance of 5 m.

Ashburton–Wakanui.—Ashburton Borough: 45 ch. of first-coat sealing was carried out.

Lake Pukaki – Hermitage.—Bush Creek Bridge and Deviation: The deviation has been completed.

Picton–Bluff (No. 16 District):—

Dunedin–Waitati Section: 8¼ m. of bituminous smoothing-coat was applied.

Waikouaiti County: Culverts were renewed in reinforced concrete at 27 m. 74 ch., 14 m. 19 ch., and 15 m. 28 ch., the first and second being of 10 ft. span and the last 12 ft.

Reconstruction and metalling of the Waikouaiti–Palmerston Section was completed, a length of 4 m. 62 ch. being carried out during the year.

The Waikouaiti Borough section of 1 m. 41 ch. was also reconstructed and metalled.

Waitaki County: A considerable amount of reconstruction has been carried out, the section between Waianakarua and Herbert, 3 m. 20 ch. in length, being completed, the Hampden–Waianakarua section in progress, and a contract let for similar work between Pukeuri and the Waitaki Bridge.

23 ch. of road-mix bituminous surfacing was laid at the southern boundary of the Oamaru Borough. The Awamoa Creek Bridge, of one 14 ft. span, has been erected, and the Big Kuri Bridge, of five 20 ft. spans, is in hand, both in reinforced concrete.

Timaru–Queenstown (No. 16 District) :—

Vincent County : Four open fords were bridged on the Longslip – Lindis Pass Section, two 25 ft. and two 30 ft. spans being constructed.

Work was commenced on the Lindis Pass Deviation, and 65 ch. of formation was completed.

Pukeuri Junction – Kurow – Omarama.—Two 9 ft. span flat-top concrete culverts were constructed near Papakaio, and a third of similar design was installed at Mulvena's Crossing.

Waiareka–Duntroon.—A length of 1 m. on the Ngapara Hill is being widened.

Palmerston–Queenstown.—Queenstown Borough : Two-coat sealing was carried out over a length of 26 ch.

Clarksville–Springvale (No. 16 District).—Alexandra Borough : 28 ch. was sealed in two coats.

Alexandra–Clyde.—The Clyde Bridge, 383 ft. long, of one 205 ft., two 44 ft., and four 22 ft. steel spans, with 11 ft. 9 in. concrete deck, has been completed.

Waipiata–Styx.—The erection of the Sowburn Creek Bridge, 70 ft. long, in steel and concrete, was commenced.

Picton–Bluff (No. 17 District) :—

Bruce County : The reconstruction of the Taieri Ferry – Milton section has been completed, except for 5½ m. of top-course metalling and the sealing-coat, contracts for which have been let.

The Claredon Deviation, 54 ch. in length, has been completed.

At Waihola, a 10 ft.-span concrete culvert was constructed, and a bridge of 24 ft. span by 24 ft. width with two 6 ft. footways, was erected at the northern boundary of the Milton Borough.

A contract has been let for improvements at the junction with the Clarksville–Springvale Main Highway.

Clutha County : 20 ch. of two-coat sealing was carried out at the southern boundary of the Balclutha Borough, and 25 ch. of similar work through Clinton.

Improvements consisting of casing two sharp curves and raising 10 ch. of road above flood-level were completed at Waipahi.

The construction of the Balclutha Bridge, together with its approaches, was completed. The bridge, 801 ft. long, consists of six 120 ft. reinforced concrete bowstring truss spans, with a 22 ft. roadway and two 4 ft. footways.

Mosgiel–Middlemarch.—The widening and superelevating of curves of the Maungatua Hill section was completed, a total length of 1 m. being improved. 15 ch. of similar work was carried out on the Lee Creek Hill.

Clarkesville–Springvale (No. 17 District).—A sharp corner near Forsythe was widened, and 25 ch. of two-coat sealing was completed at the eastern end of Lawrence Borough.

Balclutha–Papatowai.—40 ch. of two-coat sealing was completed in Owaka Township.

Owaka–Purekireki.—9 ch. of two-coat sealing was applied in Owaka Township.

Picton–Bluff (No. 18 District) :—

A foot-bridge has been completed over Taylor's Creek near Pukerau.

Brydone–Mataura Section : The reconstruction of 3 m. 62 ch. in preparation for sealing is in progress.

Gore–McNab Section : The reconstruction of 2 m. 26 ch. in preparation for sealing is in progress.

At Woodlands Dip, a length of 17 ch. is being regraded.

Invercargill–Bluff Section : A hardwood box culvert on piled foundations was constructed at Greenhills.

Bluff Borough : 36 ch. of two-coat and 10 ch. of second-coat sealing were applied.

Winton–Gore :—

Hedgehope Bridge was replaced by a twin 3 ft. 6 in. concrete culvert.

Willowbank–Matheson's Corner : The Waikaka Stream Bridge, a 20 ft. span in hardwood, has been erected.

Mossburn – Five Rivers.—1 m. 29 ch. of metalling was completed.

Invercargill–Fortrose :—

Sims's Deviation : 58 ch. of top-course gravel was laid, and between this deviation and Mokotua 14 ch. of road was straightened.

The Mokotua Deviation, 1 m. 33 ch. in length, was formed and metalled. This work included a 25 ft. span reinforced-concrete bridge.

Mataura–Wyndham–Letterbox :—

The Kuriwai Stream Bridge, of 20 ft. span in timber, has been completed.

The conversion of the Wyndham Stream Railway Bridge, 133 ft. long, to a traffic bridge, together with the construction of 28 ch. of approaches, was carried out.

Mataura Borough : 60 ch. of two-coat sealing was applied.

Lorne–Hedgehope.—The Gold Creek Bridge, of one 12 ft. span in reinforced concrete, has been completed.

Invercargill–Tuatapere.—Riverton Borough : 58 ch. of two-coat sealing was applied.

Lorne–Castlerock.—Winton Borough : The reconstruction of 52·4 ch. and the sealing, in two coats, of 66 ch. were completed.

Mataura–Waiarikiki.—Mataura Borough : 76 ch. of two-coat sealing was carried out.

Kennington–Waikawa.—Jordan's Bridge, a 14 ft. span in ironbark, was constructed.

Signed on behalf of the Main Highways Board,

C. J. McKenzie,
Chairman.

TABLE 1.—MAIN HIGHWAYS ACCOUNT.

REVENUE FUND.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1935, AND TOTAL TO DATE.

EXPENDITURE.			Total for Year 1934–35.			Total since Inception of Main Highways Act, 1922, to 31/3/35.		
Net expenditure on maintenance, repairs, &c., of main highways :—								
Highway District—			£	s.	d.	£	s.	d.
No. 1			73,994	9	0	485,880	13	8
No. 2			121,904	11	8	891,706	3	6
No. 3			52,647	0	7	366,893	18	6
No. 4			48,601	1	11	306,025	9	1
No. 5			67,954	15	4	548,436	5	2
No. 6			56,995	1	5	342,958	5	10
No. 7			38,937	11	11	400,975	1	3
No. 8			33,911	18	10	327,162	11	7
No. 9			47,526	18	4	480,315	12	6
No. 10			67,882	5	10	399,566	11	9
Totals for North Island			610,355	14	10	4,549,920	12	10
No. 11			53,046	0	8	390,507	0	7
No. 12			67,974	3	5	703,254	1	1
No. 13			14,578	16	6	185,389	17	4
No. 14			29,804	1	0	282,368	10	11
No. 15			39,783	12	6	353,436	13	1
No. 16			49,225	2	2	221,124	12	6
No. 17			30,587	10	11	236,069	8	9
No. 18			37,319	17	2	263,514	5	11
Totals for Dominion			932,674	19	2	7,185,585	3	0
Administration—								
Administration expenses (including salaries, travelling-expenses, office rents, printing, stationery, postages, and miscellaneous expenses)	£ 41,426	0 0	..			324,054	7	11
Fees and travelling-expenses of members of the Main Highways Board other than Government members	1,259	16 8	..			13,815	0	7
Miscellaneous expenses—								
Advertising, maps, rent of halls, traffic tallies, transport of samples, &c.	134	8 6	..			4,373	7	10
Compensation under section 3, Public Works Amendment Act, 1925	..		..			1,015	1	6
Depreciation of furniture, fittings, &c.	90	18 6	..			654	10	8
Petrological laboratory and other experimental work, Expenses of	1,522	15 5	..			6,753	1	9
Total administration			44,433	19	1	*350,665*	*10*	*3*
Carried forward			977,108	18	3	7,536,250	13	3

INCOME.				Total for Year 1934–35.			Total since Inception of Main Highways Act, 1922, to 31/3/35.		
Income from—				£	s.	d.	£	s.	d.
Motor-registration licenses, fees, and fines (section 24, Motor-vehicles Act, 1924)				377,085	6	2	3,508,300	8	10
Less Commission on collection by Post and Telegraph Department—									
		£	s. d.						
Motor-registration fees and licenses		15,710	18 0						
Fees for registration of change of ownership		5,384	9 6						
				21,095	7	6	173,158	10	4
				355,989	18	8	3,335,141	18	6
Interest from investments of—		£	s. d.						
Construction Fund		4,180	1 9						
Revenue Fund		1,559	12 9						
				5,739	14	6	215,156	0	6
Interest from local authorities on plant purchased on their behalf				635	15	10	20,319	3	4
Interest on advances to local authorities				3,441	1	1	19,076	19	0
Mileage Tax (Finance Act, 1931–32 (No. 2), section 19)				1,284	0	8	2,417	3	10
Miscellaneous receipts				269	18	10	1,391	16	0
Motor-spirits tax (section 9, Motor-spirits Taxation Act, 1927)				970,506	0	9	6,469,155	3	5
Tire-tax (sections 13 and 14, Main Highways Act, 1922)				91,692	13	9	1,827,933	5	5
Transfer from Consolidated Fund (section 14, Main Highways Act, 1922)				..			210,000	0	0
Rent of and tolls from ferries				..			2,081	10	6
				1,429,559	4	1	12,102,673	0	6
Balance, being excess of expenditure over income, carried to general balance-sheet				188,772	1	0	7,757	10	10
Carried forward				1,618,331	5	1	12,110,430	11	4

TABLE 1.—MAIN HIGHWAYS ACCOUNT—*continued.*

REVENUE FUND—*continued.*

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1935, AND TOTAL TO DATE—*continued.*

EXPENDITURE.		Total for Year 1934-35.	Total since Inception of Main Highways Act, 1922, to 31/3/35.	INCOME.	Total for Year 1934-35.	Total since Inception of Main Highways Act, 1922, to 31/3/35.
		£ s. d.	£ s. d.		£ s. d.	£ s. d.
Brought forward		977,108 18 3	7,536,250 13 3	Brought forward	1,618,331 5 1	12,110,430 11 4
Loan charges—	£ s. d.					
Charges and expenses of raising loans, management charges of Consolidated Stock on account of Construction Fund, &c.	551 2 11	..	48,667 4 9			
Interest on amount appropriated out of Public Works Fund and paid into Main Highways Account Construction Fund	61,300 0 0	..	306,500 0 0			
Interest on loans, recoupment to Consolidated Fund (section 4, Finance Act, 1919)	117,482 19 2	..	715,858 5 2			
Transfer to reserve for redemption of main highway securities	75,576 0 0	..	414,216 0 0*			
Payment to local authorities in commutation of toll-gate charges (Finance Act, 1925, section 20)	1,793 1 1	..	22,631 17 5			
Payment to Wellington City Council in commutation of fees chargeable in respect of motor-vehicles using Hutt Road (Finance Act, 1927 (No. 2), section 33) ..	25,168 0 2	..	157,611 10 0			
Total loan charges		281,871 3 4	*1,665,484 17 4*			
Subsidies, &c., in respect of other than main highways—						
Municipal Corporations (Municipal Corporations Act, 1933, section 71)	22,662 9 5	..	125,095 3 9			
County Councils and other local authorities (Finance Act, 1930, section 37)	158,442 7 1	..	805,542 9 3			
Subsidies to County Councils for rebate to ratepayers (Finance Act (No. 4), 1931, section 45)	..	..	253,892 12 1			
Subsidy on rates levied on farming land (Finance Act (No. 3), 1934, section 28)	178,246 7 0	..	178,246 7 0			
Maintenance and construction of roads giving access to outlying areas (Finance Act (No. 3), 1931)	..	..	45,918 8 8			
Total subsidies		359,351 3 6	*1,408,695 0 9*			
		1,618,331 5 1	10,610,430 11 4			
Transfers to Construction Fund		..	1,500,000 0 0			
		1,618,331 5 1	12,110,430 11 4		1,618,331 5 1	12,110,430 11 4

* Excludes £38,918 19s. 1d. interest credited.

TABLE 1.—MAIN HIGHWAYS ACCOUNT—*continued.*

CONSTRUCTION FUND.

INCOME AND EXPENDITURE ON CAPITAL ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1935, AND TOTAL TO DATE.

EXPENDITURE.	Total for Year 1934–35.	Total since Declaration of Main Highways (9/6/24).
	£ s. d.	£ s. d.
Net expenditure on construction and improvement of main highways—		
Highway District—		
No. 1	26,705 9 4	630,756 0 4
No. 2	58,517 4 11	812,053 7 0
No. 3	3,363 8 2	175,981 19 10
No. 4	16,254 9 1	377,566 17 6
No. 5	18,741 2 3	284,910 16 5
No. 6	14,071 13 4	339,543 19 5
No. 7	8,159 18 10	343,376 3 10
No. 8	16,480 9 8	208,564 13 1
No. 9	27,627 1 11	575,105 3 2
No. 10	9,048 2 11	215,609 16 4
Totals for North Island	198,969 0 5	3,963,468 16 11
No. 11	7,315 16 1	161,478 8 4
No. 12	13,194 4 8	155,474 8 3
No. 13	1,791 7 8	163,242 10 6
No. 14	54,955 6 11	302,840 14 8
No. 15	10,204 0 11	159,315 16 3
No. 16	11,498 14 8	160,747 6 6
No. 17	20,925 18 5	377,288 13 11
No. 18	6,628 7 6	106,614 6 7
Totals for Dominion	325,482 17 3	5,550,471 1 11
Premium on conversion of loans	..	18,510 0 0
Charges and expenses of raising loans (adjustment)	3 3 2	..
	325,486 0 5	5,568,981 1 11
Balance, being excess of income over expenditure, carried to general balance-sheet	106,013 19 7	161,633 8 11
	431,500 0 0	5,730,614 10 10

INCOME.	Total for Year 1934–35.	Total since Declaration of Main Highways (9/6/24).
	£ s. d.	£ s. d.
Loans raised under Main Highways Act, 1922—		
Stock and Debentures issued—		
At 3 per cent. interest	16,365 0 0	116,365 0 0
At 3½ per cent. interest	15,135 0 0	108,295 0 0
At 3¾ per cent. interest	400,000 0 0	403,000 0 0
At 4 per cent. interest	..	1,750,980 0 0
At 4½ per cent. interest	..	542,004 10 10
At 5⅛ per cent. interest	..	17,000 0 0
At 5¼ per cent. interest	..	55,720 0 0
At 5½ per cent. interest	..	11,250 0 0
		3,004,614 10 10
Receipts under section 15, Finance Act, 1923, from Public Works Fund, General Purposes Account (at 5 per cent. interest)	..	1,226,000 0 0
Transfer from Revenue Fund	..	1,500,000 0 0
	431,500 0 0	5,730,614 10 10

NOTE.—No charge for the cost of exchange on payments made in London is included.

TABLE 1.—MAIN HIGHWAYS ACCOUNT—*continued.*

General Balance-sheet as at 31st March, 1935.

LIABILITIES.	Revenue Fund.	Construction Fund.	Total.
	£ s. d.	£ s. d.	£ s. d.
Construction Fund—			
Balance at 31/3/34	..	55,619 9 4	
Add excess of income over expenditure for 1934–35	..	106,013 19 7	
		161,633 8 11	161,633 8 11
Sundry creditors—			
Public Works Department	5,463 17 10	654 12 0	6,118 9 10
Other Government Departments	3,949 15 3	275 6 1	4,225 1 4
Non-departmental	94,648 11 2	29,280 2 6	123,928 13 8
Interest accrued on loans	27,502 16 6	..	27,502 16 6
Motor-registration fees paid in advance	70,319 0 0	..	70,319 0 0
Writings-off in Suspense	86 8 6	16 4 1	102 12 7
Reserve for redemption of securities	392,414 19 1	..	392,414 19 1
	594,385 8 4	191,859 13 7	786,245 1 11

ASSETS.		Revenue Fund.	Construction Fund.	Total.
		£ s. d.	£ s. d.	£ s. d.
Cash in Public Account—				
At call		33,568 8 1	125,058 17 9	158,627 5 10
Temporarily invested until required		..	57,077 0 0	57,077 0 0
		33,568 8 1	182,135 17 9	215,704 5 10
Sundry debtors—				
Public Works Department		1,506 9 6	168 4 8	1,674 14 2
Other Government Departments		770 7 11	1,083 6 5	1,853 14 4
Non-departmental		5,794 18 7	5,191 0 10	10,985 19 5
Advances to local authorities (Main Highways Amendment Act, 1926, section 2)		74,939 7 0	..	74,939 7 0
Advance on subsidies (Finance Act, 1930, sections 37 and 39, and Finance Act, 1932, section 36)		4,320 1 10	..	4,320 1 10
Motor-registration fees in hands of Postal Department ..		4,552 15 0	..	4,552 15 0
Interest due and accrued		3,505 8 0	..	3,505 8 0
Stocks of materials, tools, &c.		26,436 2 3	3,264 19 10	29,701 2 1
Stocks Deficits Account		86 8 6	16 4 1	102 12 7
Furniture, fittings, &c.	£ s. d.			
Expenditure to 31/3/35	1,674 17 4			
Less depreciation to 31/3/35 ..	654 10 8			
		1,020 6 8	..	1,020 6 8
Plant and equipment—				
For Main Highways Board—				
Expenditure to 31/3/35	105,270 18 2			
Less depreciation charged to works	82,134 19 5			
		23,135 18 9	..	23,135 18 9
Purchased for local authorities—				
Expenditure to 31/3/35	177,703 13 0			
Less repayments of principal ..	163,127 6 8			
		14,576 6 4	..	14,576 6 4
Amount transferred to Loans Redemption Account	449;542 4 8			
Interest accrued to 31/3/35	3,592 14 5			
	453,134 19 1			
Less amount utilized for redemption of securities	60,720 0 0			
		392,414 19 1	..	392,414 19 1
Revenue Fund—				
Excess of expenditure over income for 1934–35..	188,772 1 0			
Less Balance at 31/3/34	181,014 10 2			
		7,757 10 10	..	7,757 10 10
		594,385 8 4	191,859 13 7	786,245 1 11

E. L. Greensmith, **Accountant, Public Works Department.**
C. J. McKenzie, **Chairman, Main Highways Board.**

I hereby certify that the Income and Expenditure Accounts and Balance-sheet have been duly examined and compared with the relative books and documents submitted for audit, and correctly state the position as disclosed thereby, subject to the departmental notes enfaced thereon. The following comment is appended:

A reserve of £449,542 4s. 8d. for redemption of securities has been set up and paid over to Loans Redemption Account, but only £60,720 has been applied to the redemption of securities.—J. H. Fowler, Deputy Controller and Auditor-General.

TABLE 2.—LENGTHS OF MAIN HIGHWAYS AT 31ST MARCH, 1935.

Number and Name of Highway District.	Type of Surface.			Total.
	Dustless.	Gravel or Macadam.	Clay or Pumice.	
	M. ch.	M. ch.	M. ch.	M. ch.
1. Auckland North	50 39	897 63	..	948 22
2. Auckland South	306 49	808 12	12 62	1,127 43
3. Tauranga	47 16	324 66	329 43	701 45
4. Gisborne	57 24	303 48	1 56	362 48
5. Napier	143 0	572 2	6 0	721 2
6. King-country	27 19	610 0	26 3	663 22
7. Taranaki	315 72	137 62	11 56	465 30
8. Wanganui	93 0	402 57	9 40	505 17
9. Wellington West	187 0	290 3	..	477 3
10. Wellington East	90 40	402 33	..	492 73
Totals, North Island	1,318 19	4,749 26	397 20	6,464 65
11. Nelson	19 5	626 30	..	645 35
12. West Coast	13 54	518 27	..	532 1
13. Canterbury North	24 29	309 35	..	333 64
14. Canterbury Central	113 41	579 50	..	693 11
15. Canterbury South	73 77	678 43	..	752 40
16. Otago Central	40 54	730 14	..	770 68
17. Otago South	35 8	444 28	..	479 36
18. Southland	27 36	858 37	..	885 73
Totals, South Island	347 64	4,745 24	..	5,093 8
Totals, Dominion	1,666 3	9,494 50	397 20	11,557 73

TABLE 3.—CONSTRUCTION WORK COMPLETED DURING YEAR, 1934–35.

Number and Name of Highway District.	Formation and Widening.	Gravelling and Metalling.	Tar and Bituminous Sealing.	Road- and Plant-mix Bituminous Surfacing.	Bituminous Macadam (Penetration).	Bituminous Concrete.	Portland cement Concrete.	Bridges.	Engineering Surveys.
	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	M. ch.	Ft.	M. ch.
1. Auckland North	6 45	4 5	4 35	..	..	..	..	991	4 18
2. Auckland South	9 69	10 11	36 57	..	0 14	..	1 77	412	51 55
3. Tauranga	0 14	..	15 25	..	..	..	..	295	..
4. Gisborne	5 55	0 3	0 68	..	2 62	..	..	160	4 65
5. Napier	1 23	2 3	18 34	3 62	..	..	..	1,035	0 32
6. King-country	13 76	10 60	4 68	..	..	..	..	310	12 20
7. Taranaki	2 10	0 30	2 21	2 60	0 25	..	..	170	3 78
8. Wanganui	15 47	1 39	9 2	..	..	..	..	45	16 75
9. Wellington West	2 78	0 52	3 50	6 35	..	..	..	203	13 72
10. Wellington East	23 73	1 15	17 51	..	..	..	..	347	39 34
11. Nelson	0 26	4 34	5 29	..	..	..	..	226	6 4
12. West Coast	2 57	2 54	9 58	..	..	..	..	813	4 44
13. Canterbury North	..	..	1 50	..	..	..	..	30	..
14. Canterbury Central	0 24	0 24	25 62	14 0	..	..	..	..	..
15. Canterbury South	12 14	12 14	9 71	..	..	..	..	72	..
16. Otago Central	9 61	9 61	2 2	0 23	..	..	..	586	5 14
17. Otago South	4 5	5 72	1 10	..	..	..	..	901	..
18. Southland	1 42	2 71	3 56	..	..	..	..	45	..
Totals	112 79	68 68	172 29	27 20	3 21	..	1 77	6,641	163 28

TABLE 4.—MILEAGE OF MAIN HIGHWAYS METALLED AND SURFACED SINCE INCEPTION OF BOARD'S OPERATIONS (9TH JUNE, 1924).

Year.	Total Miles.				Dustless Surfacing added during Year.	Percentage of Dustless Surfacing to Total.
	Main Highways.	Clay and Pumice.	Gravel and Macadam.	Dustless Surfacing.		
1924 (9th June) ..	5,954	1,535	4,171	248	..	4·2
1924–25	5,954	1,472	4,222	260	12	4·4
1925–26	6,272	1,384	4,557	331	71	5·3
1926–27	6,391	1,233	4,726	432	101	6·8
1927–28	6,608	1,100	4,953	555	123	8·4
1928–29	10,403	915	8,735	753	198	7·2
1929–30	10,408	736	8,705	967	214	9·3
1930–31	10,419	608	8,685	1,126	159	10·8
1931–32	10,846	539	9,009	1,298	172	12·0
1932–33	10,878	494	9,005	1,379	81	12·7
1933–34	10,974	466	9,047	1,461	82	13·3
1934–35	11,557	397	9,494	1,666	205	14·4
Percentage at 31st March, 1935	100	3·5	82·1	14·4	..	..

TABLE 5.—MAINTENANCE OF MAIN HIGHWAYS (INCLUDING BRIDGES).

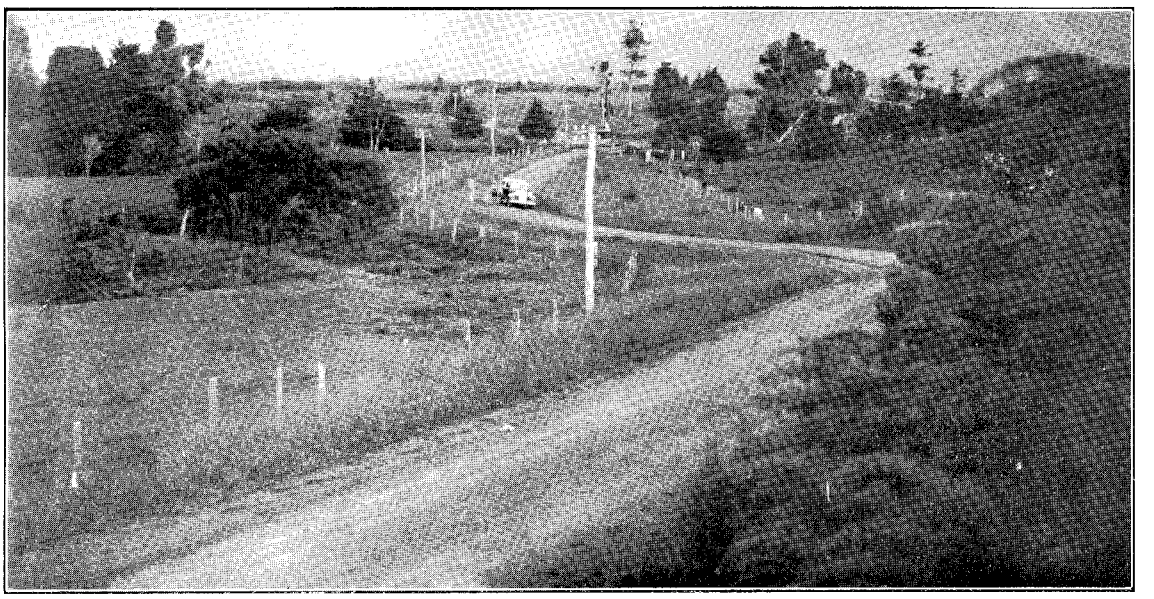
Number and Name of Highway District.	Length Maintained.	Expenditure.												
		Board.	Local Authorities.	Total.	Average per Mile per Annum.									
					1934–35.	1933–34.	1932–33.	1931–32.	1930–31.	1929–30.	1928–29.	1927–28.	1926–27.	1925–26.
	M. ch.	£	£	£	£	£	£	£	£	£	£	£	£	£
1. Auckland North ..	948 22	73,994	18,792	92,786	97·9	71·6	61·2	79·2	83·4	115·7	90·3	103·6	65·6	56·1
2. Auckland South ..	1,127 43	121,905	37,216	159,121	141·1	124·6	106·9	145·3	175·8	214·3	183·0	203·3	181·0	85·1
3. Tauranga ..	701 45	52,647	8,493	61,140	87·1	72·9	61·9	70·7	80·4	90·7	74·5	80·3	69·1	48·6
4. Gisborne ..	362 48	48,601	11,197	59,798	164·9	106·4	96·3	117·3	163·5	189·5	124·9	104·3	152·7	93·9
5. Napier	721 2	67,955	16,892	84,847	117·7	81·4	79·3	75·9	121·2	146·7	120·3	170·0	169·4	104·5
6. King-country ..	663 22	56,995	9,144	66,139	99·7	70·8	57·1	70·0	85·8	115·7	61·4	56·2	69·8	55·4
7. Taranaki ..	465 30	38,938	8,792	47,730	102·5	83·8	84·5	125·2	136·0	172·8	155·9	195·7	198·8	105·0
8. Wanganui ..	505 17	33,912	10,307	44,219	87·5	80·8	66·0	101·0	126·7	176·1	88·5	145·3	167·6	88·9
9. Wellington West ..	477 3	47,527	11,976	59,503	124·7	106·0	110·8	149·8	179·0	224·3	185·6	228·9	166·3	120·2
10. Wellington East ..	492 73	67,882	21,497	89,379	181·3	114·9	91·4	128·6	141·6	159·0	138·4	138·8	138·0	104·7
Totals, North Island	6,464 65	610,356	154,306	764,662	118·3	91·3	81·0	104·5	124·8	155·8	119·9	141·2	131·6	82·9
11. Nelson	645 35	53,046	12,196	65,242	101·1	74·1	66·6	103·6	82·0	112·8	88·7	102·1	119·9	63·9
12. West Coast ..	532 1	67,974	7,893	75,867	142·6	110·8	104·1	136·7	122·4	166·8	144·9	118·3	114·2	94·6
13. Canterbury North	333 64	14,579	4,001	18,580	55·7	58·3	59·0	55·4	72·6	99·7	81·1	90·1	79·5	47·7
14. Canterbury Central	693 11	29,804	8,463	38,267	55·2	50·9	50·2	76·5	75·2	77·3	68·8	87·3	81·4	46·1
15. Canterbury South	752 40	39,784	10,595	50,379	66·9	59·3	67·0	78·7	88·0	89·6	66·3	105·0	79·5	73·9
16. Otago Central ..	770 68	49,225	8,684	57,909	75·1	50·3	46·4	52·8	36·4	73·9	47·7	77·2	49·3	26·1
17. Otago South ..	479 36	30,587	9,957	40,544	84·6	73·8	72·8	99·5	90·8	108·1	77·1	90·5	81·7	54·2
18. Southland ..	885 73	37,320	10,459	47,779	53·9	44·4	41·6	43·2	58·7	57·9	49·9	63·4	76·0	56·6
Totals, South Island	5,093 8	322,319	72,248	394,567	77·6	62·7	60·3	77·4	75·8	94·1	75·0	91·4	85·4	59·6
Totals, Dominion ..	11,557 73	932,675	226,554	1,159,229	100·3	78·5	70·7	92·5	103·1	128·6	100·1	119·9	111·9	73·2

TABLE 6.—TESTS OF STONE COMPLETED DURING THE YEAR ENDED 31ST MARCH, 1935.

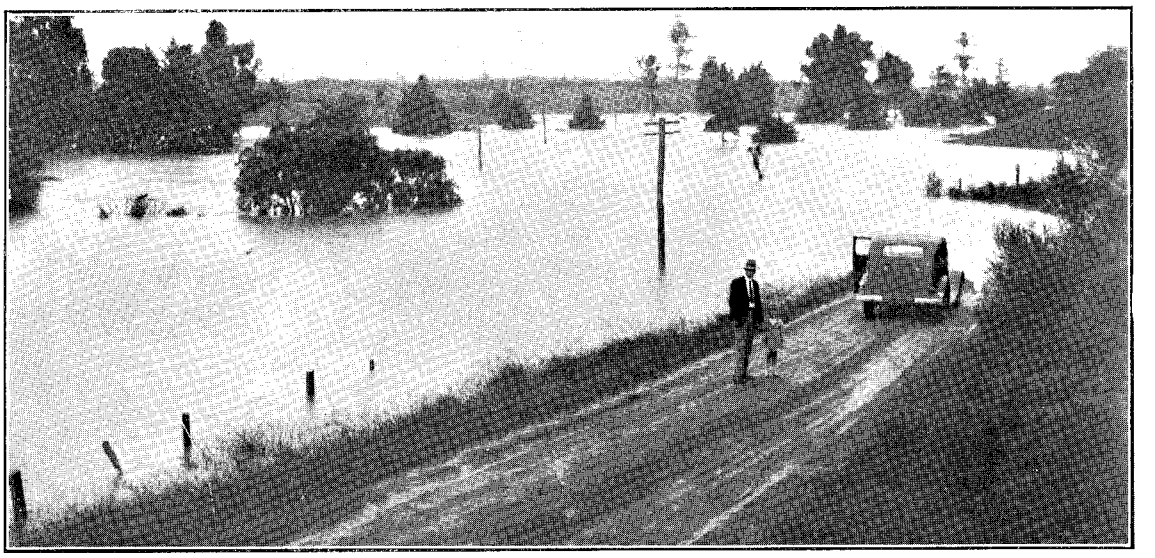
No.	Locality.	Weight in Pounds per Cubic Foot.	Absorption of Water in Pounds per Cubic Foot.	Abrasion.		Hardness.	Toughness.	Geological Classification.
				Percentage of Wear.	French Co-efficient.			
264	Godfrey's Quarry, Picton ..	168·5	0·88	5·20	7·7	18·4	31	Schistose greywacke.
265	Botanical Quarry, Picton ..	172·1	0·79	3·98	10·0	..	..	Schistose greywacke.
266	Gravesend Quarry, Picton ..	168·4	0·75	6·90	5·8	..	..	Schistose greywacke.
267	Tawa Flat Tunnel, Wellington..	168·6	0·75	3·90	10·3	19·1	27	Greywacke (best).
268	Tawa Flat Tunnel, Wellington..	160·9	0·21	12·70	3·2	..	..	Greywacke (weakest).
269	Tawa Flat Tunnel, Wellington..	..	..	5·70	7·0	..	..	Greywacke (average).
270	Tawa Flat Stream, Wellington	..	..	3·54	11·3	..	..	Gravel.
271	Shand's Quarry, Otago Peninsula	167·5	1·25	3·10	12·7	19·6	33	Trachytoid phonolite.
272	Isherwood and Bellam's Quarry, Clarendon	190·2	0·50	2·30	17·5	19·6	34	Basalt.
273	Nyphon's Quarry, Otago Peninsula	183·9	0·50	3·40	11·7	19·8	18	Dolerite.
274	Burns' Quarry, Otakou, Dunedin	148·1	3·90	4·30	9·3	18·9	23	Phonolite.
275	Mauriceville County's Quarry	167·1	0·30	3·56	11·2	19·4	33	Greywacke.
276	Wairarapa South County's Quarry	166·0	0·44	2·30	17·4	19·5	29	Greywacke.
277	Glenore Quarry, Bruce County	169·5	2·15	4·80	8·3	19·6	8	Chlorite schist.
278	Kilmog Hill, Dunedin ..	187·7	0·40	3·06	13·1	19·6	30	Basalt.
279	Stevenson and Sons, Pahiatua County	167·9	0·80	2·26	17·7	..	..	Greywacke.
280	Black Hill Domain, Waihi Borough	151·5	3·15	7·94	5·0	18·1	11	Hypersthene basalt.
281	D. Booth's Quarry, Leith Valley	171·1	0·55	3·27	12·2	19·6	20	Basanite.
282	Stewarts' Quarry, Block II, Kaipara Survey District	151·5	2·30	11·30	3·5	15·7	7	Volcanic breccia.

Other tests were made by abrasion with steel shot, sieve analysis, microscopic examination, &c., as required by the nature of the samples submitted.

By Authority: G. H. LONEY, Government Printer, Wellington.—1935.

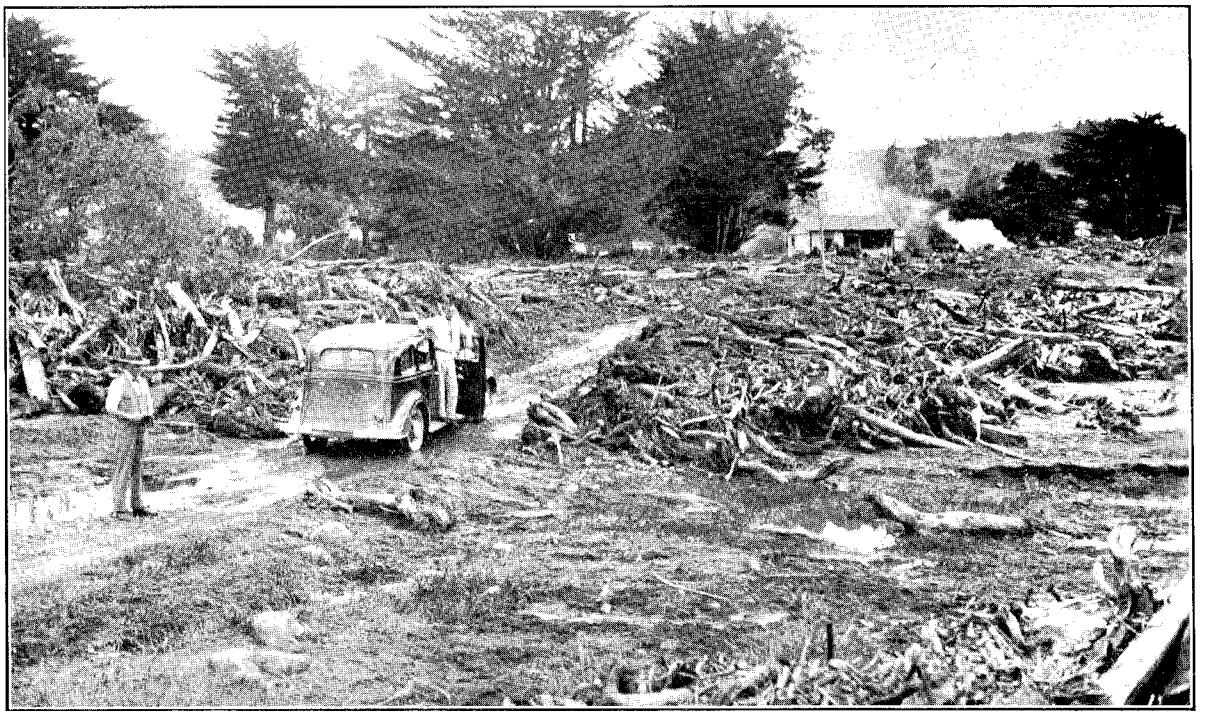


Section subject to Flooding.



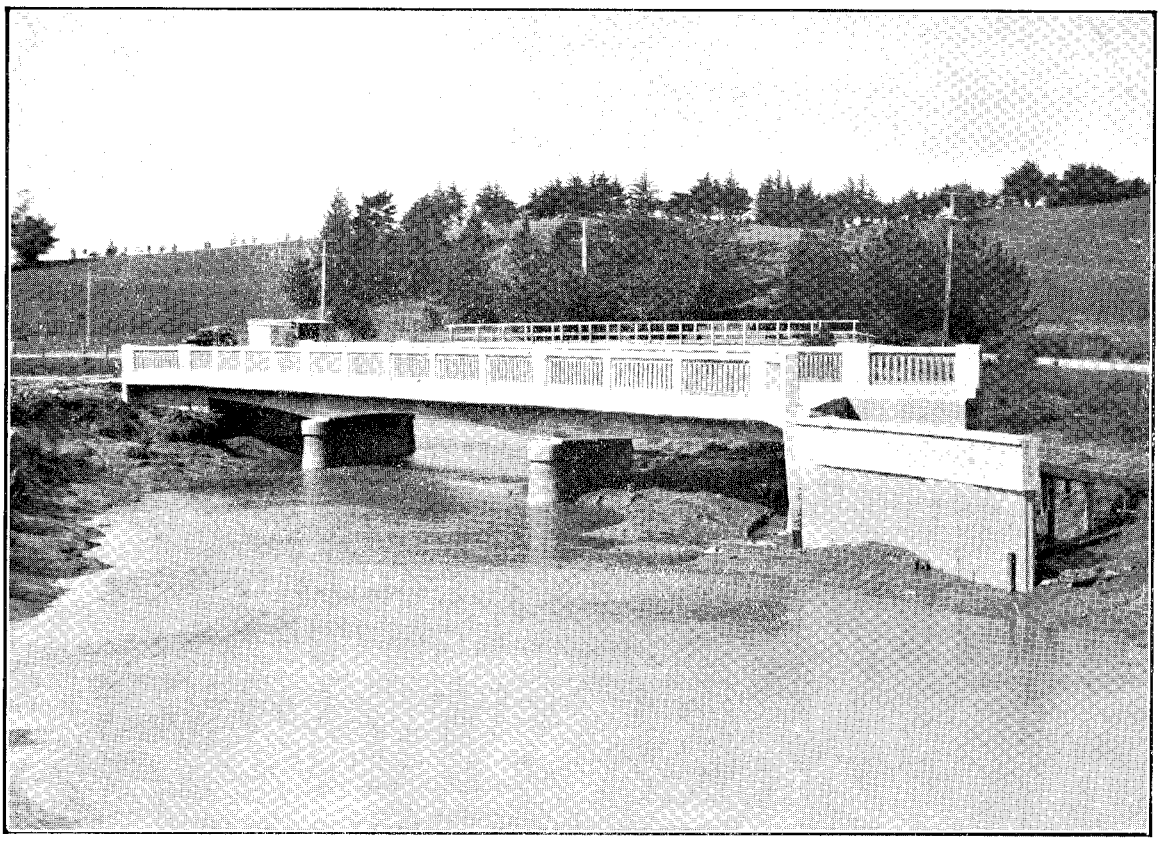
Same Section under Flood.

WAIPAPAKAURI–MAUNGATAPERE MAIN HIGHWAY.

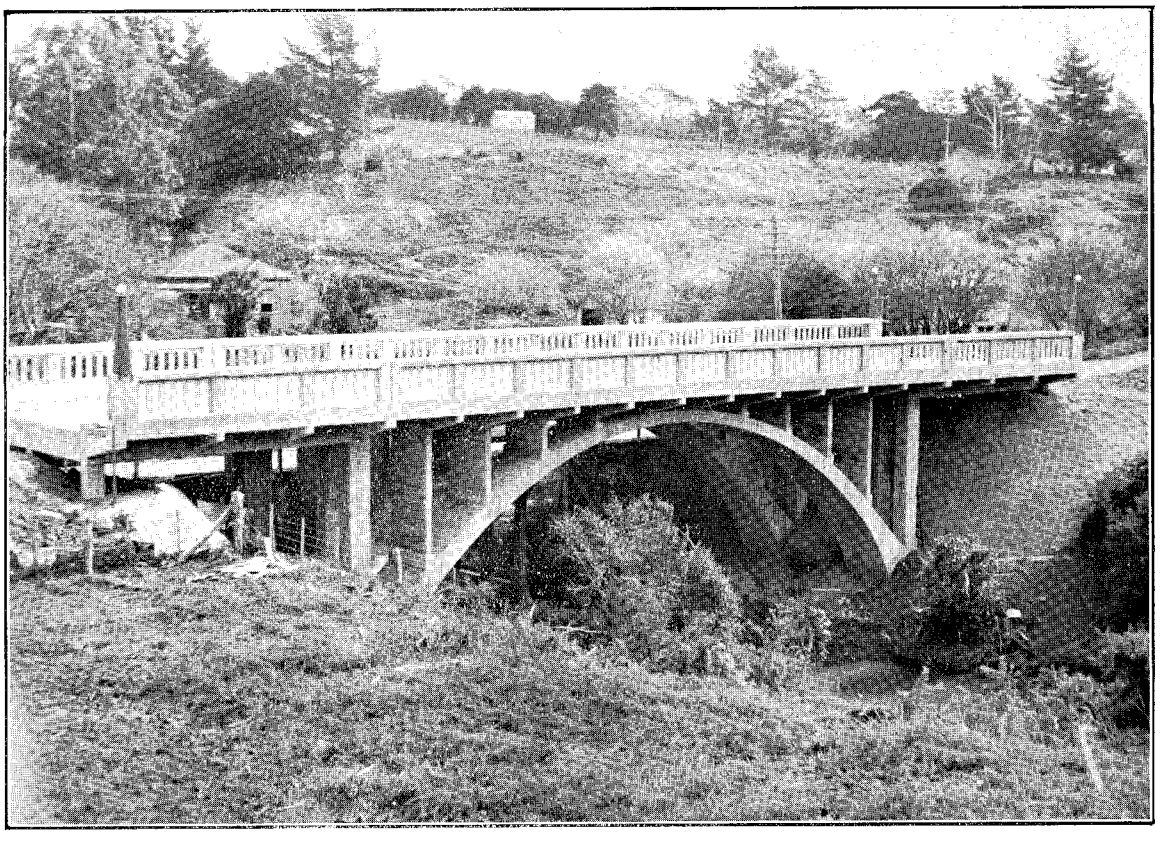


Scene after Flood.

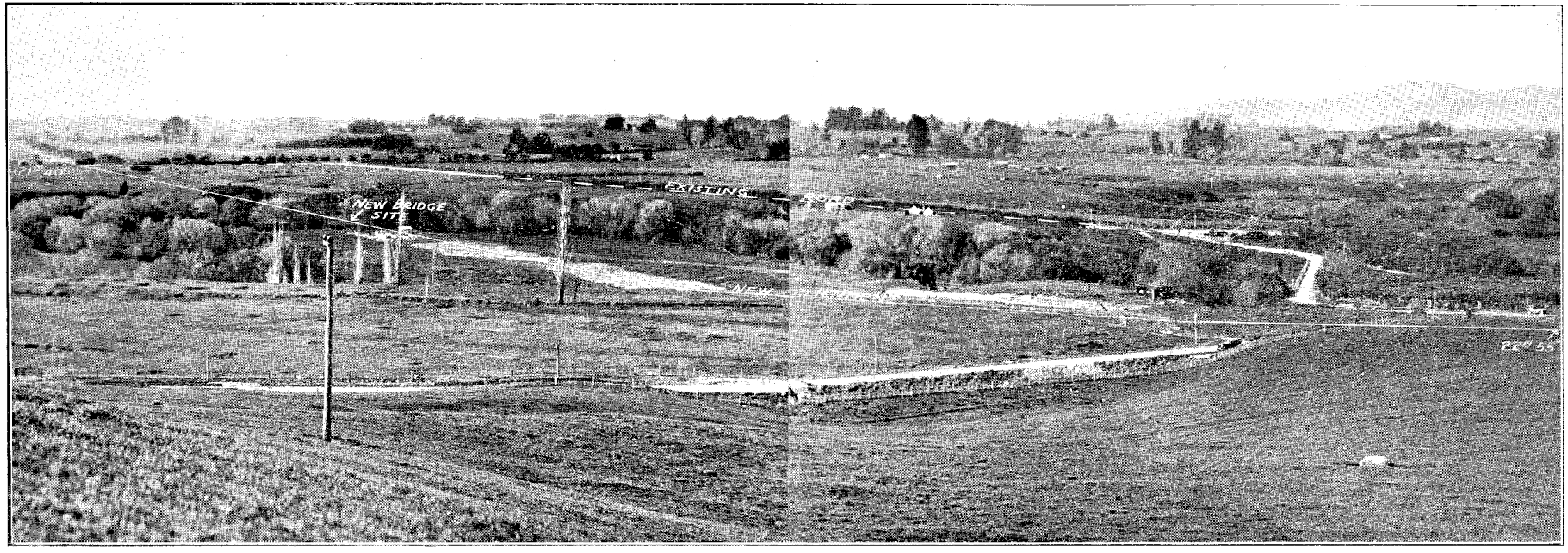
WAIMAMAKU–OHAEAWAI MAIN HIGHWAY.



PUNGANUI BRIDGE.
One 50 ft. span and two 35 ft. spans.
AUCKLAND – HELENSVILLE – WAIWERA MAIN HIGHWAY.

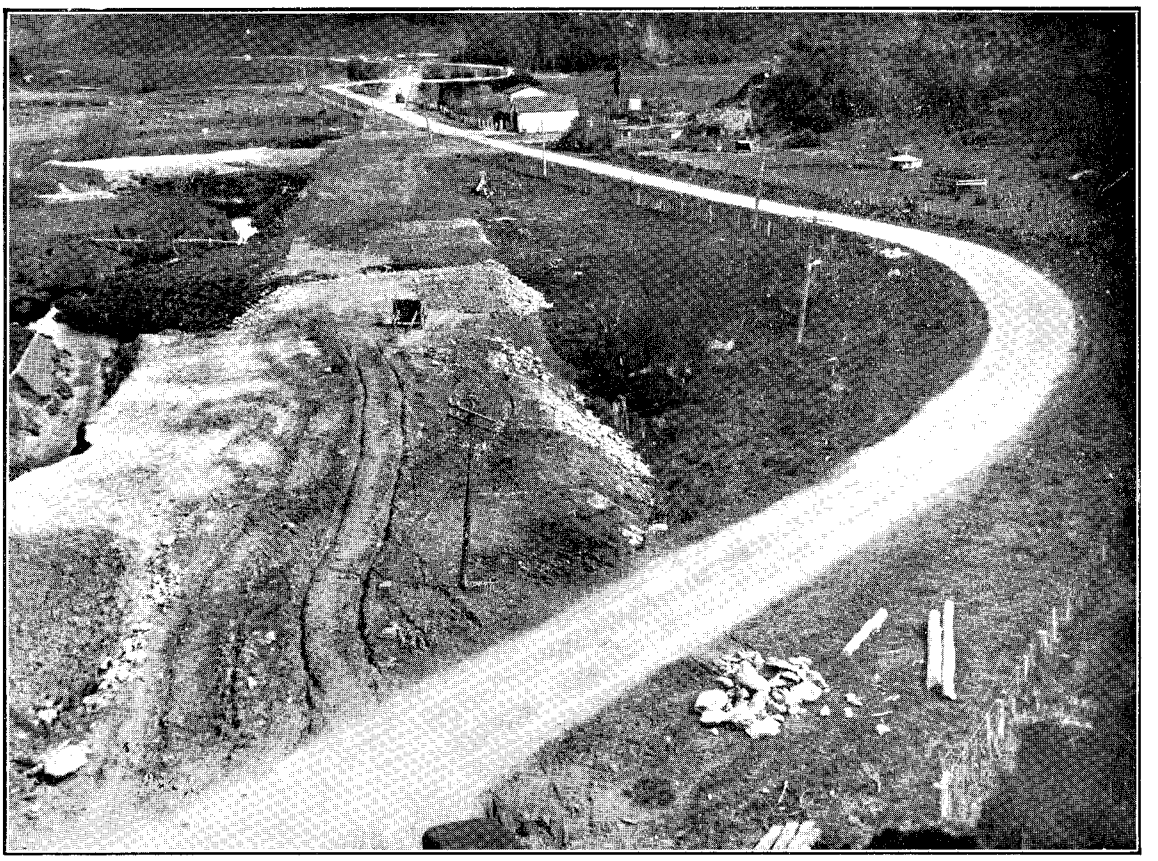


ALBANY BRIDGE.
One 73 ft. reinforced concrete arch span and two 23 ft. beam spans.
AUCKLAND – MAUNGATUROTO MAIN HIGHWAY.

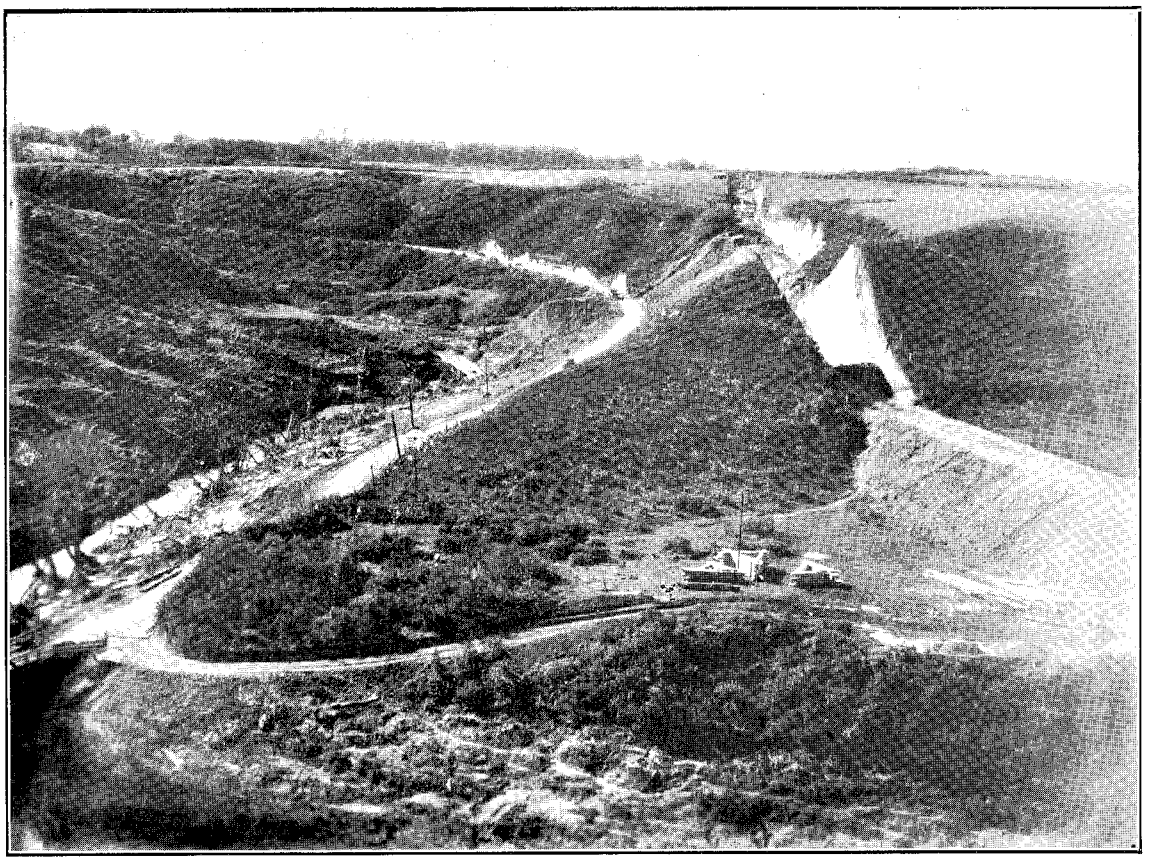


PANORAMIC VIEW OF PUNIU DEVIATION.

No. 1 GREAT SOUTH ROAD MAIN HIGHWAY, WAIPA COUNTY DIVISION.

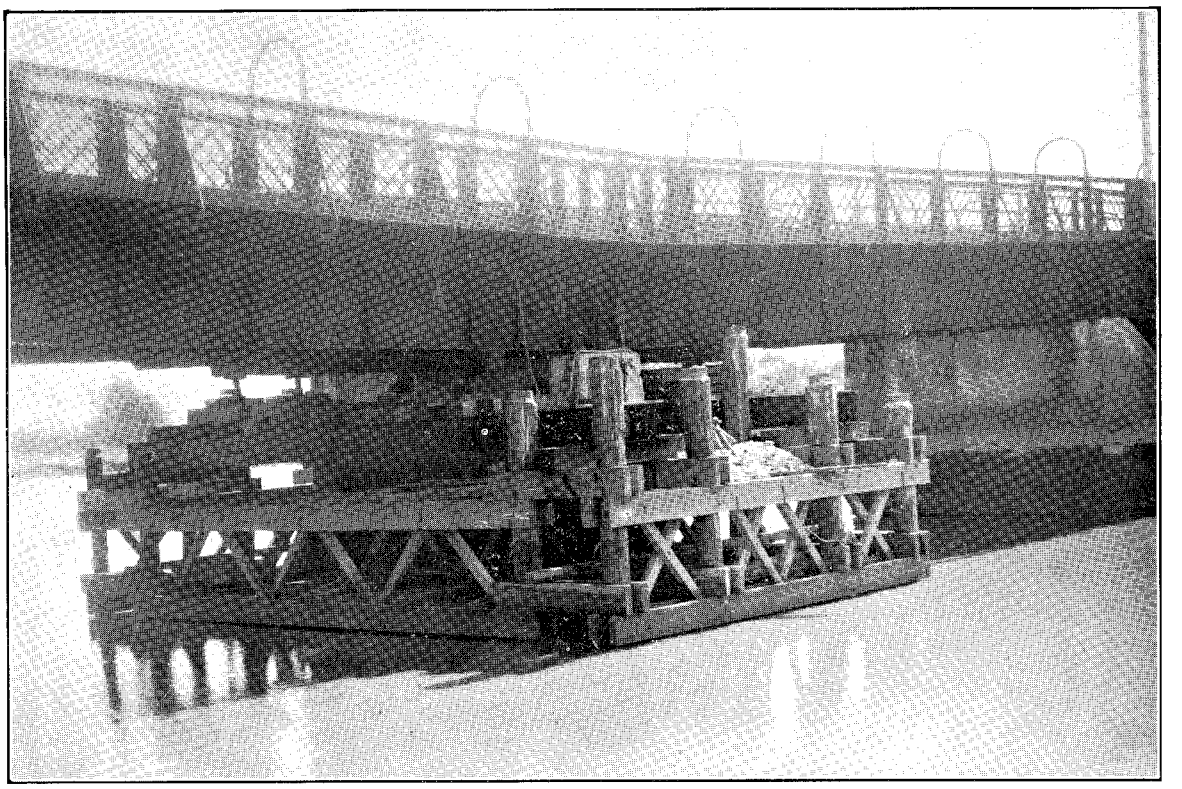


Mimi Valley.—Straightening and Widening.



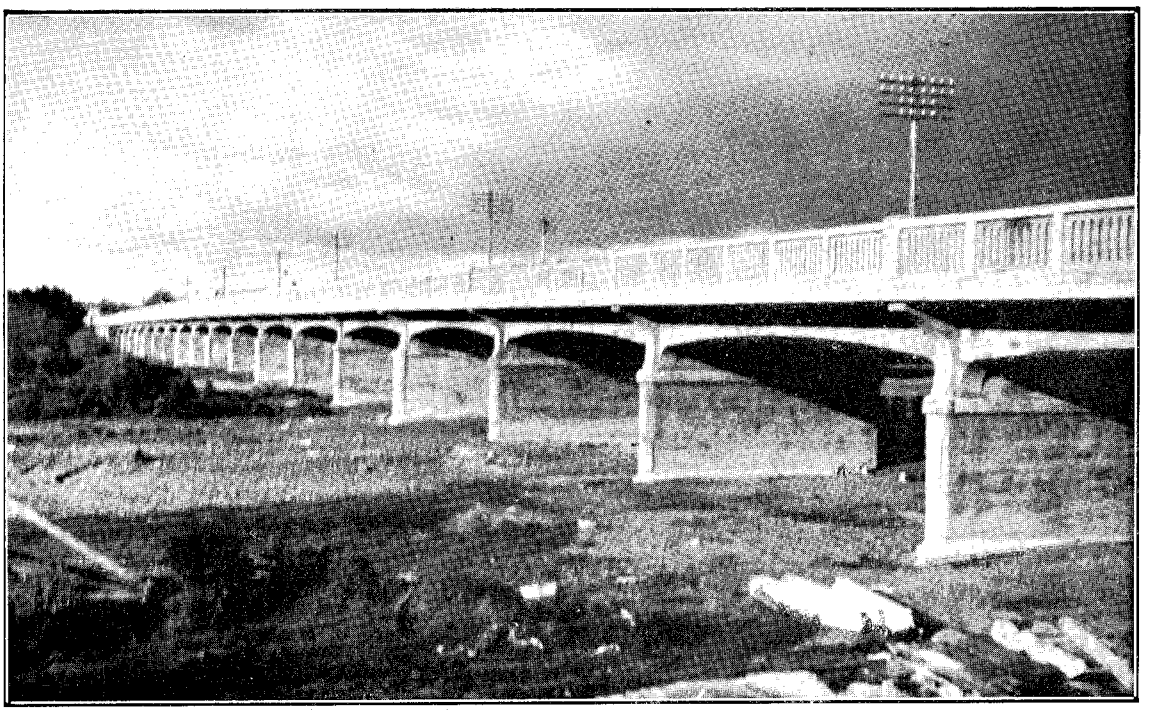
Tangahoe Deviation.

AUCKLAND–WELLINGTON, VIA TARANAKI, MAIN HIGHWAY.



Waitara Bridge.—Staging to lift Spans damaged by Flood.

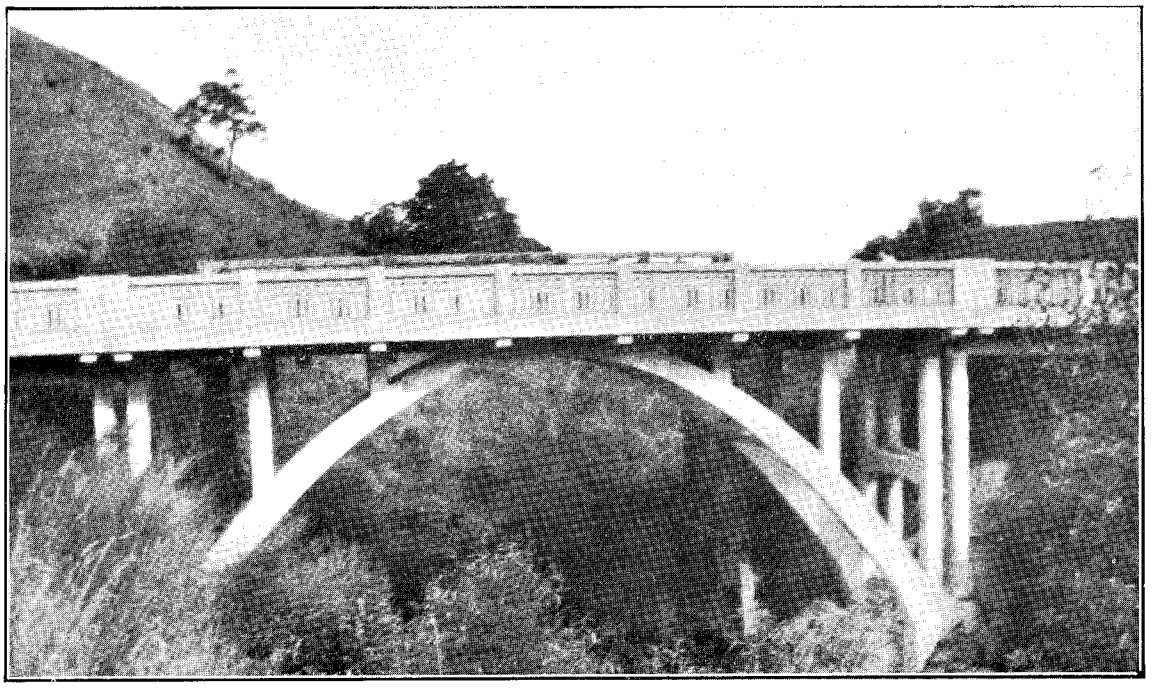
AUCKLAND–WELLINGTON, VIA TARANAKI, MAIN HIGHWAY.



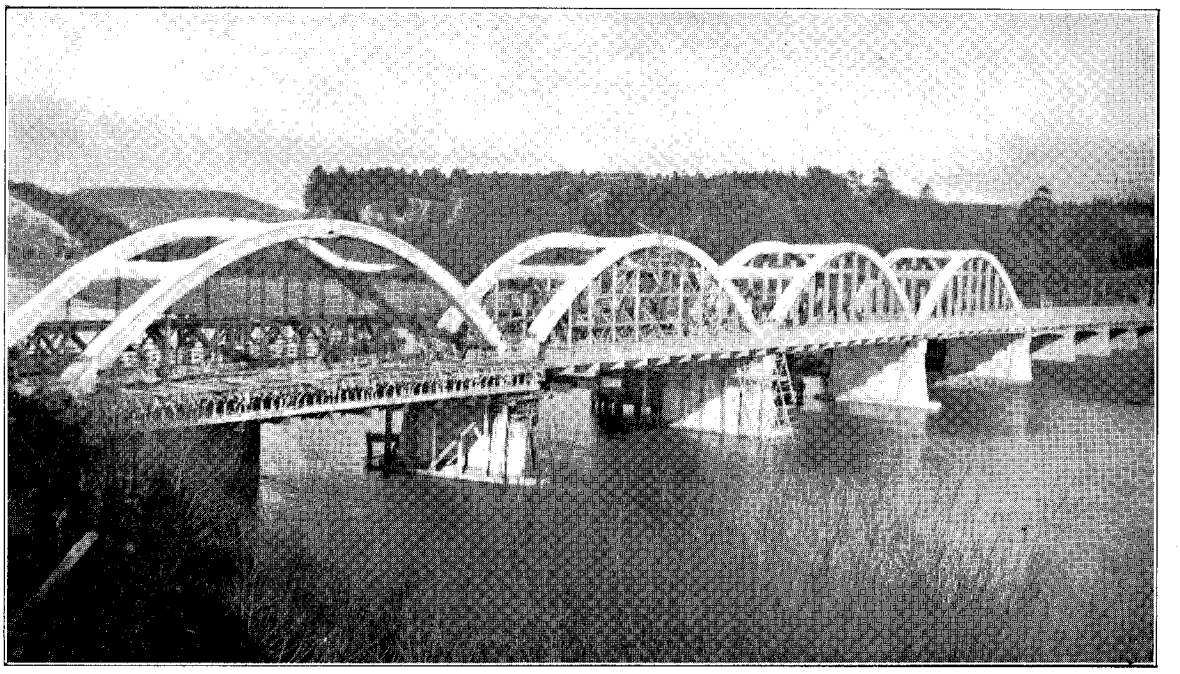
Waipukurau Traffic Bridge over Tuki Tuki River.

Twenty 45 ft. reinforced concrete spans; total length 900 ft.

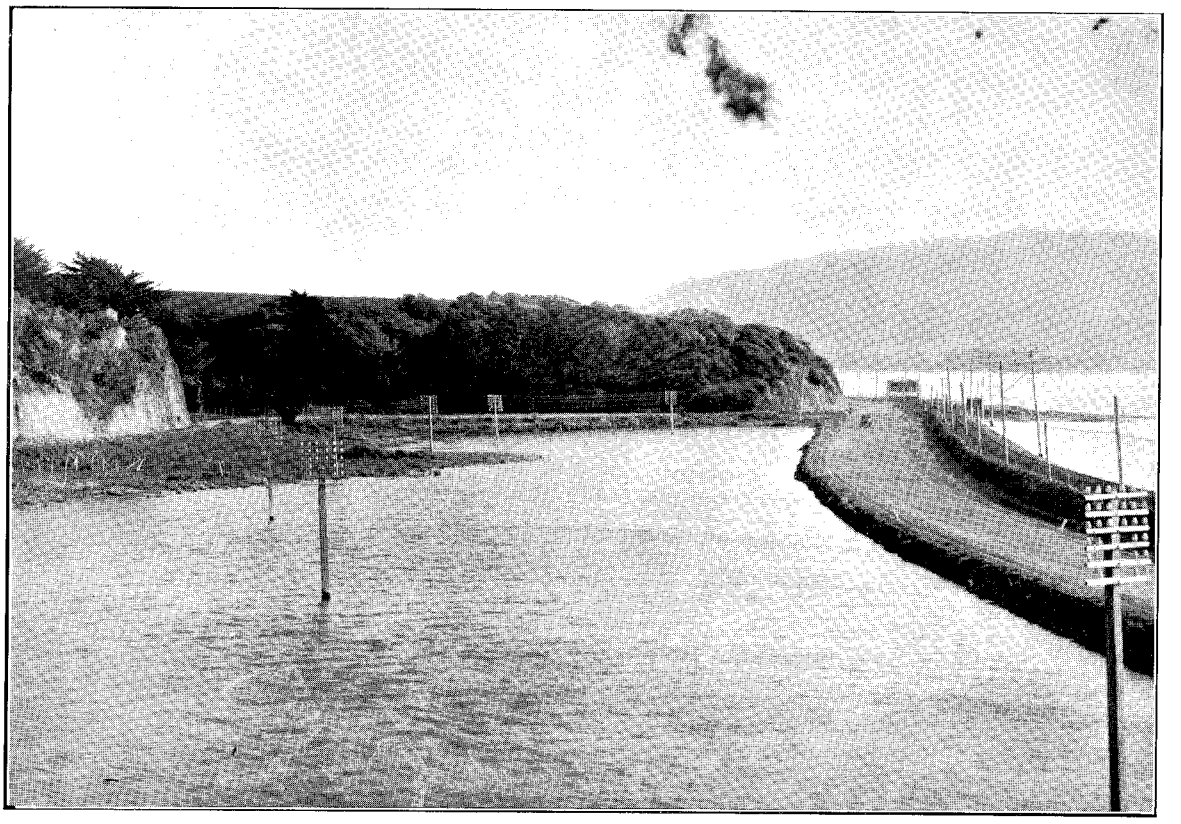
WELLINGTON–NAPIER, VIA WAIRARAPA, MAIN HIGHWAY.



Te Kura Bridge.—Reinforced Concrete Arch.
GISBORNE–WAIROA, VIA HANGAROA, MAIN HIGHWAY.



Fitzherbert Bridge over Manawatu River.
LEVIN–PALMERSTON NORTH, VIA SHANNON, MAIN HIGHWAY.

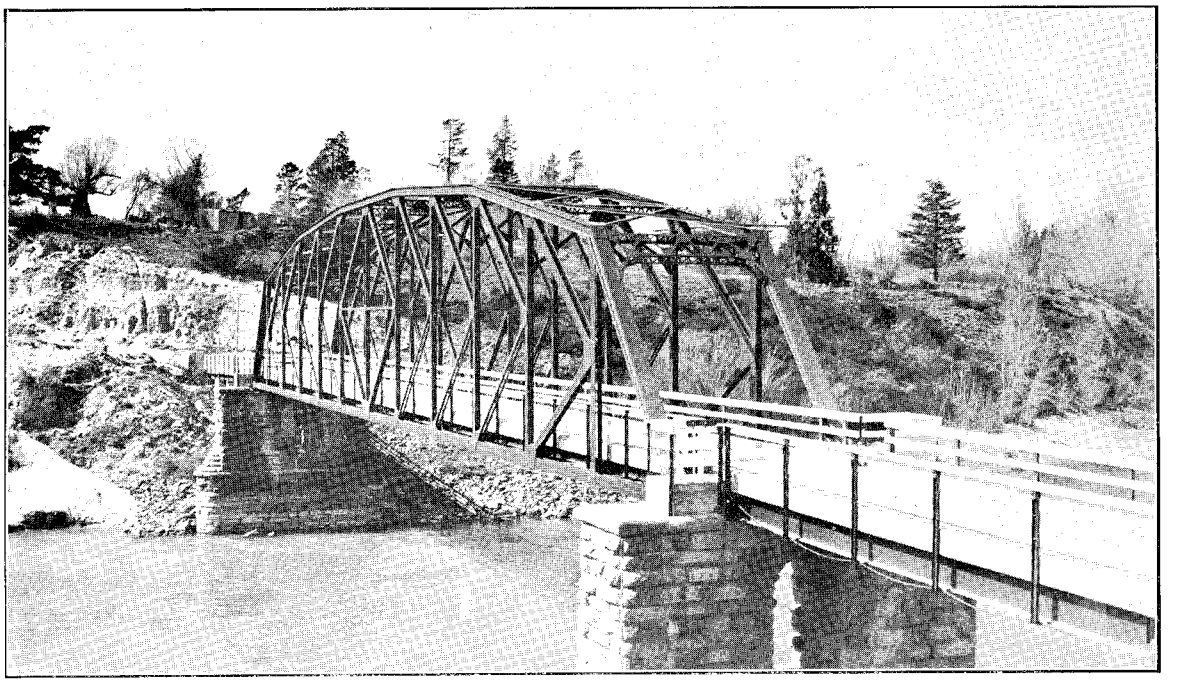


Deviation near Porirua.—Old Road on left.

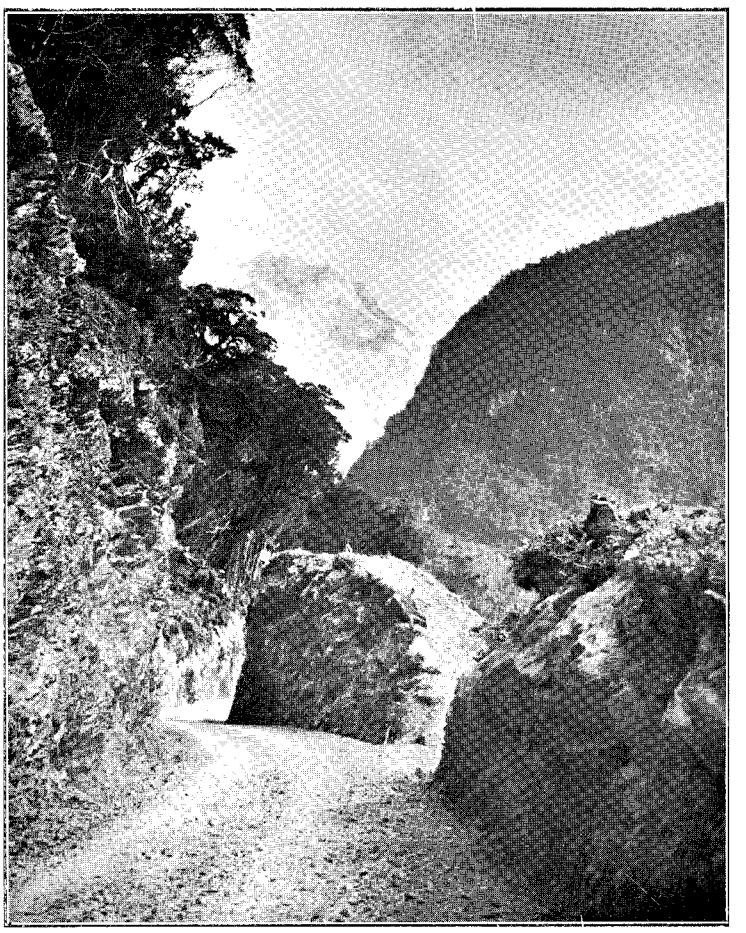
WELLINGTON–AUCKLAND, VIA TARANAKI, MAIN HIGHWAY.

Bad Bend to be eliminated by Deviation.—Takaka Hill, Hawke's Craig Section.

RICHMOND–COLLINGWOOD MAIN HIGHWAY.



Clutha River Bridge, Clyde.
Main span 205 ft., replacing old suspension bridge.
ALEXANDRA–CLYDE MAIN HIGHWAY.



Heavy Rock Work at 54 Miles.
TE ANAU–MILFORD SOUND MAIN HIGHWAY.