

1910.
NEW ZEALAND.

PUBLIC WORKS STATEMENT.

BY THE HON. RODERICK McKENZIE, MINISTER OF PUBLIC WORKS.

15TH NOVEMBER, 1910.

MR. SPEAKER,—

The year 1909–10, the operations of which I have to describe, if not quite the busiest in the annals of the Department, was nevertheless a very busy year. There have been only four occasions during the last thirty years on which the annual expenditure of the Department has exceeded two millions sterling, and last year was one of them. The present year promises to be even a busier one, as I am in the fortunate position of being able to propose larger votes than last year for all the works ordinarily undertaken by the Department—railways, roads, buildings, telegraphs, &c. — and, in addition, to submit proposals for carrying out practical work in the way of developing some of our extensive water-powers, and also for the construction of important irrigation works, and I have to bespeak for my various propositions the careful and sympathetic consideration of honourable members.

TOTAL EXPENDITURE.

The total expenditure on all works and services borne upon the public-works estimates last year amounted to £2,218,975, or, if we exclude special accounts having their own ways and means, and take into consideration only actual charges against the Public Works Fund, the total amounted to £1,993,171, which, with the exception of the previous year, is the largest expenditure on such works for many years past.

The following table shows, as regards each class of work, (a) the total expenditure since the inauguration of the public-works policy to the 31st December, 1890; (b) the similar expenditure between the 1st January, 1891, and the 31st March, 1910; (c) the gross total expenditure to the 31st March, 1910; and (d) the expenditure for the late financial year:—

Class of Work.	Expenditure.			
	A Total to 31st December, 1890.	B 1st January, 1891, to 31st March, 1910.	C Total to 31st March, 1910.	D Year ended 31st March, 1910.
Railways—	£	£	£	£
New construction ...	11,975,098	7,791,818	19,766,916	786,952
Additions to open lines ...	2,092,002	6,271,830	8,363,832*	468,518†
Roads ...	3,575,804	5,093,974	8,669,773	338,762
Public buildings ...	1,776,003	2,591,272	4,367,275	277,157
Immigration ...	2,144,386	74,405	2,218,791	17,003
Purchase of Native lands ...	1,191,137	877,277	2,068,414	30,567
Lighthouses, harbour-works, and harbour defences	880,095	180,324	1,060,419	16,682
Tourist and health resorts ...	...	197,361	197,361	14,508
Telegraph-extension ...	600,849	1,165,342	1,766,191	123,422
Development of goldfields ...	561,101	276,012	837,113	17,597
Defence-works (general) ...	429,720	474,191	903,911	4,977
Departmental ...	349,789	284,284	634,073	41,176
Payment to Midland Railway bondholders ...	...	150,000	150,000	...
Lands improvement ...	...	51,027	51,027	6,910
Minor works and services ...	300,689	20,266	320,955	...
Cost and discount, raising loans, &c. ...	1,021,472	220,460	1,241,932	5,715
Totals ...	26,898,145	25,719,843	52,617,988	2,149,946

* Including Wellington–Manawatu Railway purchase. Expenditure in connection with new Hutt Road (£67,244) not included. † Excluding expenditure on new Hutt Road.

WAYS AND MEANS.

At the 31st March, 1909, the available ways and means for public-works purposes were £383,709
and further funds were received as under:—

Balance of £1,250,000 raised under the Loan Act of 1908	...	50,000
Amount received under similar Act of 1909	...	900,000
Amount received under the Finance Act, 1909	...	1,000,000
Amount received under the New Zealand Loans Act, 1908	...	12,000
Miscellaneous receipts	...	2,833

Making a gross total of £2,348,542

The ordinary expenditure of the year amounted to £1,993,171; debentures redeemed, £300; transfer to State Coal-mines Account in respect of the Greymouth—Point Elizabeth Railway, £24,990; other charges, £17,715: thus bringing the total disbursements up to £2,036,176, and leaving a credit balance at the end of the year of £312,365.

For the current year it is proposed to provide additional funds as under:—

	£
Balance of 1909 loans	350,000
Under the Public Works and Land Settlement Act, 1910	1,750,000
Under the Aid to Water-power Works Act, 1910	500,000
Transfer from Consolidated Fund	800,000
Special provision for irrigation works (section 19, Appropriation Act, 1909)	100,000

The above, with the balance brought forward, gives a gross total of £3,812,366. The estimated expenditure for public works for the current year (excluding separate accounts having their own ways and means) amounts to £2,855,000, thus leaving a balance of £957,366 to be carried forward to next year. Honourable members will observe that the proposed transfer from the Consolidated Fund is larger than anticipated when the Budget was brought down, but the great improvement in the revenue that has since taken place has enabled the Minister of Finance to provide a larger measure of assistance than was originally considered possible.

RAILWAY-CONSTRUCTION.

The sections of railway opened for traffic during the last financial year, or since its close, are as under:—

	M.	ch.	Opened.
Ruatapu to Ross	7	21	1st April, 1909.
Waihoaka to Tuatapere	8	7	1st October, 1909.
Riversdale to Waikaia	13	70	1st October, 1909.
Catlin's to Houipapa	2	30	17th December, 1909.
Towai to Hukerenui	4	31	3rd May, 1910.
Wellsford to Te Hana	3	27	16th May, 1910.
Huiroa to Te Wera	7	0	20th June, 1910.
Ngahere to Blackball	3	40	16th July, 1910.
Domett to Mina	3	63	1st August, 1910.
Lawrence to Big Hill	7	37	Ready to open.
Total	61	6	

The total expenditure on railway-works last year amounted to £1,283,932. The particulars are as under:—

	£
Construction of new lines	786,946
Additions to open lines	316,464
Hutt Railway and Road Improvement Account	59,282
Railways Improvements Authorization Act Account	81,249
Wellington and Manawatu Railway Purchase Account	39,991
Total	£1,283,932

I will now refer more in detail to the several railways that have been in hand, and the proposals of the Government in regard to new works for the current year.

KAIHU EXTENSION.

The extension of the Kaihu Valley Railway to Waima was sanctioned under the Railways Authorization and Management Act, 1891, and on the supplementary estimates last year a vote of £2,500 was taken towards making a commencement with the work. It was found impossible to put actual construction-work in hand

during the financial year, as questions regarding the legal ownership of the land had to be dealt with, and an old-standing claim by Mr. Daniel Fallon in respect of construction-works on the line carried out for the Kaihu Valley Railway Company had also to be settled before anything else could be done. I am glad to say that both of these difficulties have now been removed. The claim of Mr. Fallon has been satisfactorily settled for a payment of £2,000.

Before starting construction-works it was necessary to have a resurvey of the line made. This is now in progress, and we shall shortly be in a position to commence operations in the matter of restoring the earthwork formation. The length of the projected extension is 2 m. 20 ch., and, as a good deal of the work was done many years ago under Mr. Fallon's contract, the task of completing it and laying the permanent-way will not be a very lengthy or expensive one. I am in hopes that the line will be opened for traffic before next year's Public Works Statement is delivered.

The vote proposed for the current year is £15,000.

KAWAKAWA—GRAHAMTOWN.

The work of closing up the gap between Kawakawa at the north and Hukerenui at the south end of this railway is now approaching completion. The section between Hukerenui and Towai, 4 m. 31 ch. in length, was opened for traffic in May last, and the rails on the remainder of the line between Kawakawa and Towai were linked together in July. A great deal of work still remained to be done in the shape of ballasting, erection of station buildings, and general finishing-works, and these are now well in hand, and I am expecting to be able to hand the line over to the Railway Department for regular working about Christmas.

The works on the extension from Whangarei to Grahamtown are also in a forward condition. The Grahamtown Wharf is practically completed, and the whole section should be ready to hand over to the Railway Department early in the new year.

The expenditure on this railway last year amounted to £51,137, and for the current year a vote of £65,000 is proposed.

KAWAKAWA—HOKIANGA.

Honourable members will recollect that the construction of the first section of this railway—namely, to Kaikohe—was sanctioned in the Railways Authorization Act of last year, and a small vote of £2,500 was provided on last year's estimates to make a commencement with the work. The survey of the line was put in hand last autumn, and as soon as a reasonable distance had been finally located construction-works were put in hand, and are now proceeding satisfactorily.

As it is intended to transfer to this line the bulk of the men at present employed on the Kawakawa—Grahamtown Railway, as from time to time the works on that line are completed, a substantial vote will be required for the current year, and an amount of £40,000 has been provided on the estimates accordingly.

NORTH AUCKLAND.

A very large amount of work was carried out on this railway during the year. The section between Wellsford and Te Hana—3 m. 27 ch.—was opened for traffic in May last. The works on the next section, to Kaiwaka, are in a forward state, and the Otamatea and Bickerstaffe sections are also well in hand. As it is intended to proceed vigorously with the construction of this railway, it is desirable that an additional section of the line should be authorized, and provision will accordingly be made in this year's Authorization Bill for the extension of the line to McCarroll's Gap.

Last year's expenditure amounted to £59,299, which is the largest expenditure which has ever taken place on the line in one year since the works were started. For the current year a still larger vote—namely, £100,000—is proposed in order to proceed with the work more vigorously.

HUNTLY-AWAROA.

The desirability of a bridge over the Waikato River at Huntly for both railway and road traffic, and the construction of a branch line of railway to open up the extensive coal-deposits in the Awaroa district has been strongly urged upon the Government, and the putting in hand of about three miles of this line, including the bridge, is considered to be a very necessary and promising work, and provision for its construction will be made in the Railways Authorization Bill of the present session. With the exception of the bridge, the works on the branch will be of a very simple and inexpensive character. The line will also be easy to work, and is expected to yield a remunerative traffic.

The vote proposed for the current year is £20,000, and, as the plans and specifications for the bridge are already prepared, tenders for its erection can be invited as soon as the appropriations are passed by Parliament.

EAST COAST MAIN TRUNK.

The section of this railway between Maunganui Bluff (Tauranga Harbour) and Te Puke was authorized in last year's Act, and construction-works have since been started, and are now well in hand. It is proposed during the present session to authorize a further section of the line—namely, between Te Puke and Paengaroa. The construction of the railway to this latter point presents no special difficulties. Beyond Paengaroa, however, the question of the best route to be adopted is at present open to some doubt, and further surveys will require to be made in order to definitely decide the point. These surveys will be undertaken during the coming recess, so that full information may be available next session to admit of the construction of a still further portion of the line being sanctioned. The works on the section now in hand are very light, and will soon be completed.

On the Gisborne-Motu division of the railway a considerable amount of work has been done. On the Otoko section the line has been practically completed as far as the Otoko Viaduct, where a temporary goods-shed has been placed, and ballast-trains are being regularly run up to that point, and are also conveying goods for the settlers, as well as carrying a number of passengers. A contract for the erection of the steel viaduct at Otoko was let to Messrs. G. W. Griffiths and Co. for £11,773 in February last, the date fixed for its completion being the 12th May, 1911, and the work is now in hand. Beyond the viaduct earthworks have been started for several miles and are making satisfactory progress, and survey-work on the remainder of the line to Motu is proceeding.

Last year's expenditure amounted to £67,630, which is by far the largest sum spent on the line in any single year since its construction was commenced.

Having in view the great importance of completing railway connection between Auckland and Wellington by the East Coast route, it is proposed to provide in the Railways Authorization Bill of the present session for the construction of the first portion of the Napier-Gisborne section of the line.

The votes proposed on the current year's estimates for the different sections are as under :—

	£
Tauranga-Paengaroa	25,000
Gisborne-Motu	80,000
Napier-Gisborne	5,000
Total	£110,000

STRATFORD—MAIN TRUNK.

A very large amount of work has been carried out on this railway during the year. The section between Huiroa and Te Wera, about seven miles in length, was handed over to the Railway Department for regular working in June last, and the further section to Pohokura—rather over nine miles—is approaching completion, the rails having been laid over the whole length, and ballasting being in progress. It is expected that this section will be ready to be handed over for regular traffic in January next. The section between Pohokura and Whangamomona is in hand, and is progressing very satisfactorily.

Last year's expenditure constituted a record, having amounted to £93,235. For the current year a vote of £100,000 is proposed.

MOUNT EGMONT BRANCH.

Very little work was done on this railway during last year, the expenditure having amounted to £405 only. The necessary surveys for the completion of the line are nearly finished, so that construction-work can be resumed almost immediately.

The vote proposed for the current year is £15,000.

NORTH ISLAND MAIN TRUNK.

The completion of this railway was mentioned in my last year's Statement, but, as a number of liabilities were outstanding, a vote of £20,000 was provided on the estimates to cover same. The actual expenditure under this vote amounted to £27,540, but credits in respect of lands acquired out of previous years' votes, sale of plant, &c., came to hand to a still larger sum, so that no expenditure whatever appears against the vote, but, on the contrary, a credit balance of £5. No further appropriation on account of the work is required.

SOUTH ISLAND MAIN TRUNK.

At the north end of this line the section between Seddon and Ward has been practically completed, but, as a matter of Departmental convenience, is retained in the hands of the Public Works Department for the present. Goods and passengers are being carried to meet the requirements of settlers, however.

The new section from Ward to Mirza, authorized under last year's Act, has been duly commenced, and is making satisfactory progress.

It is proposed in the current year's Authorization Bill to provide for a further extension of about three miles and three-quarters—namely, to a point about one mile south of the Ure River.

At the south end the section between Domett and Mina—3 m. 63 ch. in length—has been completed, and was handed over to the Railway Department for regular working in August last.

The Parnassus section between Mina and the Leader Valley, authorized in last year's Act, has been commenced, and the works are proceeding satisfactorily.

The large bridge over the Waiau-ua River is approaching completion, and when finished will be available for road as well as railway traffic.

It is desirable that provision should be made this year for a further extension of the line, and the Railways Authorization Bill to be introduced shortly will accordingly provide for a further section, about six miles in length, up the valley of the river Leader.

Last year's expenditure amounted to £49,621, and for the current year votes totalling to £50,000 are asked for—namely, £20,000 for the north end and £30,000 for the south end.

MIDLAND RAILWAY.

At the Nelson end of this railway the section between Kiwi and Tui has been practically completed, and will be ready for handing over to the Railway Department early in the new year, and the section between Tui and Kaka is nearing completion. The remainder of the works up to and including the large cutting at the Tadmor Saddle are well in hand, and a start has been made on the Hope side of the saddle. In my last year's statement I expressed the opinion that this line as far as the Hope Junction would be ready for traffic at the end of the approaching summer, so that the through journey between Nelson, Greymouth, and Hokitika might be accomplished in one day. It seems rather doubtful now whether this hope will be realized, but every effort is being made to push on with the works.

The expenditure on this end of the line last year amounted to £27,627, and for the current year a vote of £30,000 is proposed.

At the Reefton end the earthworks on the Cronadun-Inangahua Landing section are nearly completed, and the laying of the rails is in hand, so that there is not much doubt that trains can be running to the Landing by the close of the coming summer. Further work on the section between the Landing and the Inangahua Junction has been suspended for the present, pending the examination of a much shorter route which has been suggested for the

branch line to Westport, and which is referred to in greater detail in the paragraph relating to the Westport-Inangahua railway.

The expenditure on this portion of the line last year amounted to £20,434, and for the current year a vote of £20,000 is asked for.

Steady progress continues to be made with the Arthur's Pass Tunnel on the Canterbury-Westland section of the line. The bottom heading has now been excavated for a total distance of 1 m. 16 ch., enlarging to full size 64 ch., and the concrete lining 51 ch. The work that is being performed by the contractors is of a very satisfactory character, but I regret that the progress is not more rapid. The contract time expires in August, 1912, and it is becoming tolerably evident that there is very little prospect of the work being completed by that date. The contractors are being urged to accelerate the rate of progress to the utmost extent possible, in the hope that the completion may not be delayed very materially beyond the date fixed in the contract.

The expenditure last year amounted to £66,005, and for the current year a vote of £90,000 is proposed.

At the Canterbury end of the railway considerable progress has been made, with the result that the long section between Broken River and the Cass—15 m. 12 ch. in length—is now practically completed, and will be opened for regular traffic at the end of the present month. A large amount of work has been taken in hand on the section between the Cass and the Bealey, and the rails have been laid over a part of the distance. There will not be the least difficulty in completing this section up to the commencement of the Arthur's Pass Tunnel contract by the time the tunnel itself is completed.

Last year the expenditure on this end of the line amounted to £59,760, and an appropriation of £50,000 is provided for the current year.

WESTPORT—INANGAHUA.

I mentioned last year that the first section of this railway between Westport and Te Kuha—5 m. 60 ch.—was nearly finished. It has since been practically completed, but has not so far been opened for traffic.

In May last six contracts were let for constructing different sections of the extension beyond Te Kuha, and the work is making fair progress, and a further section will be put in hand shortly.

Beyond Berlin's a new route has been suggested—namely, to connect with the Midland Railway near the Inangahua Landing instead of at Inangahua Junction. The new route referred to would shorten the running-distance between Westport and Greymouth by about six miles and a half, and would also avoid carrying the railway round the well-known White Cliffs in the Buller Gorge, in which location railway-construction and its subsequent maintenance would be certain to prove very difficult and expensive undertakings. The survey to ascertain the merits of the proposed new route is now in hand, and will be pushed forward as rapidly as possible, so that an early decision on the matter may be arrived at.

Last year's expenditure amounted to £15,782, but a larger vote will be required this year, and £30,000 has accordingly been provided.

NGAHERE—BLACKBALL.

This railway has now been completed, the whole line having been handed over to the Railway Department for regular working on 16th July last.

The expenditure during the year amounted to £27,127, and a vote of £11,000 is provided in the current year's estimates.

GREYMOUTH—POINT ELIZABETH.

Very good progress has been made with the works on this railway, and there seems to be no doubt now that the line will easily be available for the transport of coal by the date the development-works at the new colliery are completed. A portion of the work is of an exceedingly heavy and difficult character.

The expenditure last year amounted to £53,603, and for the current year a vote of £50,000 is asked for.

LAWRENCE—ROXBURGH.

I stated last year that it was proposed to complete this railway as far as Big Hill, and to hand the section over to the Railway Department for regular working. This has since been done.

The question of continuing the line beyond Big Hill has received the careful consideration of the Government. It has been decided to recommend the House to proceed with the work as far as Beaumont, an additional seven miles. The Government consider that it is necessary to take in hand the additional work proposed, in order that the country may derive a return on the expenditure already incurred.

Last year's expenditure amounted to £14,065, and for the current year a vote of £15,000 is proposed. If this vote is duly passed by Parliament, arrangements will be made for construction operations to be resumed as early as practicable.

CATLIN'S—WAIMAHAKA.

The section between Catlin's River and Houipapa—2 m. 30 ch.—was handed over to the Railway Department in December last. The next section, to Papatupu, has also been completed, but is being retained by the Public Works Department for the present, as the ballast-pit for use on the Puketiro section is situated on this length of the line. The earthworks on the section to Puketiro are well in hand, but, as they are of a heavy and difficult character, it will take some little time yet to complete the section. A large number of men has been employed on the line throughout the year—the numbers having ranged generally between three and four hundred, and a considerable amount of work has been accomplished.

At the Waimahaka end of the line a good deal of work has been done, and the laying of the rails is now in hand.

The expenditure on the whole railway during the last financial year amounted to £64,413, which is a considerable increase on the amount expended during the previous year. For the current year a vote of £80,000 is proposed.

RIVERSDALE—SWITZERS.

This line was handed over to the Railway Department in October, 1909. The expenditure during last year amounted to £18,489, but, as a few liabilities connected with station-buildings and other matters remained at the end of the year, a vote of £3,000 is asked for to cover the same.

OREPUKI—WAI AU.

This railway, like the last, was completed in October, 1909, the expenditure during the year having amounted to £11,322. A few liabilities remained at the close of the year, however, and a vote of £2,000 has accordingly been provided to cover them.

SURVEYS.

A fair amount of survey-work in connection with projected new lines was undertaken during the year, the expenditure having amounted to £1,195.

For the current year a vote of £1,500 is proposed.

TOTAL APPROPRIATIONS FOR RAILWAY-CONSTRUCTION.

In addition to the votes already mentioned, the sum of £100,000 is provided in the estimates for permanent-way materials for all lines; also £2,500 to meet land-claims and other contingent items, thus bringing the total of the proposed vote for railway-construction purposes up to £1,000,000.

OTHER RAILWAY-WORKS.

The sum of £228,332 was charged during the year in respect of rolling-stock and workshops machinery for the Working Railways Department, and £89,758 in respect of additions to station accommodation, signals and interlocking-gear, telegraph and telephone facilities, improving lighting of stations, fencing, stone-crushing and excavating machine, &c., making the total charge under the heading of "Additions to Open Lines" £318,090. The cash disbursements

amounted to £316,464, as shown on the estimates. The £318,090 allows for the value of stores consumed but which were paid for during the previous year.

The Auckland–Penrose and Addington–Rolleston duplicated lines have been completed and brought into use for traffic. The Wellington–Hutt duplication-works have made considerable progress: the construction of the new main road is well in hand, and unless something very unforeseen occurs the whole work, railway and road, will, it is anticipated, be completed during the present financial year. Work in connection with the Dunedin–Mosgiel duplication is being pushed on: the Caversham tunnel has been pierced, and the line completed and opened as far as Burnside. A considerable number of men are employed in prosecuting the work thence onwards to Mosgiel.

The expenditure on these works for the last financial year was £140,531, made up as follows:—

	£
Wellington–Hutt duplication-works	30,814
New Hutt Road, including land for same	28,468
Auckland–Penrose duplication-works	5,476
Addington–Rolleston duplication-works....	9,256
Dunedin–Mosgiel duplication and deviation of line	66,517
	£140,531

For the current year provision for the duplication-works has been made to the extent of £135,000, namely:—

	£
Auckland–Penrose duplication....	1,000
Wellington–Hutt duplication	35,000
Addington–Rolleston duplication	3,000
Dunedin–Mosgiel duplication	96,000
	£135,000

The amount proposed to be voted for the current year for additions to open lines is £350,000, of which £230,000 is for new rolling-stock and work-shops machinery, and £25,000 for interlocking signal gear, tablet-installation, &c.

DEVELOPMENT OF WATER-POWER.

As already announced in the Financial Statement, the Government considers that the time has now arrived to take up with vigour the question of developing our abundant water-powers. The Prime Minister promised that proposals should be submitted to undertake one or more schemes, and to extend the work from time to time until all our centres of population have been supplied with hydro-electric energy and until our principal sources of power have been turned to commercial advantage.

To supplement the information previously available, two additional reports have now been obtained from professional men of high standing—viz., an important report by Mr. R. W. Holmes, Engineer-in-Chief of the Department, on the different schemes available, together with detailed estimates of cost of some of them and probable commercial results of working same; also a very full report by Mr. Lawrence Birks, B.Sc., A.M.I.C.E., A.M.I.E.E., on the subject of the demand that exists for power, the schemes that it would be best to develop to supply same, details of probable cost, probable working-results, &c. Mr. Holmes also gives a list of a number of existing long-distance-transmission lines, from which members will observe that there are numerous lines in existence where energy is transmitted more than 100 miles, and some where the transmission distance is over 200 miles, or longer than proposed in any of the schemes at present under consideration in this Dominion. Both of these reports are printed as appendices to this Statement.

The present position of matters is that the Department is in possession of fairly complete trial surveys and much other engineering data regarding both the Hutt River and Lake Coleridge schemes, and a large amount of very useful information in respect of several of the other schemes proposed. We are in a position to at once commence actual construction-works in connection with either or both the former schemes, and instructions will be given for a com-

mencement to be made accordingly as soon as practicable after the passing of the estimates.

The Department is in possession of more complete engineering data regarding the Hutt and Lake Coleridge schemes than with respect to any of the others, owing principally to the more advanced condition of the surveys. As regards the Hutt scheme, three estimates of cost have been prepared by engineers acting entirely independently of each other, and as regards the Lake Coleridge scheme four such estimates are available. The details of these are as under :—

	Hancock.	Hay.	Birks.	Holmes.
LAKE COLERIDGE SCHEME.				
Horse-power provided for	10,000	58,000 or) 29,000	13,300	15,000
Estimated capital cost	£241,667	£700,000 or) £440,000	£291,500	£421,000
Working-expenses per annum	£58,792	...	£44,070	£44,500
Probable receipts "	...	£200,000 or) £100,000	£90,000	...
Probable profit "	...	...	£45,930	...
HUTT RIVER SCHEME.				
Horse-power provided for	...	17,000	13,300	12,500
Estimated capital cost	...	£470,000	£443,960	£422,000
Working-expenses per annum	...	...	£50,639	£38,000
Probable receipts "	...	£50,000	£118,300	...
Probable profit "	...	...	£67,661	...

It will be observed from Mr. Holmes's report appended to this Statement that, although his proposal is to deliver only 15,000-horse power in Christchurch, he allows for the construction of hydraulic works of sufficient capacity to develop between 25,000 and 30,000 horse power. This will account for his estimate being higher than those of Messrs. Hancock and Birks.

As regards the other schemes proposed, much less information is available, and it will be necessary during the present year to gather further details and complete the surveys which are absolutely necessary, in order that full and reliable estimates, not only of the probable cost, but of the commercial results likely to be obtained from the working of the schemes, and of the markets for power, may be available for submission to Parliament next session.

Honourable members will observe that Mr. Birks's estimates of the probable receipts and expenditure in the working of the Lake Coleridge and Hutt River schemes are of a highly favourable character, and the working of the existing Waipori scheme, which is the only installation of its kind at present in the Dominion, gives some ground for the satisfactory expectation regarding the first-mentioned schemes which Mr. Birks has expressed in his report. The Waipori scheme carries a much larger capitalization per horse-power than either of the Government schemes now proposed, and is also on a much smaller scale (and consequently more expensive to work proportionately) than either of the Government schemes, and yet that scheme is now working at a profit notwithstanding that much of the energy produced is disposed of at only a small fraction over $\frac{1}{2}$ d. per unit.

The inauguration of our development of water-power policy will render it necessary to obtain the services of a hydraulic and electrical engineer of good standing, so that the Government and the country may feel assured that the moneys appropriated by Parliament for expenditure on these services are laid out on good practical and commercially-sound schemes, and to the best advantage. It is proposed to invite applications for the position immediately.

The estimates now submitted provide for an appropriation of £300,000, which sum will be ample to enable an energetic commencement to be made.

RAILWAY ELECTRIFICATION.

Closely connected with our water-power proposals is the question of railway electrification. Inquiries were made into this matter two or three years ago, and a report on the proposed electrification of the Christchurch—

Lyttelton Railway was submitted to Parliament (D.-4, 1908). This report made it appear that the proposal was likely to be unremunerative, inasmuch as the interest and depreciation on capital cost of the electrical installation, plus the cost of working the railway electrically, would amount to a larger sum than the present expense of working the line by steam locomotives. This, however, was on the assumption that the Railway Department would have to provide its own power-house and equipment. If, however, a development scheme is inaugurated at Lake Coleridge, this expense would, of course, be unnecessary; and if electric current is available in Christchurch at a much lower rate than was reckoned upon in 1908, without any interest and depreciation charges on account of a costly power-house, the circumstances would be totally different. Under our present proposals there is very little doubt that the line between Lyttelton and Christchurch, and probably suburban lines adjacent to other cities, could be electrified with great advantage to the public in the matter of the speed and frequency of the services, and also with advantage to the Railway Department from a working point of view. This matter will therefore be gone into again with a view to proposals for the electrification of suburban railways being submitted next session.

IRRIGATION AND WATER-SUPPLY.

A very considerable amount of survey and exploration work in this connection was carried out in Central Otago during last year, full details of which will be found in the annual report of the Engineer-in-Chief (Appendix E to this Statement). Plans and sections for some of the works proposed have already been prepared, so that a commencement with same can be made at an early date. It is proposed to begin with the Ida Valley block, containing 65,200 acres, which is shown as Block 4 on the map accompanying the report of Messrs. Bruce and Dobson (C.-17 of 1909). The gentlemen referred to describe this country as admirably adapted for irrigation, a very large portion being first-class agricultural land, which would undoubtedly become highly reproductive on the application of water. The irrigable area in this block is 52,500 acres, the southern portion of which will be best for cultivation, and can be the more easily irrigated. There are several sources of water-supply—namely, the Greenland Dam on the Manorburn River, the Poolburn River, and the Dovedale and other creeks. Power can also be generated from the Poolburn and Manorburn Rivers to pump water from the Manuherikia River, and from the lower reaches of the Poolburn.

Last year's vote amounted to £5,000, of which £2,435 was expended, mostly on surveys. The vote provided on the estimates for the current year is £10,000, and it is proposed to commence construction-works during the coming summer. Other proposed irrigation schemes are being investigated, and proposals in reference to some of them will be submitted next session.

PUBLIC BUILDINGS.

The total expenditure on public buildings last year amounted to £335,114—namely, £58,165 under the Consolidated Fund and £276,949 under the Public Works Fund. For the current year votes totalling to £413,190 are proposed—namely, £53,190 out of the Consolidated Fund and £360,000 under the Public Works Fund.

GENERAL.

On the current year's vote provision is made for the completion of the new Government House, and a substantial item on account of the erection of the proposed new Parliament Buildings; also for Departmental Buildings at Hamilton, Gisborne, New Plymouth, Stratford, Wanganui, Masterton, Christchurch, and Invercargill, and sundry buildings in Wellington, and other minor works and charges, the total vote proposed being £70,000.

JUDICIAL.

Courthouses.—The expenditure on Courthouses for the year amounted to £11,119.

The principal works undertaken were new buildings at Cambridge, Waipiro Bay, Feilding, Ross, and Fairlie; additions at Palmerston North, Wellington, and Christchurch; and the purchase of additional land at Auckland.

The plans for the new Magistrate's Court at Auckland are well in hand, but some minor details still remain to be settled.

Tenders have been invited for the much-needed new building at Masterton.

For the current year, votes are asked for buildings at Kaikohe, Auckland, Taumarunui, Opotiki, Waverley, Ohakune, Masterton, Petone, Greymouth, Methven and Tapanui; for additions at Hamilton, Gisborne, New Plymouth, Cheviot, and Timaru; and for converting the police-station at Warkworth into a courthouse. A considerable number of applications for new buildings have been received, many of which call for early attention, but they have had to be postponed until other works now in hand and in contemplation have been dealt with.

Gaols.—As was the case during the previous year, the principal expenditure last year was in connection with the new wing at Mount Eden, Auckland, and the gaol at Invercargill, while various small additions, alterations, and improvements have been carried out at Lyttelton. A contract for a new police-gaol at Gisborne has been let. This was a very necessary work, as the old building is in a dilapidated condition. A police-gaol is in course of erection at Greymouth as an addition to the police-station, and when completed the present gaol at Hokitika will be closed as a gaol and utilized as a mental hospital. The total expenditure on gaol buildings amounted to £4,231.

The new votes include provision for further work at Mount Eden and Invercargill, for the new building at Gisborne, for development work at Tokanui Reformatory Farm, and an addition to the police-station at Timaru, to serve as a police-gaol. Last year's votes for additions at Wellington and gaoler's residence and warders' cottages at Dunedin have been omitted, as it is not now intended to proceed with these works.

Police-stations.—The votes in last year's appropriations provided for twenty-eight new buildings, besides other items for lock-ups, additions to stations, quarters, purchase of land, repairs, &c. New buildings have been erected at Kaitia, Kaikohe, Hamilton, Shannon, Pongaroa, Takaka, Dunollie, Sydenham, Lincoln, Rakaia, and Chatham Islands, and various others are in hand.

Apart from the unexpended votes of last year, the chief new items are for buildings at Warkworth, Remuera, Takapuna, Mount Albert, Ponsonby, Taumarunui, Te Puke, Napier, Waitara, Whangamomona, Taihape, and Cobden, and a gymnasium at the Newtown Training Depot. There is an increasing demand for police-stations in many settled districts, and as settlement progresses further expenditure under this head may be anticipated.

POST AND TELEGRAPH.

An extensive building programme is in hand for the Post and Telegraph Department—the expenditure during 1908–9 having amounted to £62,262, and during last year to £68,574. The principal works in hand last year were new offices at Whangarei, Maungaturoto, Mount Eden, Epsom, Pukekohe, Huntly, Ngaurawahia, Otorohanga, Te Kuiti, Morrinsville, Taumarunui, Nuhaka, Hastings, Ongaonga, Aramoho, Ohakune, Foxton, Weraroa, Upper Hutt, Te Aro, Richmond, Wakefield, Wallsend, St. Bathans, and Wyndham, and the important new buildings in Auckland and Wellington, with both of which satisfactory progress is being made.

In addition to the above, new quarters have been provided at Whitianga, Waipiro Bay, and Ophir; new properties purchased at Karori, Upper Riccarton, Dunedin (Moray Place), and Owaka; and more or less extensive additions or alterations made at Te Puke, Napier, Okato, Stratford, Ashhurst, Wellington (parcels-post), and Christchurch.

The expansion of the work of the Post and Telegraph Department is so great that heavy expenditure for buildings must be looked for in the near future. In addition to large appropriations on account of the new offices at Auckland and Wellington a considerable sum is required this year to meet the award of the Compensation Court in respect of the land and building at Wanganui adjoining the present post-office, which has been taken under the Public Works Act to provide for very necessary enlargements. A large amount on account of buildings for wireless telegraphy will also be required. The erection of a bulk store on the land recently reclaimed on Waterloo Quay, Wellington, will absorb a considerable sum. Other important buildings have also to be erected.

MENTAL HOSPITALS.

The expenditure on Mental Hospitals during the year has been £19,838.

At Auckland the rooms formerly occupied by the Medical Superintendent have been altered for the reception of female patients, and a contract for the Wolfe Bequest Reception House has been let, and the work nearly completed.

At Porirua additions have been erected for the accommodation of patients from Mount View, and the main building painted throughout.

Additions to the Mental Hospital at Nelson have been completed and furnished.

At Christchurch sanitary arrangements on the female side have been completed, hot-water pipes insulated, and various improvements carried out.

Additions to the male side have been completed and furnished at Seacliff.

The proposed vote for the current year provides at Auckland for the completion and furnishing of the Wolfe Bequest Reception House and the installation of laundry machinery and additional boiler power; at Christchurch for a reception-house, for a boiler-house, boiler, and brick chimney-shaft, and for a cottage for the Farm Manager; at Seacliff for alterations and additions to the Upper Building Block and Simla, also additional accommodation for nurses and additions to workshops; for the erection of additions at Waitati, and for the reclamation of the Tidal Flat; at Porirua for a meat-house and chilling-plant, extension of carpenter's shop, and the construction of airing-courts for the new additions.

Provision is also made for the purchase of land, preparing site, and erection of buildings for the new Mental Hospital at Tokanui, and for the erection of rooms in connection with the general hospitals in which mental patients may be examined instead of at the police-cells.

SCHOOLS.

The sum of £98,103 was expended out of the Public Works Fund last year on school buildings. Most of this amount was paid to Education and High School Boards and other governing bodies for the erection of new buildings and additions, and the purchase of sites and equipment, &c., for public schools (including teachers' residences), training colleges, technical and secondary schools, and university colleges. The principal works carried out directly under the control of the Government were as follow: Erection of principal's residence and a classification cottage at the Special School for Boys, Otekaike; completion of the additional buildings for the boys' and girls' reformatories at Burnham and Burwood (Te Oranga Home) respectively; Native schools and residences at Whangape and Pawarenga; a residence at Matihetihe; and additions to the Waima Native School.

Provision is made on the current year's estimates for works similar in character to those mentioned above, estimated to cost £125,878, on account of which a vote of £110,000 is asked for.

OTHER BUILDINGS.

Hospitals.—Under the heading of "Hospitals and Charitable Institutions" there was an expenditure of £7,259 on new buildings and improvements, the chief items being the completion of a wing at the Hokitika Hospital and additions to St. Helens Hospital, Dunedin.

The items on this year's estimates total to £25,064, on account of which a vote of £10,000 is proposed. The principal item is £13,000, to provide for the purchase of a site and a building for a new St. Helens Hospital at Wellington, the present one being simply a rented building, and unsuitable for the purpose.

The vote also provides for substantial additions to the St. Helens Hospital, Christchurch.

Agriculture.—Last year the most important work in hand was the erection of lads' training quarters at the Ruakura Experimental Farm. This, with conveniences, is nearly completed. The purchase of a piece of land at Wallaceville was completed, and this addition consolidates the block surrounding the pathological and experimental laboratory conducted by the Live-stock and Meat Division of the Department. A much-needed stable has been erected at the Weraroa Experimental Farm.

For the current year a large proportion of the proposed expenditure is in connection with the experimental farms. An amount is required for the furnishing and fitting-up of the lads' training quarters, Ruakura, which will then be in a position to accommodate lads. The provision of butter- and cheese-making plants at Ruakura and Weraroa is contemplated. These will provide a means of utilizing the milk from the herds on the farms.

The difficulty that officers have in securing house accommodation in some of the smaller centres renders the erection of some departmental residences necessary.

There are, as usual, minor works necessary, which are detailed in the estimates.

Last year's expenditure amounted to £5,895, and this year's items total to £10,725, on account of which a vote of £5,500 is provided.

Public Health.—The expenditure under this vote was very small—namely, £319; and for the current year only one small vote of £250 is proposed, for building-works in connection with the Cambridge Sanatorium.

ROADS AND BRIDGES.

A very large amount of work has been done under this head. The number of roads dealt with is legion, and it is impossible to mention more than a very few of them, but the following are some of the more important undertakings which were either in hand or completed during the year, with the amounts expended thereon:—

Work.	Expenditure. £
Te Akau Block	3,444
Kawhia to Marokopa River	2,665
Pakihi	2,902
Ohura Road	6,474
Otunui Block	2,527
Mangapoike Valley Road (east end), (£1,500 contributed by settlers)	2,590
Te Arai Settlement	2,705
Waimarama Block	2,771
Mason's to Parapara	2,461
Piripiri Block	3,863
Waiau Ferry to Hanmer	2,340
Taieri County, flood damage (£1 for £1)	3,061

In addition to the above, some important bridges were in hand. The following are some of them, with the amounts expended during the year:—

Bridge.	Expenditure. £
Waiharakeke Bridge	2,006
Wairoa River Bridge (Frasertown)	4,324
Manawatu River Bridge (lower gorge)	3,678
Wanganui Town Bridge	2,176
Buller River Bridge (O'Sullivan's)	2,460
Fairlie to Mount Cook (bridges)	2,193

A special feature of the operations of the past year was the expenditure on the construction of roads to facilitate the transport of material and produce to and from newly settled lands in the interior of the North Island, more particularly in the King-country and adjacent districts.

A comparison of the distribution of expenditure as between the North and South Islands is largely in favour of the North Island, the actual figures being,—

	£
North Island	271,406
South Island	110,498
	£381,904

In addition to the above, the sum of £40,830 was expended on goldfields roads, and £28,468 on the construction of the new Hutt Road.

The total sum voted by Parliament last year under all votes and accounts (exclusive of Roads on Goldfields vote) for the construction, supervision, and maintenance of roads and bridges throughout the Dominion was £547,843. In pursuance of the previously expressed intention of the Government to intrust local bodies with the expenditure of the major portion of the votes, £183,444 was either authorized or offered to the various County Councils and Road Boards for expenditure between the time of the passing of the estimates and the close of the financial year, and during the same period £79,900 was authorized to departmental engineers.

This year it is proposed to invite the local authorities to submit their proposals for the expenditure of the sums available forthwith, and if reasonable expedition is exercised in doing this there should be no difficulty in the formal grants being in their hands and available for expenditure within a few days of the actual passing of the appropriations by Parliament.

While dealing with road matters I should like again to emphasize one point which I drew attention to last year—namely, that while the construction of new roads to open up backblocks is a work that may properly be regarded as devolving upon the Government, and that while the Government may reasonably be expected to assist in the improvement and metalling of roads that were originally constructed as bridle-tracks or were left unmetalled, the mere maintenance of roads and bridges, except in very special cases, is a work that should and must devolve upon the local authority of the district. Amongst the numerous applications that have been received for grants for roadworks during the current year, quite an appreciable percentage are for works of repair and maintenance, which should undoubtedly be provided for by local rating. During the financial year 1908–9 the Government of the Dominion undertook the maintenance of no less than 3,352 miles of dray-road and 2,017 miles of bridle-road, or a gross total of 5,369 miles of road. During last year the figures were much smaller—namely, 2,597 miles of dray-road and 1,246 miles of bridle-road, or a gross total of 3,843 miles of road.

ROADS ON GOLDFIELDS.

The authorizations last year under this head were £86,286, on account of which a vote of £51,250 was taken. The total expenditure during the year was £40,830. The vote was made up of a large number of quite small items, there being no individual grants of any magnitude. For the current year the proposed authorizations total to £83,175, on account of which a vote of £50,000 is asked for.

TOTAL PROVISION FOR ROADS.

Last year appropriations were as under :—					£
Roads, &c.	....	....	....	....	216,360
Backblock roads	...	....	....	....	210,200
Roads on goldfields	....	....	....	....	51,250
Loans to Local Bodies Account	....	....	....	....	50,000
National Endowment Account	...	....	....	....	17,151
Land for Settlements Account	....	....	....	....	19,132
Maintenance of roads (Consolidated Fund)	....	....	....	....	35,000
Total					<u>£599,093</u>

The provision now submitted for the current year is as under :—

					£
Roads, &c.	....	....	....	....	270,480
Backblock roads	....	....	....	....	229,520
Roads on goldfields	....	....	....	....	50,000
Loans to Local Bodies Account	....	....	....	....	100,000
National Endowment Account	...	....	....	....	15,935
Land for Settlements Account (say)	....	....	....	....	17,000
Maintenance of roads (Consolidated Fund)	....	....	....	....	30,000
Total					<u>£712,935</u>

DEVELOPMENT OF GOLDFIELDS.

The gold-mining industry maintains its position, the returns for last year being in excess of those for the previous year. This is very gratifying, in view of the fact that many places have suffered industrial depression.

The amount expended last financial year on the development of our gold-fields was £18,588, and a vote of £25,000 is proposed for the current year.

TOURIST AND HEALTH RESORTS.

The net expenditure on works and services under the above heading for the year 1909-10 amounted to £14,507, or £9,778 less than the year 1908-9.

The expenditure on electrical works was £6,255, which was for the installing of a new turbine-engine at Rotorua and for the extension and improvement of the existing plant. This work, which is nearing completion, was necessary owing to the increasing demands for electricity, both for power and lighting purposes. The construction of the Maori pa at Whakarewarewa is now complete. At the Waitomo and Ruakuri Caves a new hostel for the convenience of visitors has been erected and furnished, and the grounds have been fenced and planted and generally improved. The purchase of the Te Puia Native Township of 709 acres is at present being negotiated. The hostel at Mount Cook Hermitage has been slightly improved, and mountain huts are being erected and suitably furnished to make an additional attraction to this popular holiday resort. Provision is made on the current year's estimates for a new hostelry at Mount Cook, on the Governor's Bush site.

The works provided for on this year's vote total to £22,860, on account of which a vote of £12,500 is required.

TELEGRAPH-EXTENSION.

During the year £123,422 was expended on telegraphs and telephone extension.

The mileage of extensions and trunk circuits erected was 497 miles of line and 2,134 miles of wire; and of the telephone-exchange circuits 103 miles of line and 5,037 miles of wire. New telegraph and telephone offices to the number of 121, and 17 new telephone exchanges were opened.

The number of telephone-exchange subscribers increased by 2,104.

The principal works carried out were: Auckland Exchange, underground metallic circuit; Hastings Exchange, metallic circuit and installation of central-battery system; Auckland-Mangonui-Doubtless Bay, Otorohanga-Raurimu, Napier-Gisborne, metallic circuit; Raetihi-Ohakune-Taihape, metallic circuit; Hawera-Manaia-Opunake, Wellington-Levin, Christchurch-Timaru, metallic circuit; and Clifden-Blackmount.

Owing to the great importance of wireless telegraphy for defence, naval, and mercantile-marine purposes, the Government decided to call for tenders for two high-power stations in the neighbourhood of Doubtless Bay and Bluff, and three medium-power stations in the neighbourhood of Gisborne, Cape Farewell, and Sumner. The high-power stations will have a range of 1,250 nautical miles, which will enable communication to be kept up with stations to be erected at Sydney and Fiji, and with war-ships or mercantile vessels at any point within the range. The medium-power stations will be sufficiently equipped to command ships at sea for 500 miles. The tenders referred to were called for in New Zealand, the United Kingdom, and America, and close at Wellington on the 15th of next month. Tenderers have to state the time required for the completion of the work. As the competition now existing among manufacturers of wireless apparatus is considerable, no great delay should arise. It is expected that several, if not all, the stations will be in full working order before the end of 1911. The necessary buildings are to be erected by the Public Works Department, and will be put in hand immediately a contract is let for the wireless-telegraphy apparatus.

This year's proposals total to £151,000, including £5,000 on account of wireless-telegraph stations—the actual vote submitted for approval being £140,000.

LIGHTHOUSES, HARBOUR-WORKS, AND HARBOUR DEFENCES.

The lighthouse works undertaken during the year were: The completion of the first-order light at Cape Brett, and the necessary outbuildings and dwellings for the keepers; the erection of the new acetylene-gas light at Tuahine Point, near Gisborne; the erection of the new Pintsch-gas light on Jackson's Head, to replace the Wigham oil-light; and the connection of Cape Brett and Cape Palliser Lighthouses with the telegraph system.

The fog-signal for Timaru, for the purchase of which a sum of money was voted, has arrived in the Dominion, and will be erected at an early date.

The total expenditure on this vote for the year was £6,763.

During the current year the new works to be provided for are: The erection of two lights on the East Coast of the North Island, the protection from land-slips of the track leading to Godley Head fog-signal, and the connection of another lighthouse with the telegraph system. Since the Tuahine Point Lighthouse was erected heavy land-slips have occurred at the site, rendering the immediate removal of the light necessary. It has been decided to re-erect it on a safer and more suitable point near the old site.

For the works mentioned above a sum of £10,167 will be required, and provision for a vote of £5,000 on account is made on the estimates.

Under the heading of "Harbour-works," last year's expenditure amounted to £4,548, the principal items being: Wharves at Elmslie Bay, Horseshoe Bay, and Half-moon Bay, Okuru Wharf and River improvements, Waipu River improvements, Havelock Harbour improvements, snagging the Waitotara and Patea Rivers, removal of rocks from Kaipara and Kaikoura Harbours and Hollyford River, and acquisition of Tata Islands as a harbour of refuge.

For the current year, in addition to renewing the unexpended items on last year's appropriations, it is proposed to provide for the following: Wharves at Motukaraka (Hokianga), Kirikopuni (Kaipara), Waiuku, and Lemon Point (Kawhia), Waipu and Karamea River improvements, the erection of a meteorological observing-station at Wellington, alterations to the ponds at the Portobello Fish-hatchery, and improvements in the harbour at Collingwood. The sum of £11,718 will be required for these works, the vote proposed for the current year being £7,000.

The expenditure on harbour defences amounted to £5,372, and, as further important works are in hand or contemplated, a larger vote will be necessary for the current year. Provision has accordingly been made for an appropriation of £8,000.

GROSS TOTAL APPROPRIATIONS.

In addition to the votes specifically referred to, the estimates include provision for the undernoted services:—

	£
Departmental	45,000
Immigration.....	20,000
Lands improvement	12,500
Contingent defence	10,000

thus bringing the total amount of the proposed appropriations, including special accounts, up to £3,105,935, against £2,624,480 voted and £2,218,975 actually expended last year.

CONCLUSION.

Having now briefly detailed the work of the past year, and given an outline of the operations in hand and proposed for the current year, my task for the present is concluded. The practical initiation of our hydro-electrical-energy policy will, I am sure, act as a great stimulus to industrial development of all kinds, and lead to the starting of numerous new enterprises. Trade is rapidly improving, the public revenue is increasing, and with the amounts for public-works services that are provided, the fullest possible employment should be available for our people in the development of the country, and I therefore look forward to a year of considerable activity and progress.

PUBLIC WORKS STATEMENT, 1910.

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TABLE NO. 1.

SUMMARY showing the TOTAL EXPENDITURE ON PUBLIC WORKS and OTHER SERVICES out of PUBLIC WORKS FUND to 31st March, 1910, and the LIABILITIES on that Date.

Number of Table containing Details.	Works.	Total Net Expenditure to 31st March, 1909.			Expenditure during 12 Months ended 31st March, 1910.			Total Expenditure to 31st March, 1910.			Liabilities on Authorities, Com-tracts &c. 31st March, 1910.			Total Expenditure and Liabilities.			Works.		
		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.						
3	Railways ..	25,329,177	4	11	..	..	..	25,329,177	4	11	..	..	..	25,329,177	4	11	Railways.		
4†	Roads ..	8,331,015	13	10	..	..	..	8,331,015	13	10	..	..	..	8,331,015	13	10	Roads.		
5 and 5A	Development of goldfields ..	769,515	12	10	..	..	..	769,515	12	10	..	..	..	769,515	12	10	Development of goldfields.		
6	Telegraphs ..	1,642,768	17	8	..	..	..	1,642,768	17	8	..	..	..	1,642,768	17	8	Telegraphs.		
7	Public buildings ..	4,090,118	5	4	..	..	..	4,090,118	5	4	..	..	..	4,090,118	5	4	Public buildings.		
8	Lighthouses, harbour - works, and harbour defences ..	1,043,736	16	10	..	..	..	1,043,736	16	10	..	..	..	1,043,736	16	10	Lighthouses, harbour - works, and harbour defences.		
..	Departmental ..	592,897	7	4	..	..	..	592,897	7	4	..	..	..	592,897	7	4	Departmental.		
18 of 1878	Utilization of water-power ..	8,347	18	11	..	..	..	8,347	18	11	..	..	..	8,347	18	11	Utilization of water-power.		
11 of 1877	Coal-exploration and mine-development ..	10,835	8	0	..	..	..	10,835	8	0	..	..	..	10,835	8	0	Coal-exploration and mine-development.		
..	Aiding works on Thames goldfields ..	50,000	0	0	..	..	..	50,000	0	0	..	..	..	50,000	0	0	Aiding works on Thames goldfields.		
..	Immigration ..	2,201,788	7	7	..	..	..	2,201,788	7	7	..	..	..	2,201,788	7	7	Immigration.		
..	Purchase of Native lands ..	2,037,847	0	2	..	..	..	2,037,847	0	2	..	..	..	2,037,847	0	2	Purchase of Native lands.		
..	Defence ..	898,933	19	10	..	..	..	898,933	19	10	..	..	..	898,933	19	10	Defence.		
..	Charges and expenses of raising loans ..	1,236,216	16	10	..	..	..	1,236,216	16	10	..	..	..	1,236,216	16	10	Charges and expenses of raising loans.		
..	Interest and sinking fund ..	218,500	0	0	..	..	..	218,500	0	0	..	..	..	218,500	0	0	Interest and sinking fund.		
..	Rates on Native lands ..	68,671	16	10	..	..	..	68,671	16	10	..	..	..	68,671	16	10	Rates on Native lands.		
..	Thermal springs ..	14,599	13	2	..	..	..	14,599	13	2	..	..	..	14,599	13	2	Thermal springs.		
..	Tourist and health resorts ..	182,853	0	11	..	..	..	182,853	0	11	..	..	..	182,853	0	11	Tourist and health resorts.		
..	Lands improvement ..	44,116	18	8	..	..	..	44,116	18	8	..	..	..	44,116	18	8	Lands improvement.		
..	Payment to Midland Railway bond-holders ..	150,000	0	0	..	..	..	150,000	0	0	..	..	..	150,000	0	0	Payment to Midland Railway bond-holders.		
Totals ..		48,921,940	19	8	..	..	2,023,875	13	4	50,945,816	13	0	1,004,996	10	9	51,950,813	3	9	Totals.
Less recoveries on account of services of previous years—		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Less recoveries on account of services of previous years—	
Development of goldfields ..		..	..	..	1,000	0	0	1,000	0	0	..	..	..	1,000	0	0	..	Development of goldfields.	
Grand totals ..		48,921,940	19	8	..	..	2,022,875	13	4	50,944,816	13	0	1,004,996	10	9	51,949,813	3	9	Grand totals.

* Includes £24,989 15s., expended in 1908-9 on Greymouth - Point Elirabeth Railway, and charged to State Coal-mines Account, now transferred to Public Works Fund.
† Table 4 also contains details of expenditure under Loans to Local Bodies and other Accounts. ‡ Includes £207 13s. 4d. charged to "Unauthorized."

Does not include expenditure on Wellington-Manawatu Railway Purchase, Hutt Railway and Road Improvement, and Railways Improvement Accounts.

TABLE No. 2.
GENERAL SUMMARY.
Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND, 1888-89 to 1909-10.

Description of Services.	Total Net Expenditure to 31st March, 1888.	Expenditure.																					Total Net Expenditure to 31st March, 1910.	
		1888-89.	1889-90.	1890-91.	1891-92.	1892-93.	1893-94.	1894-95.	1895-96.	1896-97.	1897-98.	1898-99.	1899-1900.	1900-1.	1901-2.	1902-3.	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.		1909-10.
Immigration	£ 2,133,670	£ 8,791	£ 867	£ 1,823	£ 817	£ 242	£ 343	£ 101	£ Cr. 10	£ 301	£ 70	£ 105	£ 385	£ 214	£ 139	£ 142	£ Cr. 7	£ 6,481	£ 8,753	£ 14,353	£ 9,132	£ 15,076	£ 17,003	£ 2,218,791
Public Works Departmental	308,153	21,458	12,294	10,264	7,796	7,790	8,406	8,680	14,300	14,892	9,689	10,090	12,572	12,932	17,771	13,949	16,088	12,814	13,517	16,711	18,219	24,512	41,176	634,073
Utilisation of Water-power	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	468	2,901	4,664	315	..	..	8,348
Railways	13 962,423	272,077	289,601	180,021	154,417	220,894	176,304	247,545	197,105	207,231	351,600	374,192	417,937	717,723	1,333,940	759,752	828,704	779,891	1,021,265	1,227,880	1,098,535	1,116,184	*1,128,400	26,457,577
Payment to Midland Railway Bondholders	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	150,000	..	..	..	..	..	..	150,000
Roads:—																								
Roads North of Auckland	229,143	264	267	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Main Roads	1,333,421	10,968	12,799	9,905	11,739	12,588	22,235	22,731	27,959	4,289	241,209	248,934	237,351	267,374	354,687	290,349	316,248	202,850	306,065	308,500	285,248	422,174	297,932	..
Miscellaneous Roads and Bridges	528,361	26,748	19,998	12,489	6,843	10,443	58,042	9,972	17,075	11,195	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Roads to open up Lands	758,322	21,954	28,160	24,285	27,993	21,989	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Grants-in-Aid	18,944	26,913	2,172	1,586	10,757	7,144	8,951	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Village Settlements	..	10,770	7,345	4,884	3,829	4,412	2,898	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Local Bodies	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Roads on Goldfields	140,972	7,015	13,290	12,687	9,795	19,490	20,387	17,577	21,513	32,578	49,569	46,550	48,039	48,417	47,573	51,690	45,594	26,112	45,139	38,970	38,494	47,374	40,830	..
Miscellaneous	319,245	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Development of Thermal Springs and Natural Scenery	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Roads to give access to North Island Trunk Railway	40,142	1,898	248	5,532	30,289	29,440	34,765	17,841	..	16,023	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lands Improvement Account	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total, Roads	3,363,550	106,439	83,009	45,164	36,761	103,893	146,638	150,278	174,369	167,482	290,413	295,119	285,043	315,791	402,260	282,039	361,842	228,962	351,204	347,470	323,742	469,548	338,762	8,669,778
Development of Goldfields	559,941	55	284	821	2,257	3,811	5,272	5,865	9,245	10,508	33,117	17,355	21,815	15,901	15,326	24,213	16,278	6,258	18,533	11,064	5,632	32,859	18,597	837,113
Purchase of Native Lands	1,141,288	9,072	28,194	17,925	52,397	57,187	4,320	349	..	Cr. 37	61,503	53,182	32,025	28,688	18,261	15,782	5,352	6,281	13,777	9,135	2,190	2,099	30,567	..
Native Lands Purchase Account	..	..	..	..	..	Cr. 10,438	Cr. 2,428	Cr. 12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total, Land Purchases	1,141,288	9,072	28,194	17,925	52,397	66,324	80,877	101,346	163,411	128,963	61,503	52,957	32,025	28,688	18,261	15,782	5,352	6,281	13,777	9,135	2,190	2,099	30,567	2,068,414
Telegraph Extension	561,963	12,047	16,346	16,292	27,773	29,245	16,127	19,229	35,538	36,791	29,384	28,551	26,771	50,101	31,729	68,578	47,228	79,298	77,186	114,068	155,491	163,033	123,422	1,766,191
Public Buildings:—																								
General (including Miscellaneous)	168,971	14,588	7,256	2,880	454	1,588	621	2,551	3,724	8,173	14,797	8,764	3,957	5,594	12,513	9,031	10,364	9,021	2,232	14,216	16,260	39,635	41,964	..
Parliamentary	13,962	..	..	..	..	..	209	6,822	..	9	466	20,636	9,833	3,039	4,424	1,503	602	697	71	1,047	4,119	5,172	3,157	..
Judicial	237,036	8,228	11,246	9,892	8,901	2,779	5,262	11,487	27,341	14,806	12,727	11,109	19,682	29,630	28,728	33,224	25,978	13,083	15,899	35,192	28,938	37,211	31,606	..
Post and Telegraph	141,421	82	1,376	709	1,009	6,843	3,154	3,542	6,194	7,504	5,888	5,168	13,483	20,954	40,361	74,686	53,918	16,008	38,419	43,918	43,724	62,262	68,574	..
Customs	4,750	..	18	409	13	5	666	12	647	16	385	..	107	875	2,066	6,630	8,719	13,018	7,903	114	47	2,507	233	..
Quarantine Stations	3,525	..	..	..	..	..	3	306	..	..	..	..	..	2,607	424	..	..	..	..	..	..	..	..	..
Mental Hospitals	266,850	10,242	15,717	8,930	16,914	11,887	18,957	13,633	10,935	16,404	14,130	17,667	17,712	18,872	16,743	10,167	15,812	15,949	16,235	8,049	7,987	15,296	19,839	..

TABLE No. 3.
EXPENDITURE on RAILWAYS to 31st March, 1910, and LIABILITIES on that Date.

LINES OF RAILWAY.	Total Expenditure by General Government to 31st March, 1909.	EXPENDITURE OUT OF PUBLIC WORKS FUND DURING YEAR 1909-10.					Expenditure under Special Acts during Year 1909-10.	Total Expenditure by General Government to 31st March, 1910.	Valuation of Works constructed by Provinces and Midland Railway Company. ^a	Liabilities.	Total Expenditure and Liabilities, 31st March, 1910.	LINES OF RAILWAY.
		New Works.			Works on Open Lines.	Land-claims and other Old Liabilities.						
		Construction.	Permanent- way.	Total New Works.								
Kaihu Valley	£ s. d. 55,044 17 1	£ s. d. ..	£ s. d. ..	£ s. d. 6,625 10 6	£ s. d. ..	£ s. d. ..	£ s. d. ..	£ s. d. 55,044 17 1	£ s. d. ..	£ s. d. ..	£ s. d. 55,044 17 1	Kaihu Valley.
Kawakawa	155,227 6 7	6,625 10 6	..	..	..	..	..	161,852 17 1	..	200 0 0	162,052 17 1	Kawakawa.
Whangarei to Kamo Extension	208,610 5 0	44,511 15 0	14,591 0 0	59,102 15 0	140 5 5	..	..	267,853 5 5	..	16,308 1 2	284,161 6 7	Whangarei to Kamo Extension.
North Auckland (Kaipara Northward)	327,280 12 2	59,299 4 10	6,608 0 0	65,902 4 10	..	..	..	393,182 17 0	..	1,012 11 5	394,195 8 5	North Auckland (Kaipara North- Kaipara to Waikato. (ward.)
Kaipara to Waikato	1,427,439 0 10	..	..	..	22,075 10 2	..	65,475 11 7	1,454,990 2 7	..	..	1,454,990 2 7	Kaipara to Waikato.
Cambridge Branch	51,110 9 9	..	..	..	..	..	..	51,110 9 9	..	..	51,110 9 9	Cambridge Branch.
Waikato to Thames— Hamilton to Te Aroha	143,597 9 2	..	..	..	..	..	..	143,597 9 2	..	..	143,597 9 2	Waikato to Thames— Hamilton to Te Aroha.
Te Aroha to Thames	200,278 16 11	..	..	..	217 19 4	..	..	200,496 16 3	..	..	200,496 16 3	Te Aroha to Thames.
Paeroa to Waihi	143,438 7 10	..	..	..	..	..	..	143,438 7 10	..	..	143,438 7 10	Paeroa to Waihi.
Thames Valley to Rotorua— Morrinsville to Lichfield	161,693 0 10	..	..	..	..	..	..	161,693 0 10	..	..	161,693 0 10	Thames Valley to Rotorua— Morrinsville to Lichfield.
Putaruru to Rotorua	193,883 10 3	..	..	..	..	..	..	193,883 10 3	..	..	193,883 10 3	Putaruru to Rotorua.
Marton to Te Awamutu	2,669,165 16 0	Cr. c5 5 0	..	Cr. 5 5 0	12,893 18 5	..	..	2,682,054 9 5	..	35 10 0	2,682,089 19 5	Marton to Te Awamutu.
Gisborne to Ormond Tramway	4,975 1 7	..	..	..	..	..	..	4,975 1 7	..	..	4,975 1 7	Gisborne to Ormond Tramway.
Gisborne to Rotorua	206,549 4 4	67,631 10 10	9,075 0 0	76,706 10 10	..	..	..	283,255 15 2	..	12,272 15 8	295,528 10 10	Gisborne to Rotorua.
Wellington to Napier— Napier to Woodville and Palmerston North	876,656 17 2	..	..	..	3,799 9 1	..	..	880,396 6 3	..	..	880,396 6 3	Wellington to Napier— Napier to Woodville and Palmers- ton North.
Wellington to Woodville, including Te Aro Ex- tension	1,487,945 13 7	..	..	..	10,104 4 0	..	£ 30,813 11 11	1,528,863 9 6	..	..	1,528,863 9 6	Wellington to Woodville, including Te Aro Extension.
Wellington to Waitara— Wellington to Longburn (including Wellington- Manawatu Railway Purchase)	£ 902,125 2 0	..	..	..	2,766 7 8	..	£ 39,991 1 4	944,882 11 0	..	..	944,882 11 0	Wellington to Waitara— Wellington to Longburn (including Wellington-Man'au R'way Purchase).
Foxton to Waitara	1,467,072 11 2	..	..	..	7,807 2 3	..	..	1,474,879 13 5	..	..	1,474,879 13 5	Foxton to Waitara.
Sentry Hill—New Plymouth Deviation	36,592 7 8	..	..	..	..	Cr. 238 11 7	..	36,593 16 1	..	..	36,593 16 1	Sentry Hill—N. Plym'th Deviation.
Mount Egmont Branch	51,242 11 6	405 11 4	..	405 11 4	..	..	..	51,648 2 10	..	3 0 0	51,651 2 10	Mount Egmont Branch.
Stratford to Ongarue	143,754 14 10	93,235 4 7	12,488 0 0	105,723 4 7	..	..	..	249,477 19 5	..	2,323 3 1	251,801 2 6	Stratford to Ongarue.
Nelson to Roundell	175,623 8 4	..	..	..	10,977 14 7	13 8 0	..	186,614 10 11	..	..	186,614 10 11	Nelson to Roundell.
Midland Railway— Belgrove to Inangahua	134,299 6 9	27,626 13 10	2,468 0 0	30,094 13 10	..	..	..	164,394 0 7	78,306 19 9	105 19 10	242,807 0 2	Midland Railway— Belgrove to Inangahua.
Stillwater to Inangahua	105,257 6 11	20,434 0 3	556 0 0	20,990 0 3	..	..	..	126,247 7 2	543,573 17 9	639 5 8	1,464,907 14 11	Stillwater to Inangahua.
Brunnerton to Bealey	216,640 13 11	66,004 14 11	1,471 0 0	67,475 14 11	..	..	..	284,116 8 10	..	510,330 15 6	1,464,907 14 11	Brunnerton to Bealey.
Springfield to Bealey	479,211 13 5	59,759 13 0	21,946 0 0	81,705 13 0	..	..	..	560,917 6 5	61,579 5 7	2,960 15 2	625,457 7 2	Springfield to Bealey.
Westport to Ngakawau	188,008 17 3	..	..	..	..	..	..	188,008 17 3	..	..	188,008 17 3	Westport to Ngakawau.
Westport to Inangahua	34,247 16 7	15,781 18 1	7,390 0 0	23,171 18 1	..	..	..	57,419 14 8	..	34 8 9	57,454 3 5	Westport to Inangahua.
Ngahere to Blackball	103,779 6 10	27,126 10 7	3,265 0 0	30,391 10 7	..	..	..	134,170 17 5	..	3,236 9 1	137,407 6 6	Ngahere to Blackball.
Greymouth to Point Elizabeth	90,531 10 5	53,603 6 1	..	53,603 6 1	..	..	g 5 17 0	144,140 13 6	..	1,770 9 11	145,911 3 5	Greymouth to Point Elizabeth.
Greymouth to Brunnerton	150,512 11 11	..	..	..	..	..	..	150,512 11 11	..	..	150,512 11 11	Greymouth to Brunnerton.
Greymouth to Ross	331,907 1 1	2,659 18 6	..	2,659 18 6	701 0 0	..	..	335,267 19 7	..	15 14 7	335,283 14 2	Greymouth to Ross.
Pictou to Waipara— Pictou Southwards	421,256 19 3	31,372 13 6	10,124 0 0	41,496 13 6	6,098 4 8	..	..	468,851 17 5	..	2,171 2 3	471,022 19 8	Pictou to Waipara— Pictou Southwards.
Waipara Northwards	243,428 12 1	18,247 18 7	5,659 0 0	23,906 18 7	..	30 18 1	..	267,366 8 9	..	16,932 15 8	284,299 4 5	Waipara Northwards.
Culverden to Hanmer (motor-cars and repairs to roads)	£ 3,834 0 0	..	..	..	..	..	..	3,834 0 0	..	..	3,834 0 0	Culverden to Hanmer (motor-cars and repairs to roads.)
Hurunui to Waitaki— Main Line	£ 1,680,867 14 8	..	..	..	7,449 17 9	..	£ 9,256 3 1	1,697,573 15 6	316,135 0 0	..	2,013,708 15 6	Hurunui to Waitaki— Main Line.
Oxford Branch	51,467 7 11	..	..	..	..	..	..	51,467 7 11	..	..	51,467 7 11	Oxford Branch.
Eyreton Branch	44,276 12 10	..	..	..	..	..	..	44,276 12 10	..	..	44,276 12 10	Eyreton Branch.
Lytelton Branch	79,453 11 11	..	..	..	..	..	..	79,453 11 11	340,500 0 0	..	419,953 11 11	Lytelton Branch.
Southbridge Branch	88,751 1 6	..	..	..	272 17 3	..	..	89,023 18 9	..	..	89,023 18 9	Southbridge Branch.
Springfield and Whitecliffs Branches	94,903 8 2	..	..	..	66 3 9	..	..	94,969 11 11	..	..	94,969 11 11	Springfield and Whitecliffs Branches.
Fairlie Creek Branch	66,938 14 9	..	..	..	100 14 2	..	..	67,039 8 11	75,124 0 0	..	142,163 8 11	Fairlie Creek Branch.
Waimate Branch	50,062 11 7	..	..	..	95 11 3	..	..	50,158 2 10	..	..	50,158 2 10	Waimate Branch.
Ashburton Forks Branch	74,550 12 7	..	..	..	59 9 4	..	..	74,610 1 11	..	..	74,610 1 11	Ashburton Forks Branch.
Upper Ashburton Branch	61,582 16 9	..	..	..	56 1 9	..	..	61,638 18 6	..	..	61,638 18 6	Upper Ashburton Branch.
Little River Branch	107,633 18 7	..	..	..	100 0 0	..	..	107,733 18 7				

TABLE NO. 4.

STATEMENT showing the NET EXPENDITURE on ROADS, BRIDGES, &c., out of the Public Works Fund, Consolidated Fund, and the New Zealand State-guaranteed Advances Act, 1909, for the Year ended 31st March, 1910.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		PUBLIC WORKS FUND.			
		ROADS, ETC.			
		NORTH AUCKLAND ROAD DISTRICT—			
107	4	Awanui to Mangatete, <i>via</i> Oturu Block ..	Mangonui ..	Bay of Islands	£ s. d. 38 13 5
	5	Awanui to West Coast	" ..	"	100 0 0
	7	Callaghan Road	Bay of Islands ..	"	50 0 0
	9	Dunn's to Kaitaia Dairy Factory ..	Mangonui ..	"	100 0 0
	10	Fairburn Creamery to Flat Bush ..	" ..	"	40 0 0
	13	Herekino Wharf Road	Hokianga ..	"	49 2 0
	14	Hodges Bridge	Mangonui ..	"	33 9 8
	16	Hukerenui Railway-station to Riponui ..	Whangarei ..	"	50 0 0
	17	Iwitaia to Mangamuka	Mangonui, Whangaroa, and Hokianga ..	"	57 18 0
	19	Kaeo to Matauri	Whangaroa ..	"	75 0 0
	23	Kaikohe to Huehue	Hokianga and Bay of Islands ..	"	38 1 1
	24	Kaikohe to Kawakawa, <i>via</i> Ngapipito ..	Bay of Islands ..	"	46 8 8
	25	Kaikohe to Rawene	Hokianga and Bay of Islands ..	"	100 0 0
	26	Kaimamaku to Helena Bay	Whangarei ..	"	50 0 0
	28	Kaitaia to Ahipara	Mangonui ..	"	40 0 0
	29	Kaitaia to Awanui	" ..	"	40 0 0
	32	Mamari Village to Section 48. Block II, Whangape ..	Hokianga ..	"	44 13 0
	34	Mangakahia Bridge	Whangarei ..	"	35 0 0
	36	Mangamuka Block IX (access to Flavell's) ..	Hokianga ..	"	36 16 8
	38	Mangataraira	" ..	"	22 10 9
	39	Mangatete Block III, Section 63 (access) ..	Mangonui ..	"	99 10 6
	41	Mangonuiwae Stream bridges	Hokianga ..	"	59 7 8
	44	McLean Road	" ..	"	54 12 0
	45	Moscoviti Road	Bay of Islands ..	"	38 8 0
	47	Ngaruawahine	" ..	"	29 6 6
	49	Okaihau to Horeke	Hokianga and Bay of Islands ..	"	214 11 3
	50	Okaihau to Kerikeri	Bay of Islands ..	"	100 0 0
	51	Okaihau to Waihou	" ..	"	50 0 0
	52	Omapere Survey District, Blocks IX and X ..	Hokianga ..	"	35 4 3
	54	Opanaki to Hokianga	" ..	"	123 17 6
	55	Opouteke River Bridge	Bay of Islands ..	"	288 7 0
	58	Oruru Factory to Fairburn Creamery ..	Mangonui ..	"	100 0 0
	59	Oruru to Kohumaru	" ..	"	28 10 0
	62	Paiaka to Ramarama	Bay of Islands ..	"	50 0 0
	64	Pakaraka to Whangae	" ..	"	50 0 0
	65	Peria to Victoria Valley Post-office ..	Mangonui ..	"	87 18 6
	66	Purua Road and Deviation	Whangarei ..	"	100 0 0
	68	Rangiahua to Umawhero	Hokianga ..	"	59 19 0
	70	Rawhia School to Rangiahua	" ..	"	101 16 6
	71	Russell to Waikare	Bay of Islands ..	"	58 13 6
	72	Ryder's Creek Bridge	Mangonui ..	"	431 18 3
	74	Takitu Road	Hokianga ..	"	100 0 0
	78	Towai to Ramarama	Bay of Islands ..	"	5 5 0
	80	Umawhero to Mangamuka	Hokianga ..	"	95 3 10
	86	Waikare to Kawakawa	Bay of Islands ..	"	45 7 0
	88	Waimamaku to Pakanae	Hokianga ..	"	70 6 3
	89	Waimamaku Settlement	" ..	"	63 6 6
	91	Waiotu to Hukerenui (Galbraith's) ..	Bay of Islands ..	"	50 0 0
	94	Wairua Bridge to Junction of Rivers ..	Whangarei ..	"	55 0 6
	95	Whakanekeneke Bridge	Bay of Islands ..	"	141 2 10
	97	Whangaroa Coast Road	Whangaroa ..	"	50 0 0
	98	White's Bridge	Mangonui ..	"	194 5 0
	100	Finlayson's Brook Road	Whangarei ..	Marsden ..	50 0 0
	101	Fraser's Creek Bridge	" ..	" ..	239 0 10
	102	Hikurangi to Whananaki	" ..	" ..	100 0 0
	103	Mania Road (Whangarei Heads)	" ..	" ..	50 0 0
	104	Mangapai to Mangonui Bridge (Upper) ..	" ..	" ..	58 15 0
	107	Matapouri to Marua	" ..	" ..	100 0 0
	108	Maungakarama Parish, Sections 111 and 112 ..	" ..	" ..	99 19 9
	110	Maungatapere to Tangiteroria	" ..	" ..	31 5 9
	112	Mill Brook School Road	" ..	" ..	60 0 0
	113	McLaughlin's to Caves	" ..	" ..	50 0 0
	114	North River Road	" ..	" ..	41 11 6
	115	Opuwhanga to Whananaki	" ..	" ..	50 0 0
	118	Parua Bay Landing Road	" ..	" ..	100 0 0
	121	Rawnsley Road	" ..	" ..	101 4 10
	124	Urquhart's Bay Road	" ..	" ..	100 0 0
	127	Waipu Gorge to Section 1, Block X, Waipu S.D. ..	" ..	" ..	150 0 0
	128	Whangarei Heads Landing Road	" ..	" ..	100 0 0

TABLE NO. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.		
		ROADS, ETC.— <i>continued</i> .					
		NORTH AUCKLAND ROAD DISTRICT— <i>continued</i> .					
107	129	Whangarei to Whangarei Heads	Whangarei ..	Marsden ..	£	s.	d.
	130	Dargaville to Flaxmill Bridge	Hobson ..	Kaipara ..	50	0	0
	131	Kaihu Creek Bridge (Maropiu—Kairara) ..	" ..	" ..	300	0	0
	134	Kai Iwi to Kaihu	" ..	" ..	400	0	0
	136	Kirikopini to Mangakahia	" ..	" ..	100	0	0
	138	Mount Wesley to Kaihu	" ..	" ..	93	12	0
	139	Omano to Mangarata	" ..	" ..	200	0	0
	142	Paradise Road	" ..	" ..	200	0	0
	143	Tangowahine to Mangakahia	" ..	" ..	150	0	0
	145	Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c. ..	" ..	" ..	207	11	3
	146	Supervision	" ..	" ..	212	15	6
	148	Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c. ..	" ..	" ..	321	17	2
					50	10	11
		Total—North Auckland			7,847	15	1
		AUCKLAND ROAD DISTRICT—					
	150	Dibble's Bridge to Whangaripo Creamery ..	Rodney ..	Marsden ..	40	6	2
	151	Hakarau to Te Hana	" ..	" ..	50	0	0
	152	Hetherington Road (Mareretu)	Otamatea ..	" ..	50	0	0
	154	Kaiwaka to Mangawai	" ..	" ..	70	10	9
	156	Mangawai to Waipu (coast road)	Otamatea and Whangarei ..	" ..	81	2	1
	157	Mareretu to Bull's	Otamatea ..	" ..	49	19	2
	158	Mareretu Central	" ..	" ..	49	19	10
	159	Matakana to Tauwharanui	Rodney ..	" ..	50	0	0
	163	North Albertland to Te Hana Railway-station ..	" ..	" ..	100	0	0
	165	Pakiri to Whangaripo	" ..	" ..	99	15	1
	166	Waipu to Mareretu	Otamatea and Whangarei ..	" ..	146	1	9
	169	Whangaripo to Wellsford	Rodney ..	" ..	50	0	0
	170	Angel's to Creamery	Otamatea ..	Kaipara ..	50	0	0
	171	Arapohue to Hoanga	Hobson ..	" ..	200	0	0
	172	Arapohue Settlement Road, <i>via</i> Education Reserve (£1 for £1)	" ..	" ..	277	11	6
	173	Ararua	Otamatea ..	" ..	79	11	10
	174	Aratapu Domain to Pound (£1 for £1) ..	Hobson ..	" ..	150	0	0
	177	Awaroa Creek Bridge	Otamatea ..	" ..	28	16	0
	181	Bickerstaffe to Maungaturoto	" ..	" ..	74	6	0
	184	Burch's to Tokatoka—Mangapai Road ..	" ..	" ..	38	7	6
	188	Helensville to Kaukapakapa (Inland Road) ..	Waitemata ..	" ..	200	0	0
	189	Helensville to Port Albert (Rodney County section)	Rodney ..	" ..	145	3	3
	190	Helensville to Port Albert (Waitemata County Section)	Waitemata ..	" ..	54	17	6
	191	Homestead Road	Otamatea ..	" ..	100	0	0
	194	Jackson Road	" ..	" ..	99	19	11
	195	Long Bridge (£150, £1 for £1)	Waitemata ..	" ..	200	0	0
	196	Lusk Road (£1 for £1)	Hobson ..	" ..	150	0	0
	198	Makarau Railway-station to Tahekeroa ..	Waitemata ..	" ..	238	5	3
	199	Makarau River Bridge (near Railway-station) ..	" ..	" ..	49	7	2
	200	Makarau Railway-station to Kaukapakapa ..	" ..	" ..	174	10	10
	202	Matakohe District roads	Otamatea ..	" ..	125	5	3
	203	Matakohe to Tokatoka	" ..	" ..	169	19	6
	204	Matakohe to Wharf	" ..	" ..	50	0	0
	208	Okahu Road (£1 for £1)	Hobson ..	" ..	50	0	0
	210	Otamatea Road	Otamatea ..	" ..	42	19	0
	211	Pahi to Paparua	" ..	" ..	142	3	6
	212	Paparua to Matakohe	" ..	" ..	84	12	4
	213	Paparua to Maungaturoto	" ..	" ..	1	17	9
	214	Paparua to Wairere	" ..	" ..	56	13	0
	215	Parkhurst	Waitemata ..	" ..	50	0	0
	220	Ruawai to Awaroa Canal	Otamatea ..	" ..	200	0	0
	223	Tangaihi to Tikinui	Hobson ..	" ..	100	0	0
	224	Tauhoa Block to Ahuroa Railway-station ..	Rodney ..	" ..	50	0	0
	225	Taupaki Station to School	Waitemata ..	" ..	100	0	0
	226	Te Kowhai (£1 for £1)	Otamatea ..	" ..	30	3	0
	227	Te Kuri, Block XVI, Sections 60 to 62 (£1 for £1)	" ..	" ..	100	0	0
	228	Te Pahi Creek Bridge	Rodney ..	" ..	100	0	0
	245	Hobsonville to Weissers	Waitemata ..	Waitemata ..	200	0	0
	246	Hungry Creek Bridge	Rodney ..	" ..	200	0	0
	247	Kahikatea Flat Road	Waitemata ..	" ..	150	0	0
	249	Kourawhero Stream Bridge	Rodney ..	" ..	150	0	0
	251	Orewa Bridge	Waitemata ..	" ..	150	0	0
	253	Puhoi to Tahekeroa Railway-station ..	Rodney and Waitemata ..	" ..	50	0	0

TABLE No. 4 *continued.*
STATEMENT showing the NET EXPENDITURE on ROADS, &c.—*continued.*

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.— <i>continued.</i>			£ s. d.
107		AUCKLAND ROAD DISTRICT— <i>continued.</i>			
254		Puhoi to Warkworth	Rodney ..	Waitemata ..	62 2 0
255		Pukapuka to Moir Hill	" ..	" ..	50 0 0
256		Samuel's Bridge (£2 for £1)	Waitemata ..	" ..	250 0 0
260		Wade to Dairy Flat	" ..	" ..	50 0 0
261		Wade Village to Upper Orewa	" ..	" ..	50 0 0
263		Waitemata River Bridge (River-head)	" ..	" ..	450 0 0
264		Waiwera to Puhoi	Waitemata and Rodney ..	" ..	100 0 0
265		Waiwera to Wainui	Waitemata ..	" ..	2 16 0
267		Warkworth to Ahuroa Railway-station	Rodney ..	" ..	50 0 0
268		Avondale Mental Hospital to New Great North Road	Eden ..	Eden ..	100 0 0
269		Great North Road deviation (Surrey Crescent to Meola Creek), (£1 for £1)	" ..	" ..	499 10 0
270		Great North Road (Point Chevalier Road District), (£1 for £1)	" ..	" ..	260 0 0
274		New Lynn to Huia	Waitemata ..	" ..	150 0 0
275		Swanson to West Coast	" ..	" ..	50 0 0
276		Waikumete to West Coast	" ..	" ..	404 12 3
278		Whau Creek Culvert	" ..	" ..	150 0 0
280		Ardmore Range Road (£1 for £1)	Manukau ..	Manukau ..	4 3 2
284		Great South Road (Papakura Road District), (£4 for £1)	" ..	" ..	262 0 10
287		Hunua to Railway-station	" ..	" ..	386 7 3
289		Maungamaungaroa to Maraetai (£50, £1 for £1)	" ..	" ..	11 5 0
290		Paparoa to East Tamaki Road (£1 for £1)	" ..	" ..	12 15 9
291		Rama Rama Bridge (repairs)	" ..	" ..	220 14 4
294		Wairoa Butter-factory to Brookby Creamery	" ..	" ..	0 15 0
295		Wairoa River Bridge and approaches (Otau), (£1 for £1)	" ..	" ..	3 2 0
296		Abraham's Gully	" ..	Franklin ..	59 0 0
298		Akaaka Swamp Road to Pukekohe Railway-station	" ..	" ..	5 16 0
302		Awhitu Main Road	" ..	" ..	50 8 10
303		Awhitu Parish (access to Section 128A)	" ..	" ..	22 9 0
304		Awhitu Wharf Road to Morrison's, <i>via</i> Orua Bay (£50, £1 for £1)	" ..	" ..	10 3 0
305		Boundary Road (Awhitu)	" ..	" ..	34 0 0
307		Buckland to Tuakau – Drury Road	" ..	" ..	100 2 2
308		Drury Road District bridges	" ..	" ..	222 19 8
310		Drury to Waiuku, <i>via</i> Karaka	" ..	" ..	219 16 3
311		Eastern Drain Outlet	" ..	" ..	199 11 0
312		Glen Murray to Rangiriri (£1 for £1)	Raglan ..	" ..	37 10 0
313		Golding's Hill (£1 for £1)	Manukau ..	" ..	25 0 0
315		Great South Road (Drury to Rangiriri)	" ..	" ..	81 3 5
316		Great South Road (Whangamarino Road District)	Waikato ..	" ..	199 13 9
317		Harrisville to Tuakau (£1 for £1)	Manukau ..	" ..	100 0 0
319		Huntly to Kahururu	Raglan ..	" ..	15 17 10
321		Huntly Road District flood-damage (£1 for £1)	Waikato ..	" ..	116 14 6
322		Kawakawa Bay to Hauarahi Stream	Manukau ..	" ..	334 19 4
323		Kelsey's to Port Waikato	Raglan ..	" ..	100 15 9
324		Koheroa	Manukau ..	" ..	64 0 10
325		Main Road deviation through Evans's	" ..	" ..	175 4 6
327		Mangapiko Valley	Waikato ..	" ..	3 18 10
329		Matahuru Landing Road	" ..	" ..	55 4 10
330		Matahuru Valley to Mangapiko Valley	" ..	" ..	1 2 0
331		Mauku to Drury – Waiuku Road	Manukau ..	" ..	150 0 0
332		Maungatawhiri Stream Bridge	" ..	" ..	37 4 4
333		Maungatawhiri Stream to Maungatangi Stream	" ..	" ..	45 15 9
334		Morrinsville Drainage	Piako ..	" ..	400 0 0
335		McKinnon Road	Raglan ..	" ..	11 8 0
336		McPherson Road	Waikato ..	" ..	41 15 6
339		Ohinewai Railway-station to Ngarua Block	" ..	" ..	157 13 11
340		Opaheke Main Road	Manukau ..	" ..	116 0 0
344		Otau Parish (Section 77)	" ..	" ..	14 5 6
345		Otoroheao Trig. Road	Raglan ..	" ..	116 16 1
347		Paparimu to Maungatawhiri	Manukau ..	" ..	15 1 0
349		Pollok Main Road	" ..	" ..	9 7 0
350		Pukekohe to Bombay (£1 for £1)	" ..	" ..	250 0 0
351		Puriri to Huntly (£75, £1 for £1)	Raglan ..	" ..	23 1 0
352		Rifle-range Road	Manukau ..	" ..	60 19 4
353		Rutherford Road	Raglan ..	" ..	12 0 3
354		Sandspit Wharf Road	Manukau ..	" ..	50 0 0
355		Tahuna to Morrinsville	Piako ..	" ..	10 0 0
357		Taniwha to Wairangi Railway-station	Waikato ..	" ..	22 7 3
358		Tapp Road	Raglan ..	" ..	121 2 10

TABLE NO. 4—continued.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—continued.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.	
		ROADS, ETC.—continued.			£	s. d.
107	359	AUCKLAND ROAD DISTRICT—continued.				
	360	Tauhei	Waikato and Piako	Franklin	60	0 0
	361	Te Puroa	Raglan	"	353	14 11
	364	Te Puroa to Waingaro—Ngaruawahia Road (£100, £1 for £1)	"	"	102	2 11
	365	Tuakau Bridge to Waingaro (£1 for £1) ..	"	"	90	13 9
	366	Tuakau Bridge to Raglan	"	"	226	3 3
	367	Tuakau to Onewhero	"	"	2	0 0
	368	Tuakau Railway-station to Tuakau Bridge (£1 for £1)	"	"	100	0 0
	374	Tuakau to Razorback (£1 for £1) ..	Manukau	"	100	0 0
	375	Waitangi Bridge (Pukekohe Main Road), (£1 for £1)	"	"	75	0 0
	376	Waiuku to Awhitu	"	"	251	12 9
	377	Waiuku to Pukekohe (£75, £1 for £1) ..	"	"	109	18 11
	378	Waiuku to Pukekohe (Tramway Road) ..	"	"	40	5 0
	379	Waiuku Road District flood-damage (£1 for £1)	"	"	30	10 2
	382	Whangarata Road (£1 for £1)	"	"	47	10 0
	383	Cape Colville to Port Charles	Coromandel	Thames	100	0 0
	384	Coromandel to Waikawau	"	"	250	0 0
	387	Crosbie Settlement Road	Thames	"	200	0 0
	389	Kaimarama Creek Bridge (contribution) ..	Coromandel	"	498	12 11
	394	Kikowhakarere to Cabbage Bay (coast road)	"	"	99	1 4
	396	Miranda to Waitakaruru	Ohinemuri	"	19	15 3
	399	Opani to Turua	Thames	"	100	0 0
	402	Port Charles to Ahuroa	Coromandel	"	100	0 0
	403	Thames to Hikutaia	Thames	"	200	0 0
	404	Thames to Waikawau	"	"	343	8 0
	409	Kaimanawa to Hikutaia	Ohinemuri	Ohinemuri	200	0 0
	410	Komata North	"	"	220	0 0
	413	Netherton to Awaiti Block	"	"	176	3 6
	414	Netherton to Kerepehi	"	"	126	16 8
	415	Netherton to Puke	"	"	200	0 0
	416	Netherton to Turua	Ohinemuri and Thames	"	100	0 0
	420	Tahuna to Paeroa	Ohinemuri	"	14	17 5
	422	Te Rohia to Mangaiti	"	"	290	0 0
	425	Waitoa Block to Waihou Railway-station ..	Ohinemuri and Piako	"	100	0 0
	426	Aotea to Raglan	Raglan and Kawhia	Waikato	9	10 0
	427	Bertelson Road (Pukekura)	Waipa	"	92	4 5
	428	Cogswell Road	Raglan	"	67	16 6
	430	Hamilton Traffic Bridge (£1 for £1) ..	Borough of Hamilton	"	1,000	0 0
	432	Horotiu to Te Kowhai	Waipa	"	100	0 0
	433	Kaniwhaniwha Stream Bridge (Steel's Crossing)	Raglan	"	235	8 10
	434	Kauri to Harapepe	"	"	47	8 7
	435	Mangaokahu	"	"	49	11 4
	436	Matakotia	"	"	31	7 4
	437	Puniu Bridge (Te Awamutu—Otorohanga Road)	Waipa and West Taupo	"	768	16 10
	439	Ruapuke to Aotea	Raglan	"	31	10 1
	440	Ruapuke Mountain Road to Te Mata ..	"	"	30	4 0
	441	Sainsbury Road	Raglan and Waitomo	"	210	13 3
	443	Te Awamutu to Kihikihi	Waipa	"	100	0 0
	445	Te Kowhai—Te Rapa Road (McIvor's) ..	"	"	50	0 0
	446	Te Mata to Ruapuke	Raglan	"	2	0 0
	447	Te Rapa (£1 for £1)	Waipa	"	50	0 0
	448	Te Toto Stream Bridge	Raglan	"	54	7 11
	450	Waingaro Springs to Te Uku	"	"	71	5 4
	451	Waingaro to Waingaro Landing	"	"	60	18 0
	452	Wainui	"	"	27	1 11
	454	Waitetuna to Kauri	"	"	112	11 5
	455	Waitetuna Middle Bridge	"	"	90	17 5
	456	Waitetuna to Whatawhata	"	"	1,704	8 3
	458	Whaanga	"	"	164	18 7
	460	Whatawhata Swamp Road	Waipa	"	150	0 0
	461	Crow's Nest Hill to No. 4, Maungatautari (£1 for £1)	Waipa and West Taupo	Tauranga	11	3 3
	462	French Pass to Taotaoroa	Matamata	"	210	7 2
	463	Hairini Bridge and approaches	Tauranga	"	163	17 6
	465	Kakepuku	Waitomo and West Taupo	"	178	9 0
	466	Kakepuku to Puniu Bridge	Waitomo	"	78	17 8
	467	Kihikihi to Waotu	West Taupo and Piako	"	206	16 5
	469	Matamata to Mangawhero	Piako	"	100	0 0
	471	Oropi Settlement	Tauranga	"	29	10 0
	472	Piako County flood-damage (£1. for £1) ..	Piako	"	229	7 9

TABLE No. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.— <i>continued</i> .			
		AUCKLAND ROAD DISTRICT— <i>continued</i> .			£ s. d.
107	474	Raupara	Waitomo ..	Tauranga ..	42 8 4
	476	Tauranga County flood-damage (£1 for £1)	Tauranga ..	" ..	54 17 6
	478	Tautau Bridge	" ..	" ..	150 0 0
	479	Te Pahi	West Taupo ..	" ..	85 7 0
	481	Thames River Traffic-bridge (Te Aroha), (£1 for £1)	Piako ..	" ..	1,000 0 0
	482	Tokanui to Wharepapa	West Taupo ..	" ..	213 6 10
	485	Waihou River Bridge (Mangawhero)	Piako ..	" ..	453 7 4
	488	Awaroa River Bridge	Kawhia ..	Taumarunui ..	21 17 11
	489	Hangatiki to Waitomo	Waitomo ..	" ..	301 11 2
	491	Kawa Drain bridges	" ..	" ..	0 15 0
	492	Kawhia to Aotea	Kawhia ..	" ..	131 4 10
	493	Kihikihi to Otorohanga	Waitomo and West Taupo ..	" ..	79 0 0
	494	Kiokio	Waitomo ..	" ..	91 0 0
	495	Mangamahoe	" ..	" ..	14 1 0
	496	Moakurua Bridge	" ..	" ..	428 5 9
	497	Ngutunui to Kawa	" ..	" ..	173 11 7
	498	Otorohanga to Ouruwhero	" ..	" ..	0 18 0
	499	Owaikura Stream Bridge	" ..	" ..	49 16 7
	500	Pirongia to Kawhia	Kawhia and Waitomo ..	" ..	675 2 5
	501	Pirongia West	Kawhia ..	" ..	166 1 2
	502	Shea Road	" ..	" ..	95 5 6
	503	Tawarau (£1 for £1)	Waitomo ..	" ..	0 1 0
	504	Te Kuiti to Otorohanga	" ..	" ..	95 9 0
	505	Te Rau Mauku	" ..	" ..	106 2 0
	506	Toi	Kawhia ..	" ..	79 5 2
	507	Turitea (Lyford's)	Waitomo ..	" ..	64 5 9
	508	Umurearea Bridge	" ..	" ..	93 2 1
	509	Waiharakeke Bridge	Kawhia ..	" ..	2,005 13 6
	510	Waitetuna to Aotea	Kawhia and Raglan ..	" ..	192 4 6
	512	Waitomo Valley (Ruakuri Caves)	Waitomo ..	" ..	84 1 8
	513	Whakapirau	Kawhia ..	" ..	81 0 2
	514	Wharaurua	" ..	" ..	110 0 2
	515	Arahiwi to Mamaku Railway-station	Rotorua ..	Bay of Plenty ..	40 2 9
	517	Bishop Road	" ..	" ..	12 16 2
	518	Echo Lake Geyser	" ..	" ..	14 11 6
	520	Harper Road	Rotorua and Piako ..	" ..	25 1 8
	521	Kaharoa	Rotorua ..	" ..	24 13 0
	522	Kaingarua to Waiotapu	" ..	" ..	22 0 0
	524	Kapukapu	" ..	" ..	27 7 8
	526	Maketu to Te Ngae	Rotorua and Tauranga ..	" ..	159 8 5
	527	Okareka Lake to Tikitapu Lake	Rotorua ..	" ..	93 0 0
	528	Okere Falls	" ..	" ..	10 8 0
	529	Orakei Korako Road	East Taupo ..	" ..	175 13 6
	530	Oruanui to Mokai	" ..	" ..	46 16 0
	531	Oruanui to Wairakei	" ..	" ..	89 17 0
	533	Rotoiti to Tarawera, <i>via</i> Okataina	Rotorua ..	" ..	55 2 0
	534	Rotorua to Lake Rotoma	" ..	" ..	125 12 4
	535	Rotorua to Ngongotaha Mount	" ..	" ..	81 15 0
	536	Rotorua to Taupo, <i>via</i> Atiamuri	Rotorua and East Taupo ..	" ..	202 12 6
	537	Rotorua to Taupo, <i>via</i> Waiotapu	Ditto ..	" ..	484 18 8
	539	Rotorua to Wairoa	Rotorua ..	" ..	81 7 0
	540	Rotowhero to Galatea	Rotorua and Whakatane ..	" ..	39 11 6
	541	Rotowhero to Murupara	Rotorua and East Taupo ..	" ..	26 5 0
	542	South Road	Rotorua ..	" ..	11 10 5
	543	Tauhara Mountain Track	East Taupo ..	" ..	31 4 0
	544	Taupo to Te Aratiatia Rapids (east and west)	" ..	" ..	26 0 0
	545	Tikitere to Green Lake	Rotorua ..	" ..	10 8 0
	546	Tirau to Ngongotaha	Piako and Rotorua ..	" ..	68 3 7
	547	Waimangu Geyser to Kakaramea	Rotorua ..	" ..	46 16 0
	548	Waimangu to Lake Rotomahana	" ..	" ..	2 2 5
	549	Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c.	" ..	" ..	637 8 4
	550	Supervision	" ..	" ..	2,625 12 0
	551	Contingencies, including unforeseen expenditure incidental to the other items of the vote	" ..	" ..	1 10 0
	552	Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c.	" ..	" ..	396 11 0
		Total—Auckland	..	..	£37,268 1 7

TABLE No. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.— <i>continued</i> .			
		GISBORNE ROAD DISTRICT—			£ s. d.
107	553	Anderson Road (Waimana Parish) ..	Whakatane ..	Bay of Plenty	149 15 1
	557	Galatea to Te Teko	" ..	"	7 0 0
	560	Lake Rotoma to Te Teko	" ..	"	135 13 6
	562	Mangaheia Bridge	Cook ..	"	300 0 0
	565	Maraetotara	Whakatane ..	"	52 16 6
	566	Mata River Traffic Bridge (£1 for £1) ..	Waiapu ..	"	400 0 0
	567	Matata to Otamarakau	Whakatane ..	"	283 9 2
	568	Matata to Tamurenui Junction	" ..	"	11 9 6
	570	Murupara to Ruatahuna	East Taupo and Whakatane ..	"	52 17 0
	571	Motu to Opotiki	Opotiki ..	"	41 4 0
	572	Motu to Motu Bridge	Waikohu ..	"	92 2 2
	575	Ohiwa to Waimana	Opotiki and Whakatane ..	"	149 16 6
	576	Omaramutu to Te Whaiti	Opotiki ..	"	46 14 0
	580	Peoples Road	" ..	"	95 4 0
	586	Ruatoki to Opouriao	Whakatane ..	"	88 17 10
	587	Tahora to Government Road (£1 for £1) ..	Waikohu ..	"	56 17 0
	590	Tarawera Bridge protection	Whakatane ..	"	279 8 9
	593	Te Waiti Road	Opotiki ..	"	6 2 4
	596	Tuparoa to Whangaparoa (inland track) ..	Waiapu ..	"	150 0 0
	600	Wainui to Tolago Bay	Cook ..	"	400 0 0
	603	Waihero Stream Bridge	Waikohu ..	"	204 15 4
	605	Whakatane River Bridge (£1 for £1) ..	Whakatane ..	"	201 12 1
	606	Whakatane to Te Teko	" ..	"	84 11 2
	608	Gisborne to Hangaroa (£800 contributed by County Council) ..	Cook ..	Gisborne ..	1,069 16 0
	610	Gisborne to Wairoa County Boundary, via Tiniroto	" ..	" ..	421 13 4
	611	Karaua Road and Bridge	" ..	" ..	299 14 10
	617	Supervision	" ..	" ..	359 9 2
		Total—Gisborne			£5,440 19 3
		TARANAKI ROAD DISTRICT—			
	620	Arawata	Waimarino ..	Taumarunui ..	50 0 0
	621	Awakino to Tirua Point (coast track) ..	Awakino ..	" ..	95 10 6
	622	Hoihenga	Waimarino ..	" ..	21 18 0
	624	Kaka	Clifton ..	" ..	191 13 6
	625	Kihikihi Stream Bridge	Waitomo ..	" ..	109 10 7
	626	Kokakanui Valley	Waimarino ..	" ..	199 6 6
	627	Mahorahora	Ohura ..	" ..	53 9 4
	630	Makotuku Valley	Waimarino ..	" ..	195 2 3
	631	Mangakara	Ohura ..	" ..	6 9 0
	632	Mangahoe	Waimarino ..	" ..	4 0 0
	633	Mangaorino	Waitomo ..	" ..	194 15 6
	634	Mangapapa	Clifton ..	" ..	32 7 4
	635	Mangapapa Stream Bridge	Ohura ..	" ..	74 6 8
	636	Mangapehi Stream Bridge	Waitomo ..	" ..	17 19 9
	638	Mangatoro	Clifton ..	" ..	36 3 4
	639	Mangawhero River Bridge (Ohakune) ..	Waimarino ..	" ..	549 6 10
	640	Marokopa River snagging	Kawhia and Awakino ..	" ..	12 4 6
	644	Mimi to Mokau	Clifton ..	" ..	550 0 0
	646	Miroahuaio to Mangaotaki	Waitomo ..	" ..	450 5 7
	647	Mokau Ferry Service (Upper)	" ..	" ..	18 12 11
	649	Mokauiti Stream Bridge (Nelson's)	" ..	" ..	183 7 10
	651	Ngatarawa	Awakino ..	" ..	99 13 0
	653	Ohura River Bridge (Matiere)	Ohura ..	" ..	538 13 9
	655	Oniao	Waitomo ..	" ..	40 15 11
	656	Okau	Clifton ..	" ..	95 0 0
	657	Okoke (£1 for £1)	" ..	" ..	43 2 6
	659	Orautaha River Bridge (Raetihi—Ohura Road) ..	Waimarino ..	" ..	248 17 0
	660	Otaranoho	" ..	" ..	96 17 6
	661	Otaraoa	Clifton ..	" ..	650 0 0
	662	Otuiti	Ohura ..	" ..	87 6 7
	664	Paemako Improved-farm Settlement	Waitomo ..	" ..	6 15 3
	665	Pakihikura	Awakino ..	" ..	100 0 0
	666	Papakino	Clifton ..	" ..	49 10 0
	667	Parapara to Karioi	Waimarino ..	Taumarunui and Rangitikei ..	44 4 0
	668	Piko	Clifton ..	Taumarunui ..	209 12 5
	669	Pipiriki to Raetihi	Waimarino ..	" ..	45 7 0
	670	Pokoihu	Ohura ..	" ..	24 8 0
	671	Pororo-tarao to Taumarunui	Ohura and West Taupo ..	" ..	117 15 5
	672	Potaka	Waitomo ..	" ..	40 19 0
	673	Prentice	Ohura ..	" ..	79 17 4
	677	Rimu	" ..	" ..	78 18 0

TABLE NO. 4—continued.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—continued.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.—continued.			£ s. d.
107	678	TARANAKI ROAD DISTRICT—continued. Rotoaira to Waimarino Railway-station ..	Waimarino, West Taupo, and East Taupo	Taumarunui ..	208 11 2
	679	Ryan Road	Ohura	" ..	111 5 2
	680	Tapuri	"	" ..	124 10 9
	681	Taumarunui to Ohakune	West Taupo and Waimarino	" ..	307 1 1
	682	Te Kuiti to Mokau	Waitomo and Awakino	" ..	1,898 15 6
	683	Te Kuiti to Te Kumi	Waitomo	" ..	42 0 10
	684	Tokiahuru Bridge	Waimarino	" ..	365 9 9
	685	Totoro	Waitomo	" ..	62 2 3
	686	Tumutumu to Waitomo	"	" ..	62 7 0
	687	Turipoto	Awakino	" ..	29 18 6
	690	Waikaka Stream Bridge	Ohura	" ..	197 9 4
	691	Waiouru to Tokaanu	Waimarino and East Taupo ..	Taumarunui and Hawke's Bay	240 0 10
	692	Waitara River Bridge (Rerekino) ..	Clifton	Taumarunui ..	293 4 11
	695	Whenuakura	Ohura	" ..	75 3 6
	696	Tokaanu to Taupo	East Taupo	Hawke's Bay ..	114 18 8
	697	Tokaanu to Waihi	East Taupo and West Taupo	" ..	27 4 0
	698	Tokaanu Wharf Road	East Taupo	" ..	23 18 6
	699	Waikato Bridge, Tokaanu	"	" ..	40 13 0
	700	Alfred	Taranaki	Taranaki ..	76 10 0
	702	Carrington Road (Carrington Road District), (£250, £1 for £1)	"	" ..	200 0 0
	704	Korito	"	" ..	35 0 0
	705	Koru (£1 for £1)	"	" ..	85 0 0
	706	Kotuku	"	" ..	100 0 0
	709	Pitone (£1 for £1)	"	" ..	25 0 0
	712	Dawson's Falls	Stratford	Egmont ..	240 18 9
	714	Epero	Eltham	" ..	64 17 11
	715	Koane	"	" ..	163 0 0
	716	Moeawatea Ridge	"	" ..	9 12 0
	718	Okahu (Ngariki Road to Newall Road) ..	Egmont	" ..	92 6 4
	719	Patupuremu	Hawera	" ..	16 14 0
	720	Rawhitiroa (£1 for £1)	Eltham	" ..	1,195 0 0
	722	Whenuakura River Bridge	Hawera	" ..	110 14 2
	723	Whenuakura Valley	Eltham and Hawera	" ..	350 4 4
	724	Wiremu (Ngariki Road to Ihaha Road) ..	Egmont	" ..	241 5 9
	725	Autawa	Stratford	Stratford ..	28 7 4
	726	Brewer (Strathmore to Murcott Road), (£1 for £1)	Whangamomona	" ..	500 0 0
	727	Heao	Stratford	" ..	42 11 0
	729	Kohi	Whangamomona	" ..	135 6 2
	732	Mangaeahu River Bridge (Tututawa), (£1 for £1)	Stratford	" ..	350 0 0
	734	Mangaeahu (Upper), (£1 for £1)	Whangamomona	" ..	480 0 8
	737	Mangare	Whangamomona and Clifton	" ..	376 17 0
	738	Mohakau	Stratford	" ..	60 13 10
	739	Mount Humphries Road	"	" ..	27 12 0
	740	Ngatoto	Clifton	" ..	62 12 10
	742	Okara	Whangamomona	" ..	101 1 11
	744	Raupuha	Stratford	" ..	50 0 0
	745	Rimuputa	Stratford and Clifton	" ..	86 5 0
	746	Tahunaroa to Tirohanga	Whangamomona	" ..	76 7 3
	748	Tangarakau Valley Road	"	" ..	6 16 0
	750	Vera	"	" ..	80 8 0
	751	Waitara Valley (Tangitu Road to Mangare Road)	Clifton	" ..	126 14 0
	753	Ball Road	Patea	Patea ..	28 6 6
	754	Kauarapaoa	Waitotara	" ..	62 9 4
	755	Kauarapaoa Block Road (£1 for £1) ..	"	" ..	75 0 0
	756	Maben	Patea and Hawera	Patea and Egmont	521 9 7
	757	Mataimoana	Patea	Patea ..	56 3 3
	758	Moeawatea Valley	Patea and Eltham	Patea and Egmont	256 13 6
	759	Moturoa	Patea	Patea ..	30 13 0
	764	Hiwera (£1 for £1)	Rangitikei	Rangitikei ..	72 0 0
	766	Kauaekeke (£35, £1 for £1)	"	" ..	81 19 0
	767	Makohine Valley (£62, £1 for £1) ..	"	" ..	65 14 6
	770	Mangawhero River Bridge (Raupiu) ..	Wanganui	" ..	213 10 2
	771	Mataroa to Mangaweka (£1 for £1) ..	Rangitikei	" ..	121 17 9
	776	Te Hue	Wanganui	" ..	21 15 0
	778	Waipapa	"	" ..	30 19 0
	779	Wangaeahu River Bridge (Addenbrook's) ..	"	" ..	35 8 9
	780	Wangaeahu River Bridge (Mangamahua) ..	"	" ..	78 18 6

TABLE NO. 4—continued.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—continued.

Vote No.	Item No.	Name of Work.	County.	Electorate	Net Expenditure.
		ROADS, ETC.—continued.			
		TARANAKI ROAD DISTRICT—continued.			£ s. d.
107	781	Wangaehu River Bridge (Whiteman's) ..	Wanganui ..	Rangitikei ..	45 14 10
	782	Wangaehu River Road (£1 for £1) ..	" ..	" ..	124 8 0
	784	Wanganui Town Bridge ..	" ..	Wanganui ..	2,176 2 9
	787	Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c. ..	" ..	" ..	952 4 9
	788	Supervision ..	" ..	" ..	1,784 12 3
	789	Contingencies, including unforeseen expenditure incidental to the other items of the vote ..	" ..	" ..	1 15 6
	790	Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c. ..	" ..	" ..	296 4 3
		Total—Taranaki	" ..	" ..	22,700 13 9
		WELLINGTON ROAD DISTRICT—			
	791	Makaretu River Bridge	Wairoa ..	Gisborne ..	279 5 9
	793	Napier to Wairoa	" ..	" ..	418 4 10
	794	Nuhaka River Bridge (Stewart's Crossing) ..	" ..	" ..	800 0 0
	795	Nuhaka to Tarewa	" ..	" ..	161 6 0
	798	Waikaremoana Accommodation-house Road ..	" ..	" ..	36 0 0
	799	Wairoa to Gisborne, via Morere (Sandhills), (£1 for £1)	" ..	" ..	100 0 0
	800	Wairoa River Bridge (Frasertown) ..	" ..	" ..	4,323 14 0
	802	Wairoa to Putere (Cricklewood deviation) ..	" ..	" ..	50 0 0
	809	Knight Road (Argyll)	Hawke's Bay ..	Hawke's Bay ..	85 15 0
	812	Mangaohane Stream Bridge	" ..	" ..	213 5 2
	814	Maraekakaho Stream Bridge (Mangatahi Road)	" ..	" ..	541 8 6
	815	Maraekakaho Stream Bridge (upper crossing) ..	" ..	" ..	294 19 4
	816	Mason Road	" ..	" ..	227 10 0
	818	Puketitiri to Pakaututu Block	" ..	" ..	200 0 0
	822	Maharakeke Stream Bridge	Waipukurau and Waipawa ..	Waipawa ..	123 6 2
	823	Mangapurakau Stream Bridge	Dannevirke ..	" ..	114 19 7
	824	Onga Onga River Bridge (£1 for £1) ..	Waipawa ..	" ..	200 0 0
	830	Te Kouka (£1 for £1)	" ..	" ..	100 0 0
	831	Waipawamate	" ..	" ..	150 0 0
	832	Kawhatau River Bridge (£1 for £1) ..	Rangitikei ..	Rangitikei ..	1,250 0 0
	833	Makino Gorge Bridge	" ..	" ..	139 4 8
	835	Potaka	" ..	" ..	60 0 0
	836	Rangitikei Bridge (Omatane)	" ..	" ..	1,589 16 6
	838	Apiti Main South (£100, £1 for £1) ..	Kiwitea ..	Oroua ..	44 14 4
	843	Mangamako (Sandon Block)	" ..	" ..	200 0 0
	849	Oroua River Bridge (£1 for £1)	Kiwitea and Pohangina ..	" ..	331 6 2
	850	Oroua River Bridge (London's Ford), (£1 for £1)	Ditto ..	" ..	250 0 0
	853	Pohangina Bridge (£1 for £1)	Pohangina ..	" ..	750 0 0
	854	Tunipo	" ..	" ..	73 16 0
	855	Gorge Road	Kairanga ..	Palmerston ..	420 15 9
	856	Manawatu River Bridge (Lower Gorge) ..	Oroua and Kairanga ..	" ..	3,678 7 4
	857	Palmerston North to Foxton	Manawatu ..	Manawatu ..	150 0 0
	858	Ballance Main Road (£1 for £2)	Pahiatua ..	Pahiatua ..	300 0 0
	865	Huia Road (Pongaroa)	Akitio ..	" ..	48 5 5
	866	Kaituna	" ..	" ..	29 18 0
	868	Kaukuhu	Dannevirke ..	" ..	99 13 8
	869	Makairo to Coonoor	Pahiatua ..	" ..	56 16 0
	871	Makuri to Pongaroa (£1 for £1)	Akitio and Pahiatua ..	" ..	974 18 7
	872	Makuri Saddle to Pongaroa, via Rakaunui (£1 for £1)	Akitio ..	" ..	154 0 8
	873	Mangamaire Bridge (£1 for £1)	Dannevirke ..	" ..	75 0 0
	875	Mangapuaka	" ..	" ..	199 8 5
	877	Mathieson's Bridge and approaches ..	Pahiatua ..	" ..	Cr. 423 14 6
	878	Mill Stream Road	Weber ..	" ..	77 7 7
	879	McLeod Road	Akitio ..	" ..	50 0 0
	881	Ohinereia	Pahiatua ..	" ..	65 0 0
	882	Oporae	Weber ..	" ..	91 12 6
	884	Otamaraho	Dannevirke ..	" ..	88 1 3
	885	Otawhao	Woodville ..	" ..	138 16 0
	886	Pahiatua to Palmerston	Pahiatua and Kairanga ..	" ..	200 19 7
	887	Pahiatua to Pongaroa (£1 for £1), (on account of £1,000)	Pahiatua ..	" ..	500 0 0
	889	Pongaroa Stream Bridge (Huia Road) ..	Akitio ..	" ..	88 6 5
	891	Rakaunui to Pongaroa (£1 for £1) ..	" ..	" ..	74 8 10
	892	Ruaroa (Tamaki Block)	Dannevirke ..	" ..	12 17 9
	893	Tahukaretu	Weber ..	" ..	150 0 0
	894	Tamaki Settlement to Kiritaki Block ..	Dannevirke ..	" ..	35 9 1
	896	Te Hoe Creek Bridge	Weber ..	" ..	226 14 8

TABLE NO. 4 *continued.*
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued.*

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
ROADS, ETC.— <i>continued.</i>					
WELLINGTON ROAD DISTRICT— <i>continued.</i>					
					£ s. d.
107	897	Top Grass Road	Woodville ..	Pahiatua ..	119 18 5
	899	Towai	Akitio and Pahiatua ..	..	286 6 3
	900	Tunakore Bridge	Dannevirke ..	..	124 19 11
	901	Tylee's Ford (Makuri River)	Pahiatua ..	..	99 10 1
	902	Waihi River Bridge (Lunt's)	Akitio ..	..	123 17 4
	905	Weber to Herbertville (on account of £1,000)	Weber ..	..	248 6 0
	906	Weber to Waione (£1 for £1)	Weber and Akitio ..	..	90 8 6
	907	Wimbledon to North-west Boundary, Weber County, <i>via</i> Waipatiki	Weber ..	..	87 3 0
	908	Woodville Survey District (access to Section 1, Block XIV)	Woodville ..	..	70 3 0
	911	Barton's Line to Mangamahoe	Eketahuna and Masterton ..	Masterton ..	22 10 4
	913	Glendonald to Wairere	Masterton and Wairarapa South ..	..	247 10 0
	914	Hinemoa to Alfredton	Masterton and Pahiatua ..	..	160 16 0
	917	Ihuraia Bridge (£1 for £1)	Masterton ..	..	300 0 0
	920	Makakahi River Bridge (Bourke's Crossing) (£1 for £1)	Pahiatua ..	..	174 8 0
	922	Mangatainoka Valley Road	Mauriceville ..	..	245 9 3
	924	Maungatakatō	Masterton ..	..	153 13 3
	926	Puketoi (Waterfalls End)	..	..	25 13 0
	934	Blairlogie to Homewood (£31, £1 for £1)	..	Wairarapa ..	99 18 8
	936	Fernyhurst Road	..	..	27 19 3
	941	Kiriwhakapapa	..	..	120 11 5
	945	Maungahua (Kokotau), Longbush	Wairarapa South ..	..	20 7 6
	946	Maungaru to Fernyhurst	Masterton ..	..	42 8 6
	967	Mangaone to Te Horo	Horowhenua ..	Otaki ..	100 0 0
	972	Paraparaumu to Beach	Hutt ..	..	41 2 1
	973	Phillip Road	..	..	100 0 0
	974	Plimmerton to Pahautanui	..	..	158 7 11
	976	Porirua Bridge	Makara ..	..	150 0 0
	980	Taungata Bridge (£1 for £1)	Horowhenua ..	..	450 0 0
	981	Tavistock	..	..	100 0 0
	987	Waitohu Bridge (£1 for £1)	..	..	12 19 10
	989	Belmont Road (extension)	Hutt ..	Hutt ..	100 0 0
	991	Hayward's Ford	..	..	60 0 0
	994	Narrow Neck Stream Bridge	..	..	47 7 2
	995	Normandale Settlement	..	..	17 1 0
	997	Thomas Creek Bridge	..	..	102 12 10
	999	Wainuiomata Road	..	..	350 0 0
	1001	Hawtrey Settlement (access roads)	Makara ..	Wellington Suburbs ..	100 0 0
	1002	Chatham Islands roads	..	..	37 13 0
	1003	Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c.	..	..	532 14 3
	1004	Supervision	..	..	1,941 5 1
	1005	Contingencies, including unforeseen expenditure incidental to the other items of the vote	..	..	6 4 7
	1006	Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c.	..	..	68 11 10
Total—Wellington					£28,039 12 3
NELSON ROAD DISTRICT—					
1007		Nelson to Rai Saddle	Waimea ..	Nelson ..	150 0 0
1011		Alexander Bluff Bridge	..	Motueka ..	509 16 2
1013		Awaroa to Totaranui	Takaka ..	..	101 3 2
1017		Bonny Doon Road	Collingwood ..	..	155 0 0
1018		Brooklyn Creek (protective works)	Waimea ..	..	100 0 0
1020		Brooklyn Valley Road Extension	..	..	98 4 9
1022		Cemetery Road (Moutere)	..	..	100 0 0
1024		Collingwood Main Road (£1 for £1)	Collingwood ..	..	36 0 0
1026		East Road Extension	Takaka ..	..	100 0 0
1030		Gardner Road (Upper Moutere)	..	..	50 0 0
1033		Hope Valley bridges	Waimea ..	..	216 2 11
1041		Motueka River protective works	..	..	78 3 3
1042		Motueka Valley (Faulkner's)	..	..	100 0 0
1044		Neudorf to Dovedale	..	..	32 16 3
1046		Norris Gully to Stewart's	..	..	200 0 0
1047		Pearse Valley	..	..	100 0 0
1048		Pohara to Awaroa	Takaka ..	..	30 0 0
1049		Pohara to Wainui	..	..	45 0 0
1050		Richmond to Collingwood	Waimea, Takaka, and Collingwood ..	Nelson and Motueka ..	148 14 8
1051		Rising Sun Valley	Waimea ..	Motueka ..	50 0 0
1056		Sandy Bay to Marahau	..	..	50 0 0
1057		School Road (Moutere)	..	..	100 0 0

TABLE NO. 4—continued.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—continued.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.		
		ROADS, ETC.—continued.			£	s.	d.
107		NELSON ROAD DISTRICT—continued.					
1059		Sherry Valley to Manu	Waimea ..	Motueka ..	160	10	6
1061		Spring Creek Bridge	Takaka ..	" ..	270	0	0
1062		Stanley Brook to Fenermor's	Waimea ..	" ..	84	10	0
1063		Stanley Brook to Woodstock	" ..	" ..	100	0	0
1067		Takaka Main Road	Takaka ..	" ..	100	0	0
1069		Upper Tadmor	Waimea ..	" ..	100	0	0
1070		Wai-iti Valley (Upper)	" ..	" ..	50	0	0
1074		Wangapeka to Sherry	" ..	" ..	150	0	0
1077		Baigent Road	Murchison ..	Buller ..	95	19	4
1078		Buller River Bridge (O'Sullivan's) ..	" ..	" ..	2,459	19	0
1079		Buller River Road to O'Sullivan's Bridge ..	" ..	" ..	894	15	1
1082		Maruia Hot Springs	" ..	" ..	180	12	1
1083		Maruia to Rappahannoe	" ..	" ..	100	0	0
1084		Matakitaki River protection	" ..	" ..	0	9	0
1086		Slips Road	" ..	" ..	34	17	0
1088		Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c.	" ..	" ..	284	16	9
1089		Supervision	" ..	" ..	306	16	7
1090		Contingencies, including unforeseen expenditure incidental to the other items of the vote	" ..	" ..	1	1	9
1091		Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c.	" ..	" ..	55	13	7
		Total—Nelson	" ..	" ..	£7,981	1	10
		MARLBOROUGH ROAD DISTRICT—					
1092		Black Point to Main Road (Pelorus River)	Marlborough ..	Nelson ..	73	0	0
1093		Elaine Bay to Hope's Section	Sounds ..	" ..	22	3	3
1095		French Pass, Admiralty Bay, and Croixelles tracks	" ..	" ..	65	6	0
1096		Homewood Wharf	" ..	" ..	4	0	0
1097		Kaiaho Canal and Track	" ..	" ..	22	10	0
1098		Kauma Saddle	Sounds and Marlborough ..	" ..	91	0	0
1101		Portage Bay to Waitaria	Sounds ..	" ..	10	0	0
1102		Rai Falls	Marlborough ..	" ..	48	5	7
1103		Rai Falls Bridge	" ..	" ..	83	11	0
1105		Rai Saddle to Havelock	" ..	" ..	200	0	0
1106		Torea Bay Road	Sounds ..	Nelson and Wairau ..	48	3	9
1109		Arapawa Island	" ..	Wairau ..	0	8	0
1110		Awatere River to Clarence River ..	Marlborough ..	" ..	442	12	3
1115		Grove Wharf Road	" ..	" ..	53	15	0
1120		Kaituna-Tuamarina (protective works) ..	" ..	" ..	200	0	0
1121		Mahakipawa to Havelock	" ..	" ..	90	9	8
1122		Omaka River Traffic-bridge (Blenheim to Renwick)	" ..	" ..	500	0	0
1124		Picton to Grove	" ..	" ..	12	12	6
1126		Wairau Bridge	" ..	" ..	1,000	0	0
1128		Wairau Native Reserve (protection) ..	" ..	" ..	1	18	0
1131		Clarence to Hapuku	Kaikoura ..	Hurunui ..	200	0	0
1135		Kahautara to Conway (Hundalee) ..	" ..	" ..	100	0	0
1137		Kowhai to Conway (Greenhills) ..	" ..	" ..	100	0	0
1139		Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c.	" ..	" ..	242	7	9
1140		Supervision	" ..	" ..	401	15	2
1141		Contingencies, including unforeseen expenditure incidental to the other items of the vote	" ..	" ..	1	19	8
1142		Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c.	" ..	" ..	17	9	4
		Total—Marlborough	" ..	" ..	£4,033	6	11
		WESTPORT ROAD DISTRICT—					
1146		Abattoir to Soap-factory and Orowaiti River	Buller ..	Buller ..	353	10	0
1147		Brighton to Caves	" ..	" ..	50	0	0
1148		Buller Road (loop line Nine-mile to Westport)	" ..	" ..	386	4	0
1150		Carter Junction to Bradshaw Terrace ..	" ..	" ..	91	1	0
1151		Carter Junction to Cape Foulwind ..	" ..	" ..	300	0	0
1153		Coastal roads and bridges over Totara River, Cape Foulwind, and Charleston ..	" ..	" ..	500	0	0
1156		Orowaiti River Bridge	" ..	" ..	1,200	0	0
1157		Victoria Road (extension)	" ..	" ..	49	10	0
1158		Waimangaroa Bridge to Beach	" ..	" ..	69	0	0
1159		Waimangaroa to Westport	" ..	" ..	700	0	0
1161		Supervision	" ..	" ..	275	12	11
1163		Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c.	" ..	" ..	46	0	0
		Total—Westport	" ..	" ..	£4,020	17	11

TABLE No. 4—continued.

STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—continued.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.—continued.			
		WESTLAND ROAD DISTRICT—			£ s. d.
107	1164	Gilmer Road	Inangahua	Buller	109 0 0
	1165	Held's Road	"	"	46 19 0
	1167	Reefton to Maruia	"	"	688 3 4
	1169	Brunner to Moonlight	Grey	Grey	145 12 3
	1171	Inangahua Bridge (Reefton)	Inangahua	"	18 2 8
	1172	Main Grey Road Bridge (Reefton to Grey-mouth)	"	"	10 0 0
	1176	Upper Moonlight	Grey	"	82 10 0
	1181	Bruce Road	"	Westland	13 16 0
	1184	Copland Track	Westland	"	185 16 0
	1185	Crooked River Bridge, near Lady Stream	Grey	"	66 17 6
	1187	Dorothy Falls Track	Westland	"	82 7 0
	1193	Grey Valley Main Road and bridges	Grey	Westland and Grey	33 5 9
	1195	Haast to Paringa	Westland	Westland	33 12 0
	1202	Lake Kanieri Hut and Paddock	"	"	17 0 2
	1203	Mahinapua and South Creeks (Lake Mahinapua)	"	"	56 12 9
	1206	Mikonui to Bold Head	"	"	650 4 9
	1210	Otira Bridge (Upper)	"	"	718 15 11
	1215	South Westland Thermal Springs	"	"	60 9 10
	1217	Totara Flat Main Road (protection)	Grey	"	52 16 8
	1218	Turnbull River Road	Westland	"	23 7 3
	1222	Wataroa Bridge and approaches	"	"	1,494 17 0
	1224	Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c.	"	"	55 11 0
	1225	Supervision	"	"	316 1 3
	1226	Contingencies, including unforeseen expenditure incidental to the other items of the vote	"	"	Cr. 50 13 6
	1227	Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c.	"	"	64 2 2
		Total—Westland			£4,975 6 9
		CANTERBURY ROAD DISTRICT—			
	1231	Conway to Waiau, via Whalesback	Amuri	Hurunui	100 0 0
	1233	Leslie Hills Bridge to Upper Waiau Bridge (Hanmer Road)	"	"	100 0 0
	1235	Waiau Ferry to Hanmer	"	"	2,339 10 1
	1236	Waiau Ferry Service	Cheviot	"	123 11 10
	1237	King Edward VII Road	Selwyn and Mount Herbert	Lyttelton and Riccarton	521 15 4
	1242	Ford and Newton Extension	Ashburton	Selwyn	126 1 3
	1244	Selwyn River protective works (Whitecliffs)	Selwyn	"	150 0 0
	1245	Chorlton Road	Akaroa	Ellesmere	100 0 0
	1246	Duvauchelles to Barry's Bay Flat (road and wharf)	"	"	250 0 0
	1247	Kinloch Settlement roads	"	"	337 15 5
	1248	Morice Settlement Main Road	"	"	10 8 0
	1252	Clayton Road	Mackenzie	Geraldine	58 10 0
	1254	Fairlie to Mount Cook (bridges)	"	"	2,193 1 11
	1255	Hall Creek Bridge (£1 for £1)	"	"	150 0 0
	1256	Lake Tekapo to Lake Pukaki	"	"	300 0 0
	1258	Mackenzie Pass	"	"	68 1 6
	1261	Ophi Bridge (Hanging Rock), (£1 for £1)	Geraldine and Levels	"	1,250 0 0
	1263	Pukaki to Mount Cook	Mackenzie	"	655 16 6
	1264	Rocky Gully Stream Bridge (£1 for £1)	"	"	550 0 0
	1265	Tengawai Foot-bridge (Cave), (£1 for £1)	Levels	"	112 10 0
	1266	Hakataramea River Bridge (Hatcheries Road)	Waimate	Waitaki	705 9 6
	1268	Shearer's Hill Road (£1 for £1)	"	"	172 18 6
	1271	Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c.	"	"	3 7 6
	1272	Supervision	"	"	291 12 1
		Total—Canterbury			£10,670 9 5
		OTAGO ROAD DISTRICT—			
	1276	Ahuriri River Bridge	Waitaki	Waitaki	1,700 0 0
	1277	Awamoko River bridges (Stock), (£1 for £1)	"	"	130 0 0
	1287	Bushy to Beach	Waihemo	Oamaru	150 0 0
	1289	Dunback to Pigroot	"	"	100 0 0
	1292	Moeraki Native Reserve Road	Waitaki	"	21 17 0
	1297	Blackstone Valley (access new runs)	Maniototo	Tuapeka	200 0 0
	1298	Cambrian Settlement Block (access)	"	"	150 0 0

TABLE No. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.— <i>continued</i> .			£ s. d.
		OTAGO ROAD DISTRICT— <i>continued</i> .			
107	1299	Clyde and Alexandra to Ophir	Vincent ..	Tuapeka ..	51 2 6
	1300	Dansey's Pass	Maniototo ..	" ..	50 0 0
	1301	Dunback to Hyde	Waihemo ..	" ..	100 0 0
	1302	Earnsleugh to Alexandra	Vincent ..	" ..	86 11 9
	1304	Highfield and Gimmerburn Runs to Ranfurly ..	Maniototo ..	" ..	200 0 0
	1309	Lawrence to Roxburgh	Tuapeka ..	" ..	250 0 0
	1310	Maniototo County flood-damage	Maniototo ..	" ..	1,166 12 7
	1312	Naseby to Ranfurly Railway-station	" ..	" ..	150 0 0
	1313	Park Hill to Heriot	Tuapeka ..	" ..	100 14 8
	1314	Patearoa to Upper Taieri Runs	Maniototo ..	" ..	168 6 9
	1320	Arthur's Point to Skipper's	Lake ..	Wakatipu ..	45 8 0
	1321	Bannockburn Bridge (repairs)	Vincent ..	" ..	80 18 6
	1322	Ben Lomond	Lake ..	" ..	75 0 0
	1324	Cardrona to Mount Barker	" ..	" ..	100 0 0
	1325	Cardrona to Pembroke	" ..	" ..	118 5 0
	1326	Clyde to Cromwell	Vincent ..	" ..	350 0 0
	1327	Cromwell sand-drift prevention	Borough of Cromwell ..	" ..	100 0 0
	1329	Frankton to Shotover Bridge	Lake ..	" ..	200 0 0
	1331	Glenorchy to Paradise	" ..	" ..	99 14 0
	1332	Glenure to Josephville	Southland ..	" ..	100 0 0
	1333	Glade House to Lake Wakatipu	Wallace and Lake ..	Wakatipu and Wallace ..	117 11 4
	1336	Hawea Lake Tracks	Vincent ..	Wakatipu ..	38 14 0
	1338	Lake Hayes to Shotover Bridge	Lake ..	" ..	109 0 0
	1339	Longridge North	Southland ..	" ..	50 0 0
	1343	Makaroro Flat	Vincent ..	" ..	150 0 0
	1345	Matukituki River Foot and Stock Bridge ..	Lake ..	" ..	100 0 0
	1346	Nokomai Siding to Nokomai Saddle	" ..	" ..	100 0 0
	1347	Otama Hill Road (£1 for £1)	Southland ..	" ..	100 0 0
	1349	Pembroke to Vincent County boundary	Lake ..	" ..	50 0 0
	1350	Queenstown to Glenorchy	" ..	" ..	287 3 0
	1351	Rees River Road	" ..	" ..	5 4 11
	1352	Routeburn Valley	" ..	" ..	10 11 0
	1353	Shotover Bridge (£1 for £1)	" ..	" ..	898 2 0
	1357	Waipunama Bridge (£2 for £1)	Southland ..	" ..	840 9 8
	1359	Baytown Boundary to Camp	Peninsula ..	Chalmers ..	50 0 0
	1360	Beach Road to Back Beach (Karitane) ..	Waikouaiti ..	" ..	49 19 5
	1361	Beach Road to Camp	Peninsula ..	" ..	150 0 0
	1362	Boundary Road	Borough of North-East Valley ..	" ..	100 0 0
	1363	Camp to Portobello	Peninsula ..	" ..	100 0 0
	1364	Dick Road	" ..	" ..	91 4 0
	1368	Hawksbury Bush Road	Waikouaiti ..	" ..	73 10 0
	1371	Hooper's Inlet (west side)	Peninsula ..	" ..	100 0 0
	1372	Karetai	" ..	" ..	49 19 0
	1377	Macandrew Road (Port Chalmers), (£1 for £1) ..	Borough of Port Chalmers ..	" ..	200 0 0
	1378	Main North Road	Borough of North-East Valley ..	" ..	100 0 0
	1381	Mount Cargill Main Road	Waikouaiti ..	" ..	50 0 0
	1382	O'Halloran Road	" ..	" ..	50 0 0
	1383	Otakau School Road	Peninsula ..	" ..	52 2 6
	1384	Papanui Inlet roads	" ..	" ..	99 18 6
	1385	Pigeon Flat	Waikouaiti ..	" ..	50 0 0
	1386	Pipikaretu Road	Peninsula ..	" ..	21 0 0
	1387	Portobello	" ..	" ..	300 0 0
	1389	Puketiraki Native Reserve	Waikouaiti ..	" ..	5 14 0
	1392	Purakanui Township roads	" ..	" ..	100 0 0
	1393	Quarry Road	" ..	" ..	42 13 4
	1394	Rossiter Road (Mount Cargill)	" ..	" ..	24 0 0
	1395	Russell Road	" ..	" ..	50 0 0
	1396	Sheepyards to Merton Railway-station ..	" ..	" ..	49 18 9
	1397	Signal Hill	Borough of North-East Valley ..	" ..	100 0 0
	1398	Snell Road	Waikouaiti ..	" ..	20 0 0
	1399	Turnbull Hill	Peninsula ..	" ..	100 0 0
	1401	White Road (Merton)	Waikouaiti ..	" ..	150 0 0
	1406	Clarendon to Berwick	Bruce ..	Taieri ..	100 0 0
	1410	Duncan Settlement roads	Taieri ..	" ..	100 0 0
	1414	Millburn to Circle Hill	Bruce ..	" ..	100 0 0
	1416	Reidy Creek to Waipori	Tuapeka ..	" ..	100 0 0
	1420	Taieri County flood-damage (£1 for £1) ..	Borough ..	" ..	3,061 8 4
	1423	Davidson's Corner (Leith Valley)	Borough of Maori Hill ..	Dunedin North ..	500 0 0
	1424	Barnago Settlement (Main Road)	Bruce ..	Bruce ..	53 10 0
	1425	Begg Road	" ..	" ..	288 15 4
	1427	Blackburn Settlement	" ..	" ..	150 0 0
	1428	Boulger's Flat	Tuapeka ..	" ..	100 0 0
	1432	Clark Road	Bruce ..	" ..	75 0 0

TABLE NO. 4—continued.

STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—continued.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.—continued.			
		OTAGO ROAD DISTRICT—continued.			£ s. d.
107	1433	Clark's Flat to Greenfield	Tuapeka	Bruce	90 5 0
	1439	Greenfield to Crookburn	Bruce	"	45 0 0
	1440	Greenfield Settlement	"	"	323 0 0
	1442	Hillend to Manuka Creek Railway-station	"	"	200 0 0
	1449	Lawrence to Tuapeka West	Tuapeka	"	112 2 0
	1451	Lovell's Flat to Hillend	Bruce	"	100 0 0
	1452	Milton to Coombe Hay	"	"	200 0 0
	1455	Telegraph Road (Port Molyneux)	"	"	100 0 0
	1458	Waitahuna Bridge and approaches (Athenaeum Road)	Tuapeka	"	300 0 0
	1461	Ahuriri to Cannibal Bay	Clutha	Clutha	98 12 3
	1463	Bew's Road (Wyndham Valley)	Southland	"	90 0 0
	1465	Catherwood	Clutha	"	100 0 0
	1466	Catlins S.D. (Block VIII, Sections 26 and 32)	"	"	99 6 3
	1468	Catlins Valley	"	"	308 13 10
	1469	Chloris Pass	"	"	119 19 11
	1470	Clinton to Owaka	"	"	150 0 0
	1471	Coskery's to Rankleburn	Tuapeka	"	150 0 0
	1472	Faddis Road	Clutha	"	104 7 10
	1473	Glenham Settlement roads	Southland	"	163 12 11
	1477	Houipapa School to Railway-station	Clutha	"	24 19 3
	1478	Houipapa to Catlins Bridge	"	"	149 19 10
	1480	Kaiwera Bridge (Otarua), (£1 for £1)	Southland	"	100 0 0
	1482	Katea Dairy Factory to Eason's	Clutha	"	91 9 8
	1484	Martin Road	"	"	89 10 6
	1485	Matai Stream Bridge	"	"	100 0 0
	1486	Mataura Island to Titiroa	Southland	"	100 0 0
	1487	McKenzie Road (Blocks IX and X, Glenomaru)	Clutha	"	231 3 3
	1488	Meek Road	"	"	100 0 0
	1490	Mitchell Road (Glenham), (£1 for £1)	Southland	"	54 12 3
	1491	Mokoreta Block IV (Sections 13 to 34)	"	"	197 12 8
	1492	Mokoreta Block IV (Section 33 to Cemetery)	"	"	161 13 6
	1494	Mokoreta to Rimu	Clutha	"	1 14 6
	1495	Morrison Road	"	"	50 0 0
	1496	Mouat's Saddle	"	"	55 6 3
	1497	Newhaven	"	"	112 7 0
	1498	Otanomomo	"	"	50 0 0
	1499	Otara to Haldane	Southland	"	100 0 0
	1502	Papatowai to Long Beach Creek	Clutha	"	237 4 8
	1504	Pounawea	"	"	63 9 0
	1505	Puerua Bridge (£1 for £1)	"	"	350 0 0
	1506	Quarry Hills to Waikawa	Southland	"	200 0 0
	1507	Ratanui to Papatowai	Clutha	"	127 10 0
	1508	Robertson Road (Niagara)	Southland	"	50 0 0
	1510	Seddon Road	Clutha	"	70 19 6
	1511	Shank Road (£1 for £1)	Southland	"	50 0 0
	1513	Tahakopa Valley	Clutha	"	96 10 6
	1514	Taumata Settlement to Clinton (£150, £1 for £1)	"	"	86 0 0
	1515	Tokonui to Haldane	Southland	"	198 8 10
	1516	Toe-toes, Block IV (Sections 45 to 48)	"	"	74 0 0
	1517	Tuck Creek Road	Clutha	"	52 18 0
	1518	Waikawa	Southland	"	28 16 4
	1520	Waimanaka to Fortifications	"	"	242 11 4
	1522	Waipahi to Pukerau	Clutha	"	150 0 0
	1523	Warnock Road	"	"	95 14 0
	1524	Wild Road (Toe-Toes)	Southland	"	57 10 0
	1525	Wilson Road (Glenomaru)	Clutha	"	99 13 6
	1526	Woodland S.D., Block X, Section 15	"	"	100 0 0
	1527	Avondale Stock-bridge (£1 for £1)	Wallace	Wallace	125 0 0
	1528	Bath Road (£1 for £1)	"	"	100 0 0
	1531	Birchwood Road	"	"	100 0 0
	1532	Bluff Harbour Endowment Road	Southland	"	50 0 0
	1533	Cameron Road (Maori Hill)	Wallace	"	200 0 0
	1534	Casey Road	"	"	87 13 0
	1535	Clark Road, Heddon Bush (£1 for £1)	"	"	50 0 0
	1536	Clark Road (Wairaki)	"	"	104 0 0
	1538	Clifden to Otatau (£1 for £1)	"	"	100 0 0
	1539	Coast Road, Orepuki (£1 for £1)	"	"	75 0 0
	1540	Dipton Channel Bridge	Southland	"	150 0 0
	1543	Elm Creek Road	Wallace	"	100 0 0
	1544	Feldwick Road	"	"	100 0 0
	1545	Forde Road (Woodlaw)	"	"	150 0 0
	1547	Gardner Road (£1 for £1)	"	"	50 0 0
	1550	Hill Road	"	"	22 15 0
	1551	Hillend Bush Road Cutting	Southland	"	100 0 0
	1552	Hokonui (between Section 88, Hokonui, and Section 93, Forest Hill)	"	"	99 14 6
	1553	Howard Road	Wallace	"	100 0 0
	1556	Lillburn Stream Bridge	"	"	300 0 0

TABLE NO. 4—continued.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—continued.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS, ETC.—continued.			
		OTAGO ROAD DISTRICT—continued.			£ s. d.
107	1557	Line of Hundreds (east of railway) ..	Wallace	Wallace	100 0 0
	1558	Line of Hundreds (west of railway) ..	"	"	50 0 0
	1559	Longwood, Block I (Section 40), (access) ..	"	"	32 0 0
	1561	Longwood, Block XVI (Sections 3, 4, and 10 to 12) ..	"	"	92 16 0
	1563	Longwood, Block XVII (Sections 12, 14, and 15) ..	"	"	92 3 8
	1564	Longwood, Block XVIII (Sections 9 to 14 and 6 to 17) ..	"	"	276 13 10
	1572	Mossburn to Te Anau, via Manapouri ..	"	"	21 17 0
	1573	Muir Road (Waicolo) (£1 for £1) ..	"	"	100 0 0
	1574	McFarlane Road (£1 for £1) ..	"	"	100 0 0
	1575	McNeill's Road (Jacobs River Hundred), (£75, £1 for £1) ..	"	"	75 0 0
	1582	Oreti River Stock-bridge approaches ..	Southland	"	100 0 0
	1585	Rance Road (Waimatuku) ..	Wallace	"	75 0 0
	1586	Riverton Bridge ..	Borough of Riverton	"	100 0 0
	1587	Riverton Harbour Endowment Road (£100, £1 for £1) ..	Wallace	"	100 0 0
	1588	Ronald Road (Wairio), (£1 for £1) ..	"	"	50 0 0
	1589	Scott's Gap (Lower), (£100, £1 for £1) ..	"	"	75 0 0
	1591	Station Road (Jacobs River Hundred) ..	"	"	100 0 0
	1592	Sutherland Road (£1 for £1) ..	"	"	100 0 0
	1593	Waiau, Block XI ..	"	"	107 18 0
	1598	Wild Bush to Pourakino (£1 for £1) ..	"	"	100 0 0
	1599	Wrey's Bush to Mossburn ..	"	"	150 0 0
	1600	Crockett Road ..	Southland	Mataura	40 5 6
	1601	Five Roads to Woodstock (£1 for £1) ..	"	"	150 0 0
	1603	Golden Creek Hill Cutting ..	"	"	86 0 0
	1604	Gore to Kelvin (£100, £1 for £1) ..	"	"	200 0 0
	1605	Hedgehope to Mataura (£100, £1 for £1) ..	"	"	200 0 0
	1606	Horse-shoe Bush Road (Ford's) ..	"	"	150 0 0
	1610	Mimihaui to Waireikiki ..	"	"	150 0 0
	1612	Oteramika Block III (Sections 21, 23, 24, 37, and 38) ..	"	"	138 14 0
	1616	Shepherd Bush (Oteramika) ..	"	"	100 0 0
	1618	Waireikiki to Mataura ..	"	"	100 0 0
	1619	Waireikiki Valley Road ..	"	"	48 14 9
	1620	White Road ..	"	"	67 5 0
	1621	Woodstock to Main Road (£1 for £1) ..	"	"	100 0 0
	1622	Young Road (Kamahi) ..	"	"	74 1 9
	1623	Avenal roads ..	Borough of Avenal	Invercargill	126 8 0
	1626	Kingswell Creek Drain ..	Borough of South Invercargill	"	0 9 8
	1627	Melbourne Road ..	Borough of North Invercargill	"	74 14 0
	1630	Scott Road (Seaward Bush) ..	Borough of South Invercargill	"	74 15 6
	1632	Walker Road ..	Ditto ..	"	87 0 11
	1633	Baird and Ryan Road (Timboon), (£1 for £1) ..	Southland	Awarua	60 0 0
	1634	Birs Road ..	"	"	300 0 0
	1639	Brookdale Road (Hokonui) ..	"	"	199 19 10
	1641	Cameron Road (Forest Hill) ..	"	"	41 0 0
	1644	Cemetery Road (Bluff) ..	Borough of Campbelltown	"	200 0 0
	1651	Flagstaff Road ..	Ditto ..	"	100 0 0
	1653	Forest Hill (Sections 112 and 219) ..	Southland	"	196 18 0
	1659	Horseshoe Bay Beach Road ..	Stewart Island	"	57 17 10
	1660	Horseshoe Bay Wharf Approach ..	"	"	150 0 0
	1664	Marshall and Lamond Road (Spar Bush), (£1 for £1) ..	Southland	"	50 0 0
	1667	McNeil and Clark Road (£50, £1 for £1) ..	"	"	100 0 0
	1668	McRae and Anderson Road (Hokonui) ..	"	"	149 6 10
	1669	New River Bridge (West Plains) ..	"	"	181 2 10
	1673	Point Road ..	Borough of Campbelltown	"	200 0 0
	1675	Ryan Road (Oreti) ..	Southland	"	165 6 7
	1677	Scott Road (Hokonui) ..	"	"	60 0 0
	1687	Wilson Crossing (South Forest Hill Road) ..	"	"	52 3 6
	1688	Winton Creek Channel (Limehills) ..	"	"	207 10 0
	1693	Winton, Block IX (Sections 4, 5, and 8) ..	"	"	190 0 0
	1695	Survey, acquisition, and legalisation of roads, drains, gravel-pits, tramways, &c. ..	"	"	39 6 0
	1696	Supervision ..	"	"	576 7 4
	1697	Contingencies, including unforeseen expenditure incidental to the other items of the vote ..	"	"	9 9 9
	1698	Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c. ..	"	"	303 6 11
		Total—Otago ..			£32,617 9 8

TABLE No. 4 *continued.*STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued.*

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
ROADS, ETC.—<i>continued.</i>					
<i>General—</i>					
107	1699	Compensation for injuries to employees while in discharge of their duties, and contingent expenses in connection with same	..	..	£ 1,914 s. 14 d. 10
	1700	Engineering surveys	..	..	331 11 11
	1701	Plant not chargeable to any particular work	..	..	324 8 0
	1702	Roadmen's huts, storerooms, &c.	..	..	369 18 8
	1703	Stone-crushers and road-making plant	..	..	1,418 17 6
Total—General					£4,359 10 11
Vote No. 107—Total for 1909–10					£169,955 5 4
BACKBLOCKS ROADS, ETC.					
NORTH AUCKLAND ROAD DISTRICT—					
108	1	Auckland Special Settlement to Mangakahia	Hokianga	Bay of Islands	255 3 3
	2	Awanui to Mangonui, <i>via</i> Taipa	Mangonui	..	85 10 6
	3	Broadwood to Herekino	Hokianga	..	240 8 9
	4	Carpenter Road	..	..	47 14 0
	5	Duncan Road	Mangonui	..	85 5 0
	6	Great North Road to Otukai	..	..	7 6 0
	7	Herd's Point to Takahue	Mangonui and Hokianga	..	319 8 5
	8	Herekino to Kaitaia	Mangonui	..	35 12 0
	10	Herekino to Whangape	Hokianga	..	63 19 0
	11	Horeke to Taheke, <i>via</i> Section 1, Block XII, Mangamuka Survey District	..	..	3 9 2
	12	Huahua to Mangakino	..	..	55 14 10
	15	Kaikohu to Mangakahia Church	Bay of Islands and Hokianga	..	571 0 6
	16	Karaka to Rotokakahi Block	Hokianga	..	218 13 0
	17	Katui to Marlborough Settlement	..	..	132 0 9
	18	Katui to Waipoua	..	..	36 4 9
	19	Kohumaru	Mangonui	..	50 0 0
	20	Kohukohu to Motukaraka, <i>via</i> Runa Valley	Hokianga	..	55 14 3
	21	Mangamuka to Oruru	Hokianga and Mangonui	..	103 18 0
	22	Mangatu to Katui	Hokianga	..	25 7 2
	23	Mangonui to Kohumaru Block, <i>via</i> Kenana	Mangonui	..	44 8 0
	27	Motukaraka Creamery Road	Hokianga	..	199 6 1
	29	Okaihau to Kaikohe	Bay of Islands	..	14 9 0
	30	Omanaia to Hokianga Heads	Hokianga	..	37 1 10
	31	Opouteke to Mangakahia	..	..	40 4 0
	32	Opua to Waimate	Bay of Islands	..	52 0 0
	33	Oruru to Hikurangi	Mangonui	..	1,214 19 3
	34	Otukai to Mangatete, <i>via</i> Creamery Reserve	..	..	99 17 0
	35	Pakanae Block Road	Hokianga	..	19 8 8
	36	Parahaki to Russell	Bay of Islands	..	130 6 0
	38	Pirikaha	Mangonui	..	48 10 0
	41	Takahue Survey District, Block VI (access to Sections 13, 15, and 16)	..	..	104 12 0
	44	Underwood Road	Hokianga	..	77 1 8
	46	Waimamaku to Opanaki—Hokianga Road..	..	..	37 15 3
	47	Waimatanui	..	..	424 14 4
	48	Waiote—Kumarau	..	..	129 12 0
	49	Waiotemarama	..	..	264 18 3
	50	Waipoua Survey District, Section 26, Block XI (access)	..	..	214 15 9
	52	Waoku Extension Block (access)	..	..	19 11 6
	54	Whangape to Mangonuiwae, <i>via</i> Rotokakahi Block	..	..	513 3 1
	55	Whangape Track	..	..	223 8 6
	56	Yarborough Road	..	..	28 12 0
	57	Maungakaramea to Tangiteroria	Whangarei	Marsden	62 5 8
	58	Maungaturoto to Cove, <i>via</i> Rowsell's	Whangarei and Otamatea	..	355 6 7
	59	Poroti to Tangiteroria	Whangarei	..	28 15 10
	60	Avoca Settlement (South Road)	Hobson	Kaipara	24 0 0
	62	Dargaville to Whangarei County Boundary	..	..	289 6 6
	63	Mangakahia Bridge to Mangakahia Church ..	..	..	753 15 10
	66	Tangiteroria to Tangihua, Block II	..	..	97 19 0
	67	Supervision	..	..	314 15 10
Total—North Auckland					£8,257 8 9

TABLE No. 4 *continued.*STATEMENT showing the NET EXPENDITURE ON ROADS. &c.—*continued.*

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.		
		BACKBLOCKS ROADS, ETC.— <i>continued.</i>					
		AUCKLAND ROAD DISTRICT—			£	s.	d.
108	69	Ahuroa Parish (access to Section 101) ..	Rodney ..	Kaipara ..	49	18	6
	70	Ahuroa Railway-station to Komokoriki ..	" ..	" ..	23	14	6
	71	Hukatere Access Road ..	Otamatea ..	" ..	41	15	5
	72	Hukatere District Roads ..	" ..	" ..	16	5	0
	74	Makarau Railway-station to West Coast Road ..	Rodney and Waitemata ..	" ..	32	14	6
	75	Great Barrier Island (Cape Barrier to Tryphena Harbour) ..	No county ..	Waitemata ..	15	0	0
	76	Great Barrier Island (Whangapara to Awanga) ..	" ..	" ..	40	4	6
	77	Great Barrier Island (Harataonga to Port Fitzroy) ..	" ..	" ..	94	16	4
	78	Great Barrier Island (Okiwi Post-office to Katherine Bay, <i>via</i> Tapuwai) ..	" ..	" ..	47	19	0
	79	Great Barrier Island (Tryphena to Kaitoke Beach) ..	" ..	" ..	11	3	0
	80	Coromandel to Mercury Bay (continuation of main through road) ..	Coromandel ..	Thames ..	413	17	0
	81	Tairua to Hikuwai (Upper Landing) ..	Thames ..	" ..	416	9	4
	82	Hetherington Road ..	Raglan ..	Franklin ..	93	13	1
	83	Kirikiri to Te Akau through Section 60 ..	" ..	" ..	96	9	6
	84	Klondyke ..	" ..	" ..	3	10	0
	85	Matahuru Valley to Proctor's ..	Waikato ..	" ..	81	3	2
	86	Maungatawhiri to Waitakaruru ..	Waikato and Thames ..	" ..	95	11	0
	87	Miranda to Maramarua ..	Waikato and Manukau ..	" ..	196	6	7
	88	Moewaka ..	Raglan ..	" ..	207	15	0
	89	Otau to Hunua ..	Manukau ..	" ..	253	15	10
	90	Otau Road ..	" ..	" ..	144	4	6
	91	Ponganui ..	Raglan ..	" ..	95	8	9
	92	Taupiri Parish (access to Section 485) ..	Waikato ..	" ..	49	6	0
	93	Te Akau Block to Tuakau—Raglan Road ..	Raglan ..	" ..	198	0	6
	95	Turner's Junction to West Coast (through Block VI, Awaroa) ..	" ..	" ..	31	6	6
	96	Wairoa River to Otau ..	Manukau ..	" ..	152	16	2
	97	Whangape Parish (Sections 126, 127, and 128) ..	Raglan ..	" ..	64	14	10
	99	Kaihere ..	Ohinemuri ..	Ohinemuri ..	22	18	3
	100	Mangawhara ..	" ..	" ..	25	18	8
	102	Tahuna to Proctor's ..	" ..	" ..	114	1	1
	103	Torehapa ..	" ..	" ..	130	6	4
	104	Waikaka to Waitakaruru ..	" ..	" ..	80	8	7
	105	Waiti ..	" ..	" ..	118	9	6
	106	Hutewai Bridge ..	Raglan ..	Waikato ..	99	19	10
	107	Karioi to Ruapuke Mountain Road ..	" ..	" ..	54	5	8
	108	Mangakino ..	Raglan and Kawhia ..	" ..	79	2	4
	109	Papanui Bridge ..	Raglan ..	" ..	80	15	6
	110	Pehehau ..	" ..	" ..	29	17	0
	111	Pehehau to Kaniwhaniwha ..	" ..	" ..	142	16	9
	112	Ruapuke Mountain Road ..	" ..	" ..	40	1	4
	115	Awaroa to Mahoe ..	Kawhia ..	Taumarunui ..	1,128	6	8
	116	Awaroa to Waiharakeke ..	" ..	" ..	49	0	1
	117	Caves Road ..	Waitomo ..	" ..	259	15	11
	118	Hauturu ..	Kawhia and Waitomo ..	" ..	921	4	9
	119	Hauturu to Otorohanga ..	Waitomo ..	" ..	438	2	3
	121	Kauri ..	Kawhia ..	" ..	161	9	0
	122	Kawa ..	Waitomo and West Taupo ..	" ..	70	5	10
	123	Kawhia to Marokopa River ..	Kawhia ..	" ..	2,665	8	9
	124	Kihi ..	" ..	" ..	1,103	2	5
	125	Kinohaku to Waiharakeke ..	" ..	" ..	41	8	0
	126	Lemon Point to Te Maika Road ..	" ..	" ..	93	15	4
	127	Mahoe ..	" ..	" ..	382	11	5
	128	Mairoa (North of Ngapaenga) ..	Waitomo ..	" ..	342	9	3
	129	Mangaiti ..	Kawhia ..	" ..	306	1	6
	130	Oamaru ..	Waitomo ..	" ..	127	18	6
	131	Okupata Junction to Pekanui ..	Kawhia and Waitomo ..	" ..	198	15	9
	132	Orongo ..	Waitomo ..	" ..	50	2	0
	133	Otorohanga to Hangatiki—Waitomo Road ..	" ..	" ..	119	6	0
	134	Otorohanga to Pirongia ..	" ..	" ..	716	19	0
	135	Tapuae ..	" ..	" ..	396	7	2
	136	Taumatatotara East ..	Kawhia ..	" ..	73	6	1
	137	Taumatatotara West ..	" ..	" ..	193	2	5
	138	Te Maika ..	" ..	" ..	937	12	0
	139	Te Maika to Marokopa ..	" ..	" ..	146	15	8
	140	Waihohonu ..	Waitomo ..	" ..	61	12	5
	141	Clayton Road ..	Rotorua ..	Bay of Plenty ..	71	9	6
	142	Dansey Road ..	" ..	" ..	33	2	0
	143	Kaikokupu to Taheke ..	" ..	" ..	16	8	0

TABLE NO. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
BACKBLOCKS ROADS, ETC.— <i>continued</i> . AUCKLAND ROAD DISTRICT— <i>continued</i> .					£ s. d.
108	144	Mamaku to Maraeroa—Oturoa Block	Rotorua ..	Bay of Plenty	43 7 3
	145	Mangorewa Gorge to Mamaku	" ..	"	94 13 9
	147	Ngawaro to Te Puke	Rotorua and Tauranga	"	58 1 0
	149	Pongakawa to Lake Rotoehu	Ditto ..	"	16 18 0
	150	Pungarehu	Rotorua ..	"	15 10 0
	151	Puwhenua	" ..	"	30 19 1
	152	Rangiuuru to Mangorewa Gorge	Rotorua and Tauranga	"	75 5 2
	153	Rotongata to Hamurana	Rotorua ..	"	20 0 0
	154	Whataroa	" ..	"	113 8 5
	155	Whirinaki Valley	Rotorua and East Taupo	"	252 15 9
	156	Akeake	Tauranga ..	Tauranga	153 18 6
	158	Clover Road	" ..	"	31 18 6
	159	Faulkner Road	" ..	"	1 12 0
	160	Harray Road	" ..	"	29 4 0
	161	Kaimai	" ..	"	541 4 8
	162	Kaimai Road (to Sections 579, 580, 581, 582, and 583, Te Papa Parish)	" ..	"	61 19 0
	163	Kaituna	" ..	"	78 4 0
	164	Karano	" ..	"	21 17 5
	165	Komete	" ..	"	22 4 0
	166	Ngamuawahine	" ..	"	9 2 9
	167	Omanawa	" ..	"	61 10 0
	168	Rangiuuru Settlement to Rangiuuru—Mangorewa Gorge Road	" ..	"	71 10 0
	169	Te Tumu	" ..	"	34 18 0
	170	Thompson Track	Tauranga and Piako	"	204 6 8
	171	Waihi Swamp Road (Pongakawa to Maketu)	Tauranga ..	"	50 12 6
	172	Supervision	" ..	"	1,431 9 11
Total—Auckland					£18,619 7 4
GISBORNE ROAD DISTRICT—					
	173	Appleton Road	Opotiki ..	Bay of Plenty	23 17 0
	174	Fraser Road (near Motu)	Waikohu ..	"	116 4 6
	175	Hereperu North	Whakatane ..	"	4 16 0
	177	Hewitt Road	" ..	"	38 1 3
	178	Hikurangi Survey District (through Section 2, Block XV)	Waiapu ..	"	96 7 8
	180	Kowhai	Opotiki ..	"	23 3 0
	181	Mataorie to Whakatane—Nukuhou Road	" ..	"	181 17 2
	183	Motu Valley	Waikohu ..	"	406 8 1
	184	Neill Road	" ..	"	260 4 2
	185	Oliver Road	" ..	"	158 10 9
	186	Opotiki to Otoko	Opotiki ..	"	1,161 4 3
	187	Opouriao Valley Road to Wainui and Mataorie Landing	Whakatane ..	"	248 19 1
	188	Pakihi	Opotiki ..	"	2,902 6 3
	189	Philp Road	" ..	"	42 9 0
	190	Pikowai North	Whakatane ..	"	38 17 0
	191	Ross Road	" ..	"	147 19 3
	192	Ruatahuna to Waikaremoana	" ..	"	265 0 8
	193	Ruatuna to Ohiwa Landing	Opotiki ..	"	36 15 0
	194	Ryan's Bridge	" ..	"	198 5 9
	195	Sladden Road	Whakatane ..	"	7 19 6
	196	Stanley Track	" ..	"	221 6 7
	197	Stanley Road to Opouriao, via Section 348, Waimana Parish	" ..	"	268 6 3
	198	Tauwhareparae	Cook ..	"	274 4 8
	199	Tokomaru to Mata	Waiapu ..	"	150 0 0
	200	Tutaetoko	Opotiki ..	"	605 14 1
	201	Waiawa	" ..	"	10 4 3
	202	Waiapu Inland (access to Section 1, Block I, Waingaromia)	Cook ..	"	20 0 0
	203	Waikohu Valley	Waikohu ..	"	19 16 0
	204	Waimana Gorge and Deviation	Whakatane ..	"	920 11 9
	205	Waimata to Waiapu Inland Road (Todd's)	Cook ..	"	208 4 8
	206	Waioeka River Main Road	Opotiki ..	"	912 2 4
	208	Waiotahi Valley	" ..	"	89 14 11
	209	Waipiro to Mata	Waiapu ..	"	60 0 0
	210	Waitahaia	" ..	"	305 18 3
	211	Whinray Road	Opotiki ..	"	94 7 8
	214	Bushy Knoll Road	Cook ..	Gisborne	22 2 8
	215	Gisborne to Wairoa (deviation, via Te Arai Valley)	" ..	"	76 7 0
	216	Hangaroa River Bridge No. 2	" ..	"	948 19 6
	217	Hangaroa to Tahora (Steele's)	" ..	"	673 17 8

TABLE NO. 4 *continued.*
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued.*

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.		
		BACKBLOCKS ROADS, ETC.—<i>continued.</i>					
		GISBORNE ROAD DISTRICT—<i>continued.</i>					
108	218	Hangaroa to Waikaremoana	Cook and Wairoa ..	Gisborne ..	£	s.	d.
	219	Mangapoike Valley (east end), (£1,500 contributed by settlers)	.. ..	.. ..	118	7	5
	220	Mutuera .. ..	.. ..	.. ..	2,589	16	8
	221	Tokanui .. ..	.. ..	.. ..	34	8	0
	222	Supervision .. ..	.. ..	.. ..	376	14	6
					352	19	4
		Total—Gisborne			£15,711 9 6		
		TARANAKI ROAD DISTRICT—					
	223	Ameku	Waimarino ..	Taumarunui ..	33	16	0
	224	Arapae	Waitomo ..	.. ..	1,816	7	7
	225	Awakino Valley (Lower)	Awakino and Clifton ..	.. ..	324	11	4
	226	Awakino Valley (Upper)	Awakino ..	.. ..	128	0	4
	227	Hapurua	Ohura ..	.. ..	160	2	4
	228	Harvey .. ..	.. ..	.. ..	209	13	1
	229	Horopito	Waimarino ..	.. ..	141	1	7
	230	Huhatahi	Ohura ..	.. ..	143	1	7
	231	Huioteko Stream Bridge	Waitomo ..	.. ..	54	5	11
	232	Kaeae .. ..	.. ..	.. ..	36	1	6
	233	Kairimu	Awakino ..	.. ..	48	1	1
	234	Kairimu Stream Bridge .. ..	.. ..	.. ..	66	13	6
	235	Kaitieke	Waimarino ..	.. ..	384	16	5
	236	Kakahi	Ohura ..	.. ..	107	2	1
	237	Kakahi Stream Bridge .. ..	.. ..	.. ..	111	16	8
	240	Kawautahi	West Taupo ..	.. ..	54	8	8
	241	Kie Kie	Waitomo ..	.. ..	632	2	6
	242	Kiritehere	Awakino ..	.. ..	138	6	6
	243	Kiritehere Bridge .. ..	.. ..	.. ..	277	0	8
	244	Kiwi	Clifton ..	.. ..	571	2	0
	245	Kohua	Waitomo ..	.. ..	85	18	9
	246	Kumara .. ..	.. ..	.. ..	552	18	8
	247	Kururau	Ohura ..	.. ..	1,472	18	3
	249	Makarakia	Clifton ..	.. ..	7	6	0
	250	Mangakahikatea	Ohura ..	.. ..	171	14	10
	251	Mangakokopu	Awakino ..	.. ..	100	0	0
	252	Mangamaire Bridge	Waimarino ..	.. ..	70	7	9
	253	Manganui	Awakino ..	.. ..	1,841	19	0
	254	Manganui-o-te-ao	Waimarino ..	.. ..	230	1	0
	256	Mangaotaki to Mairoa	Waitomo ..	.. ..	68	15	5
	257	Mangaotaki Valley (Lower)	Waitomo and Awakino ..	.. ..	273	11	10
	258	Mangaotaki Valley (Upper)	Awakino ..	.. ..	86	5	4
	259	Mangapapa	Ohura ..	.. ..	640	11	5
	260	Mangapohue	Waitomo, Awakino, and Kawhia ..	.. ..	924	13	6
	261	Mangaturuturu	Waimarino ..	.. ..	221	4	4
	262	Marokopa River to Mahoenui	Awakino and Waitomo ..	.. ..	226	11	0
	263	Marokopa River Bridge (Te Anga), (on account)	Kawhia and Awakino ..	.. ..	57	8	0
	264	Marokopa Valley	Ditto ..	.. ..	495	8	1
	265	Middle Road	Waimarino ..	.. ..	54	19	9
	266	Miroahuaio to Matiere	Ohura ..	.. ..	1,899	17	4
	267	Mohakatino Valley	Clifton ..	.. ..	17	12	9
	268	Moki .. ..	.. ..	.. ..	885	19	10
	269	Motete	Waimarino ..	.. ..	57	10	5
	270	Ngapaenga	Waitomo ..	.. ..	737	5	2
	271	Ohura River Bridge (Kururau)	Ohura ..	.. ..	41	19	10
	272	Ohura Road	Stratford, Whangamomona, Ohura, and Waitomo ..	Taumarunui and Stratford ..	6,473	14	8
	273	Oio	Waimarino and West Taupo ..	Taumarunui ..	404	15	8
	274	Otautu	Waimarino ..	.. ..	21	0	6
	275	Owhango	West Taupo ..	.. ..	77	17	2
	276	Otunui South	Ohura ..	.. ..	317	0	4
	278	Paraheka	Waitomo ..	.. ..	783	16	10
	279	Parapara to Raetihi	Waimarino ..	.. ..	371	8	3
	280	Paro	Waitomo ..	.. ..	558	6	2
	281	Patua	Waimarino ..	.. ..	7	6	7
	282	Pehu .. ..	.. ..	.. ..	15	7	3
	284	Pirere	Ohura ..	.. ..	152	11	2
	285	Pomorangi	Awakino ..	.. ..	241	2	9
	286	Pukearuhe	Waitomo ..	.. ..	190	6	1
	287	Pukekaha	Waimarino ..	.. ..	43	2	2
	288	Pungarehu	Waitomo ..	.. ..	708	5	2

TABLE NO. 4—*continued.*
STATEMENT showing the NET EXPENDITURE on ROADS, &c.—*continued.*

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		BACKBLOCKS ROADS, ETC.— <i>continued.</i>			£ s. d.
108		TARANAKI ROAD DISTRICT— <i>continued.</i>			
289		Raetihi to Ohura	Waimarino ..	Taumarunui ..	127 0 1
290		Ratamairi	" ..	" ..	8 4 0
291		Rerekino	Clifton ..	" ..	74 12 4
292		Retaruke River Bridge	Waimarino ..	" ..	220 5 1
293		Retaruke Valley	" ..	" ..	246 5 0
294		Retaruke Valley (Upper)	" ..	" ..	16 10 10
295		Roto	Ohura ..	" ..	78 14 11
296		Tangarakau River Bridge (top crossing)	Waitomo ..	" ..	317 4 7
297		Tangitu	Clifton ..	Taumarunui and Stratford	178 6 6
298		Te Maire	West Taupo ..	Taumarunui ..	49 14 0
299		Te Rata	Waimarino ..	" ..	9 12 0
300		Tokirima Road to Harvey Road (Ohura Deviation)	Ohura ..	" ..	118 17 11
301		Tokirima (Kaikara Road to Maraekowhai Block)	" ..	" ..	40 12 0
302		Tokirima Road to Wanganui River	" ..	" ..	241 12 8
303		Tongaporutu to Mangaroa	Clifton and Ohura	" ..	983 15 6
304		Tongaporutu River Bridge (Mangatawa)	Clifton ..	" ..	219 19 2
305		Turoto	Ohura ..	" ..	826 5 7
306		Waikaka	" ..	" ..	728 15 9
307		Waikawau	Awakino ..	" ..	6 15 0
309		Waiora	Ohura ..	" ..	187 18 5
310		Waipapa	Waitomo ..	" ..	31 6 1
311		Waipaua	Awakino ..	" ..	399 16 0
312		Wairere to Mokauiti	Waitomo ..	" ..	395 19 10
313		Waitaanga North	Ohura ..	" ..	14 14 9
315		Waitawhena	" ..	" ..	1,784 8 5
317		Whakahau	Awakino ..	" ..	311 0 9
318		Carrington	Taranaki and Egmont	Taranaki ..	174 11 5
319		Warea and Waiweranui Bridges	Ditto ..	" ..	629 4 0
320		Rawhitiroa	Eltham ..	Egmont ..	1,441 15 4
321		Tangahoe (Whareroa to Rehu Village)	Hawera and Eltham	" ..	310 12 7
322		Kohuratahi	Whangamomona	Stratford ..	235 8 6
323		Manga	Stratford ..	" ..	51 7 0
324		Mangaopapa (Junction Road to Mohakau Road)	Clifton and Stratford	" ..	931 3 10
325		Mangaowata	Whangamomona	" ..	561 9 5
326		Marco	" ..	" ..	116 4 6
328		Matau Township to Tarawai	Clifton ..	" ..	197 8 3
329		Poarangi	Stratford ..	" ..	22 0 0
330		Putikituna	Whangamomona ..	" ..	300 0 0
332		Whangamomona to Wanganui River	" ..	" ..	1,322 14 11
333		Ahoroa	Patea ..	Patea ..	503 7 7
334		Ahu Ahu	Waitotara ..	" ..	201 13 5
335		Makakaho (Upper Waitotara)	Patea ..	" ..	168 19 1
336		Makakaho River Bridge	" ..	" ..	405 10 11
339		Puao	" ..	" ..	150 0 0
340		Ridge Road	" ..	" ..	185 4 6
341		Te Ngaue	" ..	" ..	113 9 6
342		Te Tuhi	Waitotara ..	" ..	248 14 6
343		Waitotara Valley Road	Patea ..	" ..	19 10 2
345		Weraweraonga	" ..	" ..	92 4 6
346		Karetu	Rangitikei ..	Rangitikei ..	68 17 0
347		Kaweka	" ..	" ..	126 3 5
348		Mangahowhi	Wanganui ..	" ..	35 9 6
349		Mangamahoe	Rangitikei ..	" ..	7 5 5
350		Mason's to Parapara	Wanganui and Waimarino	" ..	2,461 1 1
351		Mataiaponga	Rangitikei ..	" ..	34 8 4
352		Mataroa to Mangaweka	" ..	" ..	390 15 5
353		Namunui	" ..	" ..	20 16 4
354		Owhakura	Wanganui ..	" ..	187 0 0
356		Raupiu	" ..	" ..	42 15 3
357		Taheke	Rangitikei ..	" ..	60 2 4
358		Taihape to Otuarei	" ..	" ..	37 11 0
360		Te Komai	Wanganui ..	" ..	85 7 8
361		Turakina Valley	Rangitikei ..	" ..	303 7 1
362		Tutupapa	" ..	" ..	36 1 1
363		Upokonui	Wanganui ..	" ..	103 16 2
364		Waiaruhe	" ..	" ..	19 18 8
365		Wanganui River Road (Left Bank)	" ..	" ..	261 9 6
366		Supervision	" ..	" ..	2,711 17 2
		Total—Taranaki			£50,022 13 10

TABLE NO. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.		
		BACKBLOCKS ROADS, ETC.— <i>continued</i> .			£	s.	d.
108	367	WELLINGTON ROAD DISTRICT— Frasertown to Mangapoike River	Wairoa ..	Gisborne ..	339	0	0
	368	Kakariki	" ..	" ..	77	11	0
	370	Mangaone	" ..	" ..	47	1	0
	371	Mangapahi	" ..	" ..	120	3	0
	372	Mangarewarewa	" ..	" ..	107	12	0
	373	Maraenui	" ..	" ..	9	12	0
	375	Nuhaka River Road	" ..	" ..	16	12	0
	376	Omahanui to Whataroa	" ..	" ..	89	6	2
	378	Opouiti to Mangapoike	" ..	" ..	983	4	4
	379	Orewha	" ..	" ..	70	12	6
	380	Ruakituri River Bridge (Boothman's) ..	Cook and Wairoa	" ..	913	14	10
	381	Ruakituri Valley	" ..	" ..	640	11	8
	382	Waikaremoana Survey District (access to Run 79)	Wairoa ..	" ..	96	11	0
	384	Kaweka	Hawke's Bay ..	Hawke's Bay ..	156	10	8
	385	Richmond Road	" ..	" ..	46	18	0
	386	Makotuku to Matamau	Dannevirke ..	Waipawa ..	3	17	0
	387	Maunga Road (extension towards Otanga) ..	" ..	" ..	32	11	0
	388	Auputa	Kiwitea ..	Rangitikei ..	63	0	8
	390	Kew	" ..	" ..	116	14	8
	392	Mangatohu	" ..	" ..	292	7	10
	393	Pourangaki	" ..	" ..	17	17	1
	394	Titirangi	" ..	" ..	227	6	0
	395	Conspicuous Road	" ..	Oroua ..	399	8	1
	396	Umutoi	Kiwitea and Pohangina	" ..	394	3	4
	397	Birch Road	Weber and Pata-ngata	Pahiatua ..	64	14	5
	398	Central Road (Hall Block)	Pahiatua ..	" ..	222	19	9
	399	Cross Road (Hall Survey District)	" ..	" ..	162	10	3
	400	Kawakawa	Akitio ..	" ..	30	15	0
	402	Makoura	Akitio and Masterton	Pahiatua and Masterton	81	16	6
	403	Mangamaire	Dannevirke ..	Pahiatua ..	28	6	0
	404	Mangapuaka	" ..	" ..	56	10	3
	406	Marainanga	Akitio ..	" ..	279	5	0
	407	Piper Road	Pahiatua ..	" ..	1,135	18	4
	408	Range Road	Akitio ..	" ..	275	3	0
	409	Range Road (South)	" ..	" ..	342	1	1
	410	Spur Road	" ..	" ..	483	19	4
	411	Sugar-loaf Road	" ..	" ..	370	19	4
	412	Te Uri bridges	Dannevirke ..	" ..	79	10	6
	414	Waewaepa	Pahiatua ..	" ..	255	17	8
	415	Waihoki Valley	Akitio ..	Pahiatua and Masterton	276	13	11
	416	Waiowaka	" ..	Pahiatua ..	1,797	9	4
	418	Craigie-lea	Wairarapa South ..	Wairarapa ..	170	0	5
	419	McRae Road	Masterton ..	" ..	84	2	3
	420	Pakowai (Anderson's, towards Tinui—Pakowai Road)	Castlepoint ..	" ..	106	17	7
	422	Manakau North	Horowhenua ..	Otaki ..	100	0	0
	423	Manakau South	" ..	" ..	100	0	0
	426	Waikanae to Upper Hutt	Hutt ..	Otaki and Hutt	65	5	3
	427	Waitohu Extension	Horowhenua ..	Otaki ..	89	16	0
	428	Mungaroa to Upper Hutt	Hutt ..	Hutt ..	40	7	11
	429	Supervision	" ..	" ..	1,487	18	7
		Total—Wellington			£13,451	3	6
		NELSON ROAD DISTRICT—					
	430	Alexander Bluff Road	Waimea ..	Motueka ..	378	2	11
	432	Handcock's to Wainui	Takaka ..	" ..	51	12	0
	436	Lee Valley	Waimea ..	" ..	123	3	5
	438	Rainy River Road	" ..	" ..	92	17	6
	439	Rainy River to Big Bush	" ..	" ..	447	5	0
	440	Slippery Creek to Sherry Valley	" ..	" ..	238	0	6
	441	Tadmor to Baton	" ..	" ..	116	9	3
	442	Wainui to Awaroa	Takaka ..	" ..	143	8	9
	444	Wangapeka Settlement (Sherry Road) ..	Waimea ..	" ..	121	15	10
	447	Glengarry	Murchison ..	Buller ..	256	11	3
	448	Glenroy to Maruia	" ..	" ..	614	6	9
	451	Hope Junction to Lake Rotorua	" ..	" ..	64	7	1
	452	Hudson's Creek Road	" ..	" ..	92	7	6
	455	Maruia Valley	" ..	" ..	283	13	10
	456	Matakitaki to Horse Terrace	" ..	" ..	355	2	2
	458	Matiri River Road	" ..	" ..	99	11	6
	459	Newman Road	" ..	" ..	50	0	0
	460	Owen Junction to Murchison Creek	" ..	" ..	107	6	0
	461	Supervision	" ..	" ..	259	8	10
		Total—Nelson			£3,895	10	1

TABLE NO. 4—*continued.*
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued.*

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		BACKBLOCKS ROADS, ETC.—<i>continued.</i>			
		MARLBOROUGH ROAD DISTRICT—			£ s. d.
108	462	Anakoa to Manaroa	Sounds ..	Nelson ..	24 19 7
	464	Crail Bay to Manaroa	" ..	" ..	44 6 8
	465	Crail Bay to South-east Bay	" ..	" ..	6 17 6
	467	Elaine Bay to Harvey's Bay	" ..	" ..	27 15 6
	469	Fairy Bay to Tawero Point	" ..	" ..	50 5 7
	470	Harvey's Bay to Nydia Bay	" ..	" ..	214 13 9
	471	Harvey's Bay to Tawero Point	" ..	" ..	23 7 6
	472	Kenepuru to Anakoa	" ..	Nelson and Wairau ..	6 16 0
	473	Mahau Sound	" ..	Nelson ..	9 3 7
	474	Maori Bay to Black Point	" ..	" ..	16 14 0
	475	Nydia Bay to Maori Bay	" ..	" ..	13 12 0
	478	Skiddaw Run to Te Matau-a-Maui	" ..	" ..	16 4 0
	479	Skiddaw to Yncyca Bay	" ..	" ..	123 4 4
	481	Te Matau to Wet Inlet	" ..	" ..	22 3 9
	482	Waitaria to Manaroa	" ..	" ..	10 18 9
	484	Bartlett's Creek Road	Marlborough ..	Wairau ..	75 14 6
	486	Fabian's Valley (access to S.G.R. No. 154)	" ..	" ..	45 2 3
	487	Hakahaka to Opihi	Sounds ..	" ..	0 8 0
	488	Kaituna to Tuamarina	Marlborough ..	" ..	20 11 0
	490	Mahakipawa to Double Bay	Sounds and Marlborough ..	" ..	54 16 8
	493	Onahau to Anakiwi	Sounds ..	" ..	74 18 0
	494	Onahau Bay to Kenepuru Sound	" ..	Wairau and Nelson ..	109 17 6
	495	Queen Charlotte Sound	" ..	Wairau ..	53 17 6
	497	Rock Ferry to Bartlett's Creek	Marlborough ..	" ..	458 3 11
	498	Run 74 (Onamalutu)	" ..	" ..	214 16 10
	500	Top Valley to Bartlett's Creek	" ..	" ..	167 11 4
	501	Tory Heads to Waikawa	Sounds ..	" ..	67 7 6
	502	Whatamongo to Diffenbach	" ..	" ..	29 13 11
	503	White's Bay to Port Underwood	" ..	" ..	9 0 4
	505	Puhipuhi	Kaikoura ..	Hurunui ..	168 8 0
	506	Run 105B (Kaitarau)	" ..	" ..	19 18 5
	508	Spey roads	" ..	" ..	100 0 0
	509	Supervision	" ..	" ..	338 9 3
		Total—Marlborough			£2,619 17 5
		WESTPORT ROAD DISTRICT—			
	511	Little Wanganui River Bridge	Buller ..	Motueka ..	774 1 6
	512	Mokihinui to Little Wanganui	" ..	" ..	968 12 9
	513	Otumahana to Karamea Bridge (road deviation)	" ..	" ..	248 16 7
	514	Brighton Block Road	" ..	Buller ..	203 15 3
	515	Horseshoe Road (Maruia Plains)	" ..	" ..	141 0 0
	516	Mokihinui River Bridge	" ..	Buller and Motueka ..	1,271 2 6
	517	Utopia	" ..	Buller ..	95 6 0
	518	Supervision	" ..	" ..	93 6 8
		Total—Westport			£3,796 1 3
		WESTLAND ROAD DISTRICT—			
	519	Brown Creek Road	Inangahua ..	Buller ..	52 9 9
	520	Inangahua Landing to Coal Creek	" ..	" ..	124 9 0
	522	Barrytown to Punakaiki	Grey ..	Grey ..	354 0 0
	523	Big River	" ..	" ..	10 0 0
	525	Cobden to Runanga	" ..	" ..	44 0 0
	527	Matthew Road	" ..	" ..	9 10 6
	528	Meagher's Creek to Sea-beach	" ..	" ..	100 0 0
	529	Porarari	" ..	" ..	42 10 0
	530	Punakaiki	" ..	" ..	57 0 0
	531	Rough River Track	" ..	" ..	19 0 0
	533	Ahaura to Haupiri	" ..	Westland ..	411 0 0
	534	Arawata to Cascade	Westland ..	" ..	84 2 3
	535	Big Bay	" ..	" ..	121 13 3
	537	Butement Road	" ..	" ..	67 13 6
	538	Clear Creek Bridge	Grey ..	" ..	105 7 2
	539	Cook River to Karangarua	Westland ..	" ..	199 11 6
	541	Harris Road	Grey ..	" ..	150 0 0
	542	Hatters to Haupiri	" ..	" ..	183 0 0
	543	Haupiri to Amuri	" ..	" ..	100 0 0

TABLE NO. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		BACKBLOCKS ROADS, ETC.— <i>continued</i> .			
108		WESTLAND ROAD DISTRICT— <i>continued</i> .			£ s. d.
	544	Jacobs to Karangarua (Hunt Creek)	Westland	Westland	291 5 4
	545	Kokatahi (Upper) to Doughboy	"	"	42 3 7
	546	Kokiri to Moana	Grey	"	528 10 0
	547	La Fontaine Road and Bridge	Westland	"	122 16 9
	548	Mahitahi to Bruce Bay (Paringa Landing) ..	"	"	8 11 0
	549	Makawhio to Manakiaiana	"	"	399 6 5
	550	Okuru Track	"	"	49 19 5
	551	Omoeroa to Waiho	"	"	348 12 3
	553	Ross to Kokatahi	"	"	0 3 0
	555	Slatey Creek Bridge	Grey	"	219 12 5
	559	Waikukupa Bridge	Westland	"	767 6 3
	560	Waipuna Bridge	Grey	"	107 1 9
	562	Waitaha Settlement extension	Westland	"	10 0 0
	566	Waterson Road	Grey	"	200 0 0
	567	Supervision	"	"	130 2 2
		Total—Westland			£5,460 17 3
		OTAGO ROAD DISTRICT—			
	569	Ormaglade	Tuapeka	Tuapeka	100 0 0
	570	Mount Nicholas to Greenstone	Lake	Wakatipu	146 5 0
	571	Barewood Runs	Taieri	Taieri	200 10 8
	573	Andrews Road	Clutha	Clutha	100 0 2
	574	Buckingham Road	Southland	"	47 16 8
	575	Crosbie Road	"	"	47 14 0
	576	Ewart Road to Section 34, Block VI, Glenomaru	Clutha	"	99 14 11
	577	Gregg Road (Otago)	Southland	"	138 16 7
	578	Harrison Road	Clutha	"	73 11 7
	580	Hewson Road to Section 62, Block IV, Catlin's	"	"	93 18 11
	581	Kidd Road	Southland	"	112 15 0
	582	King Road (Otago)	"	"	50 0 0
	583	McKenzie Road (Block VII, Glenomaru) ..	Clutha	"	51 10 9
	584	Morris Saddle	"	"	89 11 8
	585	Pascoe Road	Southland	"	79 15 0
	586	Stewart Road	"	"	149 19 11
	588	Waikawa, Block I	"	"	3 15 0
	589	Wyndham Valley Road	"	"	103 19 1
	590	Cody Road (Hillend)	"	Wallace	46 12 3
	591	Crowe Road (Lillburn)	Wallace	"	149 11 3
	592	Lillburn, Block II	"	"	93 0 6
	593	Matthew Road	Southland	"	19 0 0
	594	McLean Road (Longwood)	Wallace	"	52 12 7
	595	McRae Road (deviation)	"	"	33 1 0
	597	Waiau, Block X (Sections 130 to 138) ..	"	"	99 17 7
	598	Hodgson Road (Kapuka)	Southland	Mataura	221 13 6
	600	Oteramika, Block III (Sections 64 and 68) ..	"	"	93 2 0
	603	Brown's to Settlers' Reserve	"	Awarua	87 19 6
	606	Invercargill, Block XV (Section 136) ..	"	"	155 16 4
	608	Kingswell Creek to Seaward Bush	"	"	87 18 9
	609	Lora Stream Bridge (Section 148, Forest Hill) ..	"	"	99 15 10
	610	Makarewa River Bridge (Grove Bush), (access road)	"	"	188 14 6
	611	Martin Road	"	"	7 0 0
	612	Mason Road (Seaward Bush)	"	"	56 0 0
	614	McKinnon Road and drain	"	"	6 11 8
	615	Settlers' Bush Reserve Road	"	"	98 19 0
	616	Stewart Island Roads	Stewart Island	"	1,865 8 6
	617	Taylor Gorge	Southland	"	20 8 0
	618	Winton, Block VIII	"	"	108 15 0
	619	Wood Road, Campbelltown	"	"	35 19 7
	620	Supervision	"	"	493 13 4
		Total—Otago			£5,811 5 7
		GENERAL—			
	621	Miscellaneous works and services, including assistance towards the construction of roads, bridges, tracks, &c.			331 11 10
		Total—General			331 11 10
		Vote No. 108—Total for 1909–10			£127,977 6 4
		CONSOLIDATED FUND. :			
19	1	MAINTENANCE AND IMPROVEMENT OF ROADS—Expenses incidental to the maintenance and improvement of roads			£28,563 11 8

TABLE NO. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
ROADS TO OPEN UP CROWN LANDS.					
NORTH AUCKLAND ROAD DISTRICT—					
126	3	Kohumaru Block	Mangonui ..	Bay of Islands	£ 474 8 0
	5	Mangakahia Block	Whangarei ..	"	134 6 9
	7	Opouteke Block	Hokianga ..	"	562 6 10
	12	Otukai Block	Mangonui ..	"	57 18 10
	13	Oue Block	Whangarei and Hobson ..	"	962 13 8
	17	Rotokakahi Block	Hokianga ..	"	322 5 7
	18	Ruaoterei Block	Bay of Islands ..	"	126 8 5
	22	Tarawhati Block	Hokianga ..	"	15 4 0
	29	Ranga Block	Whangarei ..	Marsden	253 7 9
	30	Waitotira Block	" ..	"	9 3 2
Total—North Auckland					£2,918 3 0
AUCKLAND ROAD DISTRICT—					
	31	Tokatoka Block (additional)	Otamatea ..	Kaipara	188 16 2
	35	Roto Ngaro Block	Raglan ..	Franklin	6 13 9
	36	Te Akau Block	" ..	"	3,444 8 6
	37	Te Puroa Block	" ..	"	76 0 0
	39	Waitoa Block	Ohinemuri ..	Ohinemuri	531 17 7
	40	Korakonui Block	West Taupo ..	Tauranga	0 4 8
	49	Kaimango Block	Kawhia ..	Taumarunui	183 12 11
	50	Kakepuku Block	Waitomo and West Taupo ..	Taumarunui and Tauranga	31 14 3
	53	Mangaokahu Block	Raglan ..	Taumarunui and Waikato	143 17 4
	66	Te Pahu Block	" ..	Taumarunui	1 2 0
	67	Te Puhi Block	Waitomo ..	"	2 17 4
	71	Wharepuhunga Block	West Taupo ..	Taumarunui and Tauranga	615 1 7
Total—Auckland					£5,226 6 1
GISBORNE ROAD DISTRICT—					
	75	Koranga Block	Waikohu ..	Bay of Plenty	846 15 11
	76	Manawahe Block	Whakatane ..	"	84 2 7
	78	Oamaru No. 1 Block	Opotiki ..	"	14 16 6
	79	Oamaru No. 2 Block	" ..	"	356 11 4
	80	Oamaru No. 3 Block	" ..	"	1,564 9 5
	83	Tahora No. 2 North Block	" ..	"	1,665 0 6
	85	Tutamoe Block	Waikohu and Cook ..	"	236 17 2
	86	Waiawa Block	Opotiki ..	"	422 15 8
	88	Whitikau Block	" ..	"	1,121 11 3
Total—Gisborne					£6,313 0 4
TARANAKI ROAD DISTRICT—					
	89	Aorangi Block	Waitomo ..	Taumarunui	14 2 0
	90	Aria Township Block	" ..	"	242 2 2
	91	Awakino Block	Awakino ..	"	14 6 0
	95	Hikimutu Block	West Taupo ..	"	1,172 7 9
	97	Horopito West Block	Waimarino ..	"	210 6 9
	99	Kahuwera Block	Waitomo ..	"	249 3 3
	101	Kakahi Village Settlement Block	West Taupo ..	"	105 13 11
	102	Kawautahi Block	West Taupo and Waimarino ..	"	572 14 6
	103	Kirikau Block	Waimarino ..	"	1,382 19 1
	104	Makino Block	Clifton ..	"	335 16 2
	108	Marangae Block	Whangamomona ..	"	216 16 5
	112	North Waimarino Block	Waimarino ..	"	174 16 0
	115	Ohakune Village Settlement Block	" ..	"	1,900 9 1
	117	Otake Special Settlement Block	Waitomo ..	"	394 8 11
	118	Owhango Block	West Taupo ..	"	560 0 7
	119	Papakauri Block	Awakino ..	"	243 14 4
	120	Pareketu Block	Ohura and Waitomo ..	"	123 19 1
	121	Rangataua Block	Waimarino ..	"	653 14 1
	124	Retaruke Block	" ..	"	1,599 2 11
	127	Ruatiti Block	" ..	"	924 5 1
	128	South Kaitieke Block	" ..	"	319 2 5
	129	Tahuna Block	Waitomo ..	"	35 9 4
	132	Tupapanui Block	Waimarino ..	"	105 13 2
	137	Whareorino Block	Awakino ..	"	211 18 6
	142	Taonui-Maraetana-Pukewhakapu Block	Wanganui ..	Rangitikei	95 1 5
	143	Ahu Ahu Block	Waitotara ..	Patea	1,285 9 10
	144	Rangitatau Block	" ..	"	1 4 0
Total—Taranaki					£13,144 16 9

TABLE NO. 4 *continued.*
STATEMENT showing the **NET EXPENDITURE** on **ROADS, &c.—continued.**

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.		
		ROADS TO OPEN UP CROWN LANDS—continued.					
		WELLINGTON ROAD DISTRICT—					
					£	s.	d.
126	149	Waipaoa Block	Wairoa	Gisborne	820	14	6
	150	Waimarama Block	Hawke's Bay ..	Hawke's Bay ..	2,770	15	4
	151	Awarua 1 st Block	Rangitikei ..	Rangitikei ..	954	0	4
	153	Kumeti Block	Waipawa	Waipawa	6	8	0
	155	Piripiri Block	Dannevirke ..	.. ..	3,862	15	11
	156	Tamaki No. 1 Block	"	"	156	1	6
		Total—Wellington			£8,570	15	7
		NELSON ROAD DISTRICT—					
	161	Mount Arthur No. 2 Block	Takaka	Motueka	185	18	9
	162	Rainy River Block	Waimea	"	6	4	11
	164	Totaranui Block	Takaka	"	2	0	0
	165	Upper Aorere Block	Collingwood ..	"	53	2	6
	167	Wairoa Forks Block	Waimea	"	11	6	2
	168	Glenroy Block	Murchison ..	Buller	121	15	6
	170	Mangles—Blackwater Block	"	"	454	15	7
	171	Maruia Block	"	"	476	8	6
	173	Mid Maruia Block	"	"	252	10	5
	174	Murchison Village Settlement Block	"	"	27	5	0
	176	Rappahannock Block	"	"	48	13	0
		Total—Nelson			£1,640	0	4
		MARLBOROUGH ROAD DISTRICT—					
	177	Rimu Gully Block	Marlborough ..	Nelson	209	2	6
	178	Ronga Valley No. 1 Block	"	"	148	17	9
		Total—Marlborough			£358	0	3
		WESTPORT ROAD DISTRICT—					
	181	Kongahu Block	Buller	Motueka	777	2	5
	183	Oparara Block	"	"	78	14	0
	184	Otumahana Block	"	"	183	2	6
	185	Brighton Block	"	Buller	44	7	3
		Total—Westport			£1,083	6	2
		WESTLAND ROAD DISTRICT—					
	187	Inangahua Block	Inangahua ..	Buller	78	11	6
	192	Okuru Block	Westland ..	Westland ..	96	2	6
	194	Wataroa Block	"	"	200	4	11
		Total—Westland			£374	18	11
		OTAGO ROAD DISTRICT—					
	199	Alton No. 3 Block	Wallace	Wallace	5	4	6
	203	Waikawa, Block II	Southland ..	Clutha	28	12	3
	207	Waimatua Block	"	Mataura	643	16	0
		Total—Otago			£677	12	9
		Vote No. 126—Total for 1909–10					
					£40,307	0	2
		ROADS TO OPEN UP NATIONAL ENDOWMENT LANDS—					
		NORTH AUCKLAND ROAD DISTRICT—					
127	1	Otakairangi Block	Whangarei ..	Bay of Islands ..	282	14	3
	2	Ranga Block	"	Marsden	76	0	0
	3	Opanake Block (extension)	Hobson	Kaipara	36	6	6
		Total—North Auckland			£395	0	9
		TARANAKI ROAD DISTRICT—					
	4	Iriwhata Block	Ohura	Taumarunui ..	28	16	0
	5	Marangae Block	Whangamomona ..	"	271	0	0
	7	Otunui Block	Ohura	"	2,526	13	1
		Total—Taranaki			£2,826	9	1

TABLE No. 4—*continued*.
STATEMENT showing the NET EXPENDITURE ON ROADS, &c.—*continued*.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure.
		ROADS TO OPEN UP NATIONAL ENDOWMENT LANDS— <i>continued</i> .			
		NELSON ROAD DISTRICT—			£ s. d.
127	8	Wangamoa Block	Waimea ..	Nelson ..	2 8 0
	10	Dart Block	" ..	Motueka ..	311 8 10
	11	Lee River Extension Block	" ..	" ..	15 16 8
	12	Wairoa Forks Block	" ..	" ..	167 0 0
	14	Matakitaki Block	Murchison ..	Buller ..	486 0 1
		Total—Nelson	..	..	£982 13 7
		WESTLAND ROAD DISTRICT—			
	15	Punakaiki Block	Grey ..	Grey ..	577 13 6
	16	Arnold Valley Block	" ..	Westland ..	193 2 10
		Total—Westland	..	..	£770 16 4
		Vote No. 127—Total for 1909–10	..	..	£4,974 19 9
		Votes 107, 108, 19, 126, and 127	..	..	371,778 3 3
		Add expenditure for previous years	..	..	*7,930,024 11 3
		Total expenditure to 31st March, 1910	..	..	£8,301,802 14 6

* Includes expenditure for certain years out of Native Land Purchase Account and Lands Improvement Account—*vide* Table No. 2.

ROADS ON GOLDFIELDS.

Vote No. 109.—Item No. 1.—Assistance towards the construction and repair of roads, &c.	£	s.	d.
2. Roads to open up mineral lands	4,322	9	8
3. Compensation for injuries to employees, &c.	70	0	0
	87	4	5

AUCKLAND.

Coromandel County.

	£	s.	d.
5. Awakanae—Shrimpton	100	0	0
6. Buffalo Public Battery Road	150	0	0
7. Cabbage Bay—Matamaharakeke	160	0	0
8. Cabbage Bay—Cape Colville	500	0	0
9. Cabbage Bay—Port Jackson	200	0	0
10. Coromandel—Kuaotunu, <i>via</i> Matarangi	731	0	0
11. Coromandel—Tererenga	100	0	0
12. Coromandel Wharf Road extension	260	0	0
13. Guntown—Whenuakite	200	0	0
14. Kaimarama Bridge and approaches	453	10	6
16. Kauris—Ecclestone's	300	0	0
17. Kauris—Mahakirau	1,400	0	0
19. Kikowhakarere—Cabbage Bay Road	130	0	0
20. Kuaotunu—Mercury Bay	125	0	0
22. Manaia—Waikawau	250	0	0
23. Mercury Bay—Tairua	300	0	0
24. Mercury Bay—Whenuakite and Boat Harbour	100	0	0
25. McLaughlin's—Waikawau	100	0	0
26. Tairua—Whenuakite	100	0	0
27. Tererenga—Whangapoua	190	0	0
28. Tiki—Kaimarama	200	0	0
29. Tiki—Manaia	100	0	0
32. Whitianga—Guntown	250	0	0
33. Whitianga—Kaimarama	82	0	0

TABLE No. 4—continued.
ROADS ON GOLDFIELDS—continued.
AUCKLAND—continued.
Thames County.

	£	s.	d.
34. Crosbie Settlement Road	100	0	0
35. Golden Belt Battery Road	250	0	0
36. Golden Belt Battery - Puketui	309	2	0
37. Hape Creek Road	80	0	0
38. Hikutaia-Whangamata (Wires)	179	11	0
39. Hikuwai-Tairua	217	17	6
41. Karaka Creek Roads	100	0	0
43. Moanataiari Road	46	9	4
46. Neavesville - Golden Belt Battery Road	200	0	0
47. Ohio Creek Road	50	0	0
49. Omaha-Whangamata	164	15	0
50. Otanui Track	50	0	0
53. Puketui-Hikuwai	412	5	10
54. Puriri-Neavesville	395	12	5
55. Puriri Valley Road	30	5	0
56. Tairua-Broken Hills-Upper Landing	239	3	0
57. Tairua River Bridge	616	0	0
58. Tapu Creek Road	100	0	0
59. Tapu-Gumtown	517	5	0
60. Tararu Creek Road	100	0	0
61. Thames-Hikutaia	301	6	1
62. Thames - Waikawau Windy Point widening	422	15	3
64. Upper Tararu Road	74	0	5
65. Waiotahi Road	100	0	0
66. Whangamata-Tairua	250	0	0
67. Whangamata-Wentworth	49	0	0
<i>Thames Borough.</i>			
68. Karaka Creek (clearing)	100	0	0
69. Waiotahi-Aqueduct (repairs)	62	9	10
<i>Ohinemuri County.</i>			
71. Alpha Road, Waitekauri - Durbar Mine	100	0	0
72. Bridge Road - Karangahake	64	0	0
73. Cadman Road (Waikino-Waitekauri)	100	0	0
74. Collett's Track	100	0	0
75. Dominion Mine Road	132	0	0
76. Durbar Mine - Komata	140	0	0
77. Golden Cross - Maratoto	100	0	0
78. Hikutaia-Maratoto	100	0	0
79. Hikutaia-Paeroa	156	18	1
80. Hikutaia-Waihi	80	6	7
81. Hills Road, Karangahake	200	0	0
83. Hoununga Road	6	0	0
84. Jubilee Low-level Road	100	8	0
85. Karangahake-Railway	200	0	0
87. Komata Creek Road	310	0	6
90. Komata-Thames	200	0	0
91. Komata-Waitekauri	150	0	0
94. Mangakino Track	50	0	0
96. Maratoto Road	274	5	0
97. Netherton Roads	200	0	0
99. Old Tauranga Road	200	0	0
102. Paeroa-Waitoa	66	0	0
103. Poland Road	100	0	0
105. Rahu Road	199	7	6
108. Rotokohu Road	247	0	0
109. Seddon Street Waikino - Waitekauri Main Road	363	8	4
111. Te Aroha Roads	200	0	0
113. Victoria Road	100	0	0
114. Victoria Road, Waitekauri	100	0	0
115. Waitawheta Crossing Bridge	119	0	0
116. Waitawheta Road	102	19	6
117. Waitawheta Road Deviation	100	10	0
118. Waitawheta-Waihi	132	17	6
119. Waitekauri Hill Track	100	0	0
120. Waitekauri - Golden Cross	81	15	0
121. Waitekauri - Durbar Mine Track	104	18	0

£17,081 2 7

TABLE No. 4—*continued.*
ROADS ON GOLDFIELDS—*continued.*

MARLBOROUGH.

Pelorus Road Board.

	£	s.	d.
126. Havelock—Mahakipawa ...	141	8	6
129. Wakamarina Road (widening) ...	250	0	0
	<u>£391</u>	<u>8</u>	<u>6</u>

NELSON.

Collingwood County.

	£	s.	d.
130. Aorere Bridge (£1 for £1)...	194	0	0
131. Aorere—Parapara ...	20	0	0
133. Collingwood—Parapara ...	140	0	0
134. Fernstown—Pakawau ...	350	0	0
135. Kaituna—Paturau ...	211	11	0
137. Pakawau—Puponga ...	100	0	0

Takaka County.

139. Anatoki Bridge ...	300	0	0
141. Anatoki Track ...	100	0	0
142. Bubu Bridge ...	77	5	0
143. Bubu Springs Road ...	100	0	0
144. Go-ahead Creek Bridge ...	108	8	2
145. Long Plain Road ...	100	0	0
147. Pariwhakaho Bridge ...	252	7	8
149. Takaka—Collingwood Inland Road ...	30	0	0
150. Takaka Hill Road ...	100	0	0

Waimea County.

151. Dove River Bridge ...	450	0	0
155. Pearce Valley Road ...	200	0	0

Riwaka Road Board.

157. Riwaka—Kaiteriteri Beach ...	50	0	0
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Buller County.

159. Brighton—Grey County Boundary ...	350	0	0
160. Bullock Creek Road ...	200	0	0
162. Channel Flat—Mackley's and bridge ...	50	0	0
163. Denniston Grounds Road ...	200	0	0
165. Fairdown—Sergeant's Hill, <i>via</i> railway ...	175	0	0
166. Four-mile—Brighton ...	275	0	0
168. Granity Creek Southwards... ..	225	0	0
169. Granity Relief Channel ...	175	0	0
171. Harben Road ...	200	0	0
172. Hector—Ngakawau River Road ...	200	0	0
174. Karamea Mud-flat ...	550	0	0
175. Karamea Overflow Bridge ...	600	0	0
177. Lyell—Mokihinui ...	300	0	0
179. McPadden's—Gillow's Dam ...	100	0	0
180. Millerton—Stockton Mine ...	650	0	0
182. Millerton Township Road ...	150	0	0
183. Mine Creek—Mangatini ...	400	0	0
185. Mokihinui end of Westport Road ...	150	0	0
186. Mokihinui—Little Wanganui River Road ...	178	5	11
187. Mokihinui—Ngakawau ...	350	0	0
190. New Creek Road Extension... ..	100	0	0
192. Nile Valley Road Extension ...	200	0	0
193. North Beach Track ...	200	0	0
200. Seddonville Roads ...	100	0	0
201. Seddonville—Mokihinui Mine ...	50	0	0
204. Summerlea—Mokihinui ...	200	0	0
205. Utopia Road ...	200	0	0
206. Waimangaroa—Birchfield ...	150	0	0
208. Westport—Mokihinui ...	50	0	0
209. Wilson's Lead Road, Addison's ...	300	0	0

TABLE No. 4—*continued.*
ROADS ON GOLDFIELDS—*continued.*

NELSON—*continued.**Inangahua County.*

	£	s.	d.
210. Blackwater Creek	999	2	1
212. Burke's Creek Road	200	0	0
214. Cronadun—Capleston	196	4	6
215. Greymouth—Reefton—Upper Blackwater	65	0	0
216. Inangahua Bridge	523	16	4
222. Maruia—Glenroy	289	1	8
223. Murray Creek Road	207	12	4
225. Progress Junction—Slab Hut Creek	88	19	10
226. Rappahannoc Bridge	230	3	11
228. Six-mile Creek Bridge	100	0	0

£12,811 18 5

WESTLAND.

Grey County.

	£	s.	d.
231. Ahaura—Moonlight—Shellback	100	0	0
233. Arnold Bridge (repairs)	250	0	0
236. Blackball—Paparoa	100	0	0
237. Cobden—Brighton	15	0	0
241. Moonlight—Blackball	25	0	0
245. Payne's Gully Track	100	0	0
246. Seven-mile—Nine-mile Bluff	175	0	0
247. Taffy Road	100	0	0
248. Upper Moonlight Prospecting Track	25	0	0

Brunner Borough.

250. Brunner—Blackball	6	15	0
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Westland County.

251. Back Creek Road... ..	20	0	0
252. Bullock Creek Track	100	0	0
257. Larrikins—Great Westland Road	30	0	0
260. Okarito—Forks Track	90	0	0
262. Reefton—Hokitika—Ross Deviation	5	15	9
267. Wilberforce—Westland Reefs	762	1	3

£1,904 12 0

OTAGO.

Waihemo County.

	£	s.	d.
270. Mount Highlay Mine Road... ..	110	0	0

Tuapeka County.

272. Lawrence—Roxburgh	200	0	0
273. Waipori—Waitahuna	72	7	10

Vincent County.

274. Alexandra—Dry Gully	200	0	0
276. Bannockburn Bridge	161	16	10
277. Bannockburn Coal Pit Road	100	0	0
279. Clyde—Tuapeka County Boundary	100	0	0
280. Nevis Valley Road	200	0	0
282. Ryan and Company's Coal-pit Road... ..	100	0	0
284. Tinkers Sludge-channel Bridge	100	0	0

Lake County.

285. Arrowtown—Macetown	100	0	0
287. Cardrona Coal-pit Road	100	0	0
288. Garston—Nevis	67	15	6
289. Macetown—Sawyer's Gully	86	0	0
291. Queenstown—Gentle Annie	112	0	0
292. Skipper's—Stony Creek	100	0	0
294. Upper Shotover Valley Road	284	15	0

Maniototo County.

296. Hogburn Gully Retaining-wall	300	0	0
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£2,494 15 2

TABLE No. 4—*continued*.
ROADS ON GOLDFIELDS—*continued*.

SOUTHLAND.

Wallace County.

	£	s.	d.
302. Colac - Round Hill Road	600	0	0

Southland County.

311. Garston-Nevis	50	0	0
313. Maitland - Little Waikaka	100	0	0
315. Waikaia Dredges Road (repairs)	100	0	0
317. Waikaka Valley Road - Dredging claims	100	0	0
318. Waikaka Valley Main Road	200	0	0

Stewart Island County.

320. Stewart Island roads	516	7	6
	<u>£1,666</u>	<u>7</u>	<u>6</u>

	£	s.	d.
Expenditure for year ended 31st March, 1910	40,829	18	3
Expenditure for previous years	828,823	9	2
Total expenditure to 31st March, 1910, on Roads on Goldfields	<u>£869,653</u>	<u>7</u>	<u>5</u>

Development of Goldfields.—Table No. 5.

STATEMENT showing the EXPENDITURE for WATER-RACES on GOLDFIELDS out of Public Works Fund to 31st March, 1910, and the LIABILITIES on that Date.

LOCALITY AND NAME OF RACE.	EXPENDITURE.				LIABILITIES.				Total Expenditure and Liabilities.		LOCALITY AND NAME OF RACE.
	Survey and Construction, 1870-1909.	Grants, Subsidies, 1870-1909.	Survey and Construction 1909-1910.	Grants, Subsidies, 1909-1910.	Totals.	Authorities on Construction.	Authorities on Grants, Subsidies.	Contracts.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
NORTH ISLAND.											
AUCKLAND PROVINCIAL DISTRICT—											
Thames ..	80,708 19 3	..	..	..	80,708 19 3	..	..	..	..	80,708 19 3	Thames.
Tairua Water-race ..	..	34 5 4	..	..	34 5 4	..	..	..	..	34 5 4	Tairua Water-race.
Compensation, Thames Water-race ..	..	1,250 0 0	..	..	1,250 0 0	..	..	..	..	1,250 0 0	Compensation, Thames Water-race.
R. Kelly's water-race, Mata ..	..	40 0 0	..	..	40 0 0	..	..	..	..	40 0 0	R. Kelly's water-race, Mata.
Kusotunu Sludge-channel ..	..	230 0 0	..	..	230 0 0	..	..	..	..	230 0 0	Kusotunu Sludge-channel.
Drain, Te Aroha West ..	..	61 0 0	..	..	61 0 0	..	..	..	..	61 0 0	Drain, Te Aroha West.
	80,708 19 3	1,615 5 4	..	..	82,324 4 7	..	..	..	..	82,324 4 7	NORTH ISLAND.
MIDDLE ISLAND.											
WESTLAND PROVINCIAL DISTRICT—											
Subsidies—											
Hobonui ..	3 7 0	1,955 12 1	..	..	1,955 19 1	..	..	..	..	1,955 19 1	Hobonui.
Hilbertian ..	12 5 8	1,992 14 8	..	..	2,005 0 4	..	..	..	..	2,005 0 4	Hilbertian.
New River ..	21 5 0	3,496 0 3	..	..	3,517 5 3	..	..	..	..	3,517 5 3	New River.
Kanieri ..	1 5 6	10,310 18 4	..	..	10,312 3 10	..	..	..	..	10,312 3 10	Kanieri.
Rimu Drainage-tunnel ..	191 19 6	32 0 0	..	..	223 19 6	..	3 0 0	..	3 0 0	226 19 6	Rimu Drainage-tunnel.
Ross Sludge-channel ..	..	1,554 10 6	..	..	1,554 10 6	..	..	..	..	1,554 10 6	Ross Sludge-channel.
Kumara Sludge-channel No. 2 ..	..	2,762 17 2	..	..	2,762 17 2	..	..	..	..	2,762 17 2	Kumara Sludge-channel No. 2.
Kumara Sludge-channel No. 3 ..	..	1,199 7 6	..	75 0 0	1,199 7 6	..	..	..	75 0 0	1,274 7 6	Kumara Sludge-channel No. 3.
Kumara No. 4 Main Tail-race ..	..	1,151 10 8	..	..	1,151 10 8	..	..	..	..	1,151 10 8	Kumara No. 4 Main Tail-race.
Kumara No. 5 Main Tail-race ..	..	5,666 14 11	..	..	5,666 14 11	..	..	..	..	5,666 14 11	Kumara No. 5 Main Tail-race.
Trustees Main Tail-race, Waimea ..	..	2,294 6 8	..	..	2,294 6 8	..	..	..	..	2,294 6 8	Trustees Main Tail-race, Waimea.
Branch Tail-race to No. 4 Channel, Payne and party ..	..	100 0 0	..	..	100 0 0	..	..	..	..	100 0 0	Branch Tail-race to No. 4 Channel, Payne and party.
Kelly's Terrace Tunnel ..	..	2,472 13 0	..	..	2,472 13 0	..	34 9 10	..	34 9 10	2,517 13 0	Kelly's Terrace Tunnel.
Quinn's Creek Water-race (purchase) ..	..	70 0 0	..	..	70 0 0	..	..	..	..	70 0 0	Quinn's Creek Water-race (purchase).
Raising dam, Loop-line ..	1,125 16 6	..	..	..	1,125 16 6	..	..	..	..	1,125 16 6	Raising dam Loop-line.
Ngahere-Blackball ..	..	200 0 0	..	..	200 0 0	..	..	..	..	200 0 0	Ngahere-Blackball.
Donnelly's Creek Tail-race ..	..	444 4 5	..	..	444 4 5	..	..	..	..	444 4 5	Donnelly's Creek Tail-race.
Purchase of Byrne, O'Hallahan, and Murdoch's water-rights ..	..	35 0 0	..	..	35 0 0	..	..	..	..	35 0 0	Purchase of Byrne, O'Hallahan, and Murdoch's water-rights.
Jones Creek Storm-channel ..	100 0 0	225 0 0	..	..	325 0 0	..	3 1 4	..	3 1 4	425 0 0	Jones Creek Storm-channel.
Back Creek Water-race ..	330 1 0	..	..	..	330 1 0	..	..	..	..	330 1 0	Back Creek Water-race.
Ford and Party, Park Terrace ..	..	90 3 0	..	..	90 3 0	..	66 7 0	..	66 7 0	175 5 0	Ford and Party, Park Terrace.
Government Works—											Government Works—
Waimea-Kumara ..	195,538 0 4	..	312 9 0	..	195,850 9 4	..	..	..	..	195,850 9 4	Waimea-Kumara.
Wainihini Water-race ..	14,152 17 7	..	..	..	14,152 17 7	..	..	..	..	14,152 17 7	Wainihini Water-race.
Mikonui ..	25,927 4 6	..	..	..	25,927 4 6	..	..	..	..	25,927 4 6	Mikonui.
Nelson Provincial District—											Nelson Provincial District—
Government Works—											Government Works—
Nelson Creek ..	90,722 10 8	..	..	..	90,722 10 8	..	..	..	..	90,722 10 8	Nelson Creek.
Napoleon Hill ..	257 16 7	..	..	..	257 16 7	..	..	..	..	257 16 7	Napoleon Hill.
Argyle (Charleston) ..	15,951 15 3	150 0 0	..	..	16,101 15 3	..	50 0 0	..	50 0 0	16,151 15 3	Argyle (Charleston).
Black's Point ..	244 9 0	..	..	..	244 9 0	..	..	..	..	244 9 0	Black's Point.
Carried forward ..	344,580 14	1,36,203 13 2	312 9 0	226 3 10	381,323 0 1	75 0 0	156 18 2	..	231 18	2381,554 18 3	

STATEMENT showing the EXPENDITURE for WATER-RACES on GOLDFIELDS out of Public Works Fund to 31st March, 1910, and the LIABILITIES on that Date—continued.

LOCALITY AND NAME OF RACE.	EXPENDITURE.				LIABILITIES.				Total Expenditure and Liabilities.	LOCALITY AND NAME OF RACE.					
	Survey and Construction, 1870-1909.	Grants, Subsidies, 1870-1909.	Survey and Construction, 1909-1910.	Grants, Subsidies, 1909-1910.	Totals.	Authorities on Construction.	Authorities on Grants, Subsidies.	Contracts.			Totals.				
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
Brought forward ..	344,580	14	136,203	13	2	312	9	0	226	3	10	381,323	0	1	
MIDDLE ISLAND—continued.															
NELSON PROVINCIAL DISTRICT— <i>old</i> .															
Subsidies—															
Jones, Baxter, and party, water-race from Roaring Meg	..		800	0	0	..			..			800	0	0	
Bell Hill Co.'s Race ..	..		500	0	0	..			..			500	0	0	
Randall Creek Water-race ..	322	18	2	..		..			..			322	18	2	
Wills and party, water-race at Sulky Gully	..		218	0	0	..			..			218	0	0	
OTAGO PROVINCIAL DISTRICT—															
Subsidies—															
Arrow	..		612	10	0	..			..			612	10	0	
Beaumont and Tuapeka	4	6	2	..		..			..			644	6	2	
Carriek Range ..	..		9,249	13	1	..			..			9,249	13	1	
Mount Pisgah ..	..		200	0	0	..			..			200	0	0	
Lawrence Drainage-channel ..	..		3,092	19	0	..			..			3,092	19	0	
Ophir Tail-race ..	..		1,150	0	0	..			..			1,150	0	0	
Muddy Creek Channel ..	..		850	0	0	..			..			850	0	0	
St. Bathans ..	..		2,250	0	0	..			64	4	0	2,314	4	0	
Maerewhenua ..	1,065	0	0	..		..			..			1,065	0	0	
Artesian wells, Maniototo ..	20	0	0	..		..			..			20	0	0	
Improving water-supply, Oamaru	1,600	7	2	..		..			..			1,600	7	2	
Mountain Hut Water-race ..	4,879	12	0	..		..			..			4,879	12	0	
Government Works—															
Mount Ida ..	73,832	10	6	..		..			..			73,832	10	6	
Waipori ..	11,263	1	0	..		..			..			11,263	1	0	
Alexandra (purchase) ..	16,956	7	3	..		..			..			16,956	7	3	
CANTERBURY PROVINCIAL DISTRICT—															
Subsidy—															
Ninety-mile Beach Water-race	65	6	7	..		..			..			65	6	7	
SOUTHLAND PROVINCIAL DISTRICT—															
Subsidy—															
Round Hill ..	..		133	19	4	..			..			133	19	4	
GENERAL—															
Increased water-supply ..	530	4	0	100	0	0	..		..			630	4	0	
DEPARTMENTAL—															
Salaries, travelling, advertising, &c.	6,763	9	6	..		..			..			6,763	9	6	
TOTALS ..	461,883	16	556,000	14	7	312	9	0	290	7	10	518,487	7	10	
SUMMARY.															
NORTH ISLAND ..	80,708	19	3	1,615	5	4	..		..			82,324	4	7	
MIDDLE ISLAND ..	461,883	16	556,000	14	7	312	9	0	290	7	10	518,487	7	10	
TOTALS ..	542,592	15	857,615	19	11	312	9	0	290	7	10	600,811	12	5	
TOTALS ..	981	18	2519,469	6	0	981	18	2519,469	6	0	981	18	2519,469	6	0

Development of Goldfields.—Table No. 5a.

STATEMENT showing ASSISTANCE towards PROSPECTING, and MISCELLANEOUS SERVICES, out of Public Works Fund to 31st March, 1910, and the LIABILITIES on that Date.

	Total Expenditure to 31st March, 1909.			Net Expenditure during Twelve Months ended 31st March, 1910.			Total Net Expenditure to 31st March, 1910.			Liabilities on 31st March, 1910.			Total Net Expenditure and Liabilities.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Assistance towards prospecting ..	29,510	4	9	4,986	3	9	34,446	8	6	1,116	8	0	35,562	16	6
Oil boring, Kotuku ..	207	10	0	..	..	..	207	10	0	42	10	0	250	0	0
Purchase and expenses of diamond and other drills	10,198	7	1	749	15	6	10,948	2	7	..	..	..	10,948	2	7
Prospecting deep levels, Thames—															
Queen of Beauty shaft subsidy ..	25,000	0	0	..	..	..	25,000	0	0	..	..	..	25,000	0	0
Inspector's fee ..	500	0	0	..	..	..	500	0	0	..	..	..	500	0	0
Cost and expenses, purchase, plant, &c.	6,153	14	2	713	12	4	6,867	6	6	..	..	..	6,867	6	6
Lowering water, Queen of Beauty shaft	400	0	0	..	..	..	400	0	0	..	..	..	400	0	0
Deepening and unwatering Queen of Beauty shaft	7,989	14	6	1,216	2	0	9,205	16	6	..	..	..	9,205	16	6
Prospecting deep levels, Ross ..	8,503	0	5	6,516	3	11	15,019	4	4	..	..	..	15,019	4	4
Purchase of Cassrell's and Bennett's leaseholds, Paeroa	2,250	0	0	..	..	..	2,250	0	0	..	..	..	2,250	0	0
Compensation proclamation of rivers	40,374	7	3	32	9	6	40,406	16	9	..	..	..	40,406	16	9
Water-conservation—															
Reports on Coromandel Harbour and Kuaotunu Sludge-channel	80	12	6	..	..	..	80	12	6	..	..	..	80	12	6
Engineer's salary and expenses ..	3,219	0	2	..	..	..	3,219	0	2	..	..	..	3,219	0	2
Reports on Ross Flat ..	284	10	8	..	..	..	284	10	8	..	..	..	284	10	8
Eweburn Reservoir ..	16,459	15	10	..	..	..	16,459	15	10	..	..	..	16,459	15	10
Gimmerburn Creek embankment	111	10	0	100	2	3	211	12	3	..	..	..	211	12	3
Greenland Swamp Dam ..	39	12	0	..	..	..	39	12	0	..	..	..	39	12	0
Home Gully Dam ..	1,028	0	6	..	..	..	1,028	0	6	..	..	..	1,028	0	6
Manorburn Creek weir ..	448	3	7	8	18	0	457	1	7	..	..	..	457	1	7
Compensation, Owen Roberts ..	75	0	0	..	..	..	75	0	0	..	..	..	75	0	0
Telephone-line, Bannockburn to Nevis	50	0	0	..	..	..	50	0	0	..	..	..	50	0	0
Resumption of land ..	862	7	0	..	..	..	862	7	0	..	..	..	862	7	0
Water-supplies for Mining Townships—															
Waikino ..	1,193	15	4	1,374	4	8	2,568	0	0	..	..	..	2,568	0	0
Waitekauri ..	445	2	5	..	..	..	445	2	5	..	..	..	445	2	5
Karangahake ..	607	6	5	..	..	..	607	6	5	..	..	..	607	6	5
Mackaytown ..	351	0	0	..	..	..	351	0	0	..	..	..	351	0	0
Clyde ..	1,121	13	2	..	..	..	1,121	13	2	..	..	..	1,121	13	2
Alexandra ..	600	0	0	..	..	..	600	0	0	..	..	..	600	0	0
Ophir ..	..	..	..	..	..	..	..	..	..	150	0	0	150	0	0
Ohinemuri River silting ..	3	12	0	..	..	..	3	12	0	..	..	..	3	12	0
Thames Drainage Board contribution	1,000	0	0	..	..	..	1,000	0	0	..	..	..	1,000	0	0
Kumara Water-race extension across Teremakau River	83	4	2	344	5	6	427	9	8	..	..	..	427	9	8
Waimumu Main Tail-race ..	1,450	6	3	..	..	..	1,450	6	3	..	..	..	1,450	6	3
Charlton Creek Main Tail-race ..	408	7	1	..	..	..	408	7	1	..	..	..	408	7	1
Advances to companies ..	8,200	0	0	2,000	0	0	10,200	0	0	..	..	..	10,200	0	0
Protective works, Stafford ..	97	0	0	3	0	0	100	0	0	..	..	..	100	0	0
Less Recovery on account of Expenditure of Previous Years—	169,306	17	3	17,994	17	5	187,301	14	8	1,308	18	0	188,610	12	8
Muddy Terrace Sluicing Company	..	..	..	..	..	..	1,000	0	0	..	..	..	1,000	0	0
Totals ..	169,306	17	3	17,994	17	5	186,301	14	8	1,308	18	0	187,610	12	8

TABLE No. 6.

STATEMENT showing the EXPENDITURE on TELEGRAPHS out of Public Works Fund to 31st March, 1910, and the Liabilities on that Date.

Line.	Expenditure during Twelve Months ended 31st March, 1910.								
	Expenditure.			Material issued from Stores.			Total Cost during the Year.		
	£	s.	d.	£	s.	d.	£	s.	d.
Telephone Exchanges—									
Ashburton	40	16	5	370	19	7	411	16	0
Auckland	10,166	19	9	5,423	8	0	15,590	7	9
Blenheim	27	0	0	212	13	10	239	13	10
Christchurch	4,925	9	2	5,834	8	8	10,759	17	10
Dannevirke	31	13	3	118	6	9	150	0	0
Dunedin	2,684	8	3	2,181	4	3	4,865	12	6
Feilding	248	18	1	370	0	10	618	18	11
Gisborne	335	12	9	751	19	5	1,087	12	2
Greymouth	53	2	1	268	18	3	322	0	4
Hamilton	49	6	0	151	17	7	201	3	7
Hawera	114	16	2	210	2	8	324	18	10
Hokitika	18	9	9	86	2	6	104	12	3
Invercargill	3,743	9	4	7,722	5	1	11,465	14	5
Lawrence	2	11	6	..	..	..	2	11	6
Levin	303	8	11	545	5	8	848	14	7
Masterton	220	9	9	1,000	7	4	1,220	17	1
Napier	3,092	2	0	9,822	5	8	12,914	7	8
Nelson	173	8	9	626	8	3	799	17	0
New Plymouth	69	2	7	618	3	0	687	5	7
Oamaru	150	1	7	226	1	9	376	3	4
Pahiatua	115	5	3	288	9	3	403	14	6
Palmerston North	192	6	10	490	6	0	682	12	10
Rotorua	42	6	9	111	10	9	153	17	6
Stratford	11	17	7	166	13	9	178	11	4
Thames	147	10	3	377	14	6	525	4	9
Timaru	1,170	0	10	5,081	3	5	6,251	4	3
Wanganui	2,063	2	0	2,970	11	7	5,033	13	7
Wellington	6,970	13	4	8,168	5	7	15,138	18	11
Westport	12	8	1	152	6	5	164	14	6
Whangarei	216	2	6	285	10	8	501	13	2
Telephone Exchanges	37,392	19	6	54,633	11	0	92,026	10	6
New Wires—									
Auckland—Mangonui—Doubtless Bay (Morse wire)	830	10	2	569	9	11	1,400	0	1
Komiti	..	..	..	6	15	6	6	15	6
Takahue—Pamapurua (Victoria Valley line)	113	16	10	25	9	3	139	6	1
Russell—Manawaora—Cape Brett	192	3	10	..	..	..	192	3	10
Russell—Whangamumu	30	19	2	11	12	1	42	11	3
Motukaraka—Broadwood	7	15	6	44	2	0	51	17	6
Utakura (Rawene—Horeke)	95	10	1	..	..	..	95	10	1
Taheke—Kaikohe	155	13	7	..	..	..	155	13	7
Hukerenui—Tapuhi	95	13	1	38	15	0	134	8	1
Paiake (Hukerenui—Towai)	14	6	9	..	..	..	14	6	9
Opauwhanga (Whangarei—Hukerenui)	74	8	5	..	..	..	74	8	5
Hikurangi—Marua—Whananaki	179	3	3	..	..	..	179	3	3
Whangarei—Onerahi	1	12	0	24	19	2	26	11	2
Pakotai—Nukutawhiti	16	4	0	10	2	6	26	6	6
Kaihu—Mangatu—Tutamoe—Waimatenui	263	10	1	156	9	0	419	19	1
Oranora (Kaihu—Waimatenui)	25	7	4	26	19	0	52	6	4
Onetea (Dargaville—Tangiteroria)	95	14	11	16	11	1	112	6	0
Mapau	5	17	0	2	8	9	8	5	9
Batley—Marohemo	..	..	..	7	9	11	7	9	11
Whangateau (Warkworth—Pakiri)	0	15	0	..	..	..	0	15	0
Warkworth—Streamlands—Tauhoa	111	5	10	41	14	5	153	0	3
Helensville—Makarau	0	12	6	33	16	7	34	9	1
Upper Waiwera—Parakakau	88	16	2	18	12	8	107	8	10
Whangaparaoa (Waiwera—Tiritiri)	13	16	11	11	5	8	25	2	7
Taiaotea (Auckland—Albany)	..	..	..	0	19	8	0	19	8
Taupaki (Auckland—Waimauku)	3	9	3	..	..	..	3	9	3
Auckland—Whangarei (superimposed circuit)	83	19	8	161	15	2	245	14	10
Auckland—Pukekohe	25	13	5	..	..	..	25	13	5
Auckland—Morrinsville—Putaruru	526	12	9	57	9	5	584	2	2
Auckland—Taumarunui	333	9	7	3	12	4	337	1	11
Hamilton—Ngaruawahia (metallic circuit)	3	5	7	234	9	2	237	14	9
Papakura (extension Auckland—Papatoetoe)	1	3	0	..	..	..	1	3	0
Awhitu (Manukau Heads—Awhitu Central)	62	6	6	16	2	4	78	8	10
Orua Bay (Manukau Heads—Awhitu)	27	10	2	..	..	..	27	10	2
Runciman (Drury—Hunua)	2	8	11	5	13	1	8	2	0
Waiuku—Pollock Settlement	33	15	9	35	9	11	69	5	8
Maramarua (Mercer—Miranda)	6	6	4	1	17	3	8	3	7
Te Kauwhata (Mercer—Matahuru)	..	..	..	3	1	10	3	1	10
Carried forward	3,523	13	4	1,567	2	8	5,090	16	0

TABLE NO. 6—continued.

STATEMENT showing the EXPENDITURE ON TELEGRAPHS—continued.

Line.	Expenditure during Twelve Months ended 31st March, 1910.								
	Expenditure.			Material issued from Stores.			Total Cost dur- ing the Year.		
	£	s.	d.	£	s.	d.	£	s.	d.
Brought forward	3,523	13	4	1,567	2	8	5,090	16	0
New Wires—continued.									
Kareta (branch Thames—Tapu)	6	6	8	1	10	6	7	17	2
Waiomio	..	..	..	3	17	11	3	17	11
Port Charles—Great Barrier	225	1	6	..	..	..	225	1	6
Gordonton—Whitikahu—Orini	172	3	0	4	16	5	176	19	5
Waharoa—Wardville	46	15	0	19	18	10	66	13	10
Katikati—Athenree—Waihi (metallic circuit)	82	2	5	136	5	9	218	8	2
Omokoroa (Tauranga—Katikati)	9	5	9	22	12	11	31	18	8
Tuhikaramea (Hamilton—Okete)	66	15	3	..	..	..	66	15	3
Hamilton—Paeroa (metallic circuit)	46	1	6	..	..	..	46	1	6
Cambridge—Rotorangi	76	2	9	17	3	5	93	6	2
Rotorua—Taupo	..	..	..	21	15	2	21	15	2
Kinohaku—Marokopa	63	3	6	..	..	..	63	3	6
Otorohanga—Raurimu	1,950	5	0	603	7	11	2,553	12	11
Mangaotaki (Te Kuiti—Paemako)	95	3	2	..	..	..	95	3	2
Aria—Kaeia	166	15	3	20	6	0	187	1	3
Tatu (Ongarue—Ohura)	143	16	3	..	..	..	143	16	3
Owhango (Taumarunui—Raurimu)	6	0	0	4	14	11	10	14	11
Kakahi	..	..	..	4	9	2	4	9	2
Matahanea (extension Whakatane—Waioweka)	139	14	4	..	..	..	139	14	4
Ruatoki (Whakatane—Opouriao)	34	7	7	14	17	7	49	5	2
Opotiki—Toatoa	63	3	6	166	3	10	229	7	4
Kahukura—Te Araroa	192	3	5	1	3	6	193	6	11
Gisborne—Te Karaka (metallic circuit)	114	7	3	261	11	9	375	19	0
Otoko	..	..	..	4	12	4	4	12	4
Puha—Waikohu	0	3	0	5	4	9	5	7	9
Napier—Gisborne	572	15	6	3,248	14	11	3,821	10	5
Tangoio	..	..	..	7	9	9	7	9	9
Napier—Dannevirke (metallic circuit)	70	4	7	29	10	9	99	15	4
Napier—Greenmeadows	0	6	0	6	13	6	6	19	6
Greenmeadows—Puketapu	1	14	0	10	15	1	12	9	1
Puketapu—Puketitiri	131	4	8	17	9	4	148	14	0
Waipawa—Argyll East	50	17	6	143	12	5	194	9	11
Tamumu—Omakere	33	16	1	97	16	8	131	12	9
Dannevirke—Te Rehunga	26	3	3	80	16	11	107	0	2
Dannevirke—Raumati	16	1	3	16	16	10	32	18	1
Wairoa—Nuhaka (metallic circuit)	..	..	..	361	2	3	361	2	3
Maryville—Mokau Coal-mine	9	10	0	..	..	..	9	10	0
Okau—Rerekapa	5	10	0	20	15	10	26	5	10
New Plymouth—Opunake (metallic circuit)	19	2	9	..	..	..	19	2	9
Hawera—Manaia—Opunake	424	19	10	424	14	3	849	14	1
Kaimiro—North Egmont Mount House (Tahurangi)	88	9	7	115	18	7	204	8	2
Pohokura—Reporua	3	6	0	6	8	6	9	14	6
Mahoe—Dawson's Falls	131	7	3	17	2	2	148	9	5
Mahoe—Tahutimai	..	..	..	5	2	5	5	2	5
Lowgarth—Cardiff—Mahoe	45	4	2	..	..	..	45	4	2
Omoana—Moeawatea—Taurakawa	180	4	1	132	3	3	312	7	4
Normanby—Te Roti	37	13	11	16	13	6	54	7	5
Patea—Hurleyville—Manutahi (metallic circuit)	34	4	1	2	3	6	36	7	7
Taumatatahi—Kapara	101	10	1	73	19	0	175	9	1
Waitotara—Upper Waitotara	0	4	0	..	..	..	0	4	0
Kai Iwi—Ahu Ahu	468	15	4	84	6	5	553	1	9
Brunswick—Raorikia	0	12	6	..	..	..	0	12	6
Westmere—Rapanui	1	2	6	..	..	..	1	2	6
Makirikiri—Upokonui	14	14	6	25	15	8	40	10	2
Ahuiti—Te Tuhi	5	9	0	66	4	1	71	13	1
Aramoho—Papaiti	0	8	0	5	19	5	6	7	5
Makirikiri—Kakatihi	82	1	6	7	9	0	89	10	6
Turangarere Railway	..	..	..	6	3	3	6	3	3
Raetihi—Ohakune—Taihape (metallic circuit)	6	7	0	703	5	11	709	12	11
Marton—Taihape (metallic circuit)	..	..	..	7	13	2	7	13	2
Mangoihe	..	..	..	5	6	0	5	6	0
Ohakune East	..	..	..	5	6	3	5	6	3
Ohakune—Horopito	6	16	3	..	..	..	6	16	3
Utiku—Taihape (metallic circuit)	100	14	4	32	16	2	133	10	6
Mangaweka—Ruahine	0	12	6	..	..	..	0	12	6
Apiti—Kimbolton	5	5	0	..	..	..	5	5	0
Kaheke (off Umutoi line)	1	4	0	..	..	..	1	4	0
Komako—Utuwai	68	3	3	5	12	7	73	15	10
Stanway	..	..	..	22	3	0	22	3	0
Rewa—Livingstone	31	5	4	39	18	9	71	4	1
Palmerston North—Ashhurst	..	..	..	11	7	2	11	7	2
Carried forward	10,001	9	0	8,747	1	7	18,748	10	7

TABLE NO. 6—*continued.*STATEMENT showing the EXPENDITURE ON TELEGRAPHS—*continued.*

Line.	Expenditure during Twelve Months ended 31st March, 1910.								
	Expenditure.			Material issued from Stores.			Total Cost dur- ing the Year.		
	£	s.	d.	£	s.	d.	£	s.	d.
Brought forward	10,001	9	0	8,747	1	7	18,748	10	7
New Wires— <i>continued.</i>									
Karewa Road	..			5	0	2	5	0	2
Foxton - Te Wharangi	3	18	4	8	19	3	12	17	7
Oroua Downs (Foxton-Bull's)	1	5	6	0	6	3	1	11	9
Otaki - Hautere Cross - Waihaonga	71	8	2	41	0	8	112	8	10
Levin-Shannon (metallic circuit)	..			469	17	10	469	17	10
Pahiatua-Wellington (metallic circuit)	53	14	1	18	17	5	72	11	6
Pongaroa-Makuri	246	11	9	1	4	8	247	16	5
Rakaunui-Waikereu	63	14	4	15	17	5	79	11	9
Waikereru-Mara	57	16	3	..			57	16	3
Waikereru-Waiowaka	17	17	0	14	17	6	32	14	6
Te Pare - Cape Palliser	323	3	11	320	15	6	643	19	5
Upper Hutt - Hutt (metallic circuit)	101	19	4	0	6	6	102	5	10
Hutt - Rona Bay	29	2	5	129	3	10	158	6	3
Wellington-Levin	408	10	3	570	16	8	979	6	11
Petone-Korokoro	..			23	13	3	23	13	3
Wellington - Day's Bay	88	9	0	..			88	9	0
Wellington-Makara	0	11	0	..			0	11	0
Makara-Terawhiti (McMenamin's)	65	0	10	74	1	8	139	-2	6
Wellington-Dunedin	41	6	0	651	19	4	693	5	4
Blenheim-Seldon (metallic circuit)	50	7	0	0	10	4	50	17	4
Blenheim - Cape Campbell - Flaxbourne	182	3	11	20	15	3	202	19	2
Rapaura - Spring Creek	23	10	9	65	6	10	88	17	7
French Pass - Bulwer	240	19	4	65	5	4	306	4	8
Waitata Bay (branch off French Pass - Bulwer)	4	10	6	15	10	2	20	0	8
Nelson-Richmond	27	2	2	86	10	0	113	12	2
Nelson-Wakefield (metallic circuit)	31	17	10	22	2	0	53	19	10
Upper Moutere - Appleby	0	10	10	..			0	10	10
Redwood's Valley (cut in Motueka-Richmond)	1	7	0	4	13	1	6	0	1
Umukuri	12	10	6	21	15	5	34	5	11
Terakohe (Takaka-Totaranui)	6	3	0	..			6	3	0
Tui (Kohatu-Kiwi-Manu)	4	8	6	4	15	4	9	3	10
Karamea-Arapito	22	11	0	..			22	11	0
Summerlea-Wairere	..			2	16	3	2	16	3
Waimarie	4	12	0	11	7	4	15	19	4
Hinehaka	..			0	11	4	0	11	4
Millerton - Mine Creek	1	8	6	..			1	8	6
Blackball-Roa	70	9	6	6	11	8	77	1	2
Greymouth-Otira	121	1	1	11	17	8	132	18	9
Otira - Otira Tunnel	19	6	2	19	6	6	38	12	8
Hokitika-Tainui-Ruatapu	12	19	9	31	3	6	44	3	3
Waiau-Conway	148	12	11	17	19	4	166	12	3
Kaipoi-Clarkville	4	5	10	8	5	10	12	11	8
Clarkville - Coutts Island	6	16	0	..			6	16	0
Christchurch-Amberley	103	4	7	177	15	0	280	19	7
Christchurch-Timaru (metallic circuit)	279	8	7	280	13	1	560	1	8
Christchurch - Little River	122	15	6	..			122	15	6
Rolleston-Springfield	84	5	6	148	10	3	232	15	9
Killinchy-Leeston	16	17	5	..			16	17	5
Rakaia-Mead	181	7	7	40	15	7	222	3	2
Timaru-Mawaro	8	7	8	0	0	2	8	7	10
Fairlie-Albury (metallic circuit)	125	7	7	56	3	10	181	11	5
Fairlie - Ashwick Flat	2	0	0	..			2	0	0
Pukaki-Hermitage	1	0	6	..			1	0	6
Waimate-Hook	190	15	2	27	18	3	218	13	5
Oamaru-Elderslie	0	17	4	..			0	17	4
Duntroon-Otekaieke	21	0	0	..			21	0	0
Reidston-Maheno	1	12	0	4	12	7	6	4	7
Dunedin-Outram	8	13	6	111	18	4	120	11	10
Hyde	..			4	18	7	4	18	7
Naseby-Ranfurly	25	4	0	..			25	4	0
Milton-Moanariri	212	3	1	..			212	3	1
Waitahuna - Manuka Creek	73	8	4	33	4	0	106	12	4
Nuggets-Tirohanga	1	9	6	..			1	9	6
Tautuku-Chasland's	174	17	1	28	17	10	203	14	11
Ashby Downs - Taumata	33	15	6	15	9	7	49	5	1
Clydevale-Wharetoa	35	8	10	38	8	11	73	17	9
Waikaia-Paru	..			21	0	11	21	0	11
Clinton-Gore	128	0	2	128	8	11	256	9	1
Mataura-Waimumu	..			22	3	5	22	3	5
Queenstown-Malaghan's	12	10	4	6	4	6	18	14	10
Arthur's Point - Arrowtown	47	2	0	35	6	7	82	8	7
Glenorchy-Paradise	133	2	5	..			133	2	5
Carried forward	14,598	5	5	12,693	13	0	27,291	18	5

TABLE NO. 6—continued.

STATEMENT showing the EXPENDITURE ON TELEGRAPHS, &c.—continued.

Line.	Expenditure during Twelve Months ended 31st March, 1910.					
	Expenditure.		Material issued from Stores.		Total Cost during the Year.	
	£	s. d.	£	s. d.	£	s. d.
Brought forward	14,598	5 5	12,693	13 0	27,291	18 5
New Wires—continued.						
Waitiri—Cromwell	96	9 4	57	1 9	153	11 1
Invercargill—Wyndham	370	3 8	58	11 2	428	14 0
Invercargill—Winton	0	16 4	19	18 2	20	14 6
Winton—Pukeoti (Upper South Hillend)	41	18 8	..	..	41	18 8
Winton—Pukemutu	16	1 5	1	7 9	17	9 2
Otautau—Waikouro	8	2 11	18	13 1	26	16 0
Maraekoa (Gladfield)	13	2 4	6	0 0	19	2 4
Green Hills—Dog Island	..	..	3	8 6	3	8 6
Tuatapere—Clifden	77	4 7	24	11 5	101	16 0
Clifden—Blackmount	385	13 10	92	16 9	478	10 7
Riverton—Opuaka	0	4 6	6	3 3	6	7 9
Tuatapere—Puysegur Point	18	5 9	..	..	18	5 9
Puysegur Point—Te Oneroa	268	11 6	..	..	268	11 6
New Wires	15,895	0 3	12,982	4 10	28,877	5 1
Total Telephone Exchanges and New Wires	53,287	19 9	67,615	15 10	120,903	15 7
Stock of materials increased during year by	..	..	2,518	1 6	2,518	1 6
Total expenditure during year ended 31st March, 1910	53,287	19 9	70,133	17 4	123,421	17 1
Total expenditure to 31st March, 1909	..	..	..	..	1,642,768	17 8
Total expenditure 1909–10	..	..	..	..	123,421	17 1
Total expenditure out of Public Works Fund to 31st March, 1910	..	..	..	..	1,766,190	14 9
Liabilities at 31st March, 1910	..	..	..	..	39,310	0 0
Total expenditure and liabilities	..	..	..	..	£1,805,500	14 9

TABLE No. 7.

STATEMENT showing the EXPENDITURE on PUBLIC BUILDINGS out of Public Works Fund to 31st March, 1910, and the LIABILITIES on that Date.

	Total Expenditure to 31st March, 1909.		Expenditure for Year ended 31st March, 1910.		Total Expenditure to 31st March, 1910.		Liabilities on Authorities, Contracts, &c., 31st March, 1910.		Total Expenditure and Liabilities.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Judicial	628,380	10 2	31,606	8 7	659,986	18 9	1,378	14 9	661,365	13 6
Postal and Telegraph	590,619	0 0	68,573	14 0	659,192	14 0	185,626	3 3	844,818	17 3
Customs	49,207	13 10	233	3 1	49,440	16 11	..	..	49,440	16 11
Offices for Public Departments	308,601	13 11	16,277	9 4	324,879	8 3	292	16 9	325,172	0 0
Mental Hospitals	565,088	7 6	19,838	7 3	584,926	14 9	7,699	8 3	592,626	3 0
Alexandra Depot, Wellington	8,061	16 2	21	13 4	8,088	9 6	..	..	8,088	9 6
School Buildings	1,656,786	13 3	98,103	2 4	1,754,889	15 7	131	15 3	1,755,021	10 10
Hospitals	106,604	0 0	7,258	18 4	113,862	18 4	..	..	113,862	18 4
Quarantine Stations	6,863	19 5	..	..	6,863	19 5	..	..	6,863	19 5
Parliament Buildings	72,661	16 5	3,157	6 11	75,819	3 4	5	16 7	75,824	19 11
Government House, Auckland	5,485	6 10	..	..	5,485	6 10	..	..	5,485	6 10
Government House, Wellington (old building)	8,331	0 2	..	..	8,331	0 2	..	..	8,331	0 2
Government House, Wellington (land and new building)	..	..	25,001	3 7	25,001	3 7	4,204	8 10	29,205	12 5
Agricultural	24,052	10 5	*6,102	13 6	30,155	3 11	958	10 0	31,113	13 11
Public Health	32,058	14 6	319	4 10	32,377	19 4	..	..	32,377	19 4
Miscellaneous	27,315	2 9	663	8 0	27,978	10 9	109	3 7	28,087	14 4
Totals	4,090,118	5 4	277,156	13 1	4,367,274	18 5	200,406	17 3	4,567,681	15 8

* Includes "Unauthorized." £207 13s. 4d.

TABLE No. 8.

STATEMENT showing the EXPENDITURE on LIGHTHOUSES, HARBOUR-WORKS, and HARBOUR DEFENCES out of Public Works Fund, to 31st March, 1910, and the LIABILITIES on that Date.

	Total Expenditure to 31st March, 1909.	Net Expenditure during 12 Months ended 31st March, 1910.	Total Expenditure to 31st March, 1910.	Liabilities on Authorities, Contracts, &c., to 31st March, 1910.	Total Expenditure and Liabilities.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
LIGHTHOUSES.					
Akaroa	7,148 16 5	..	7,148 16 5	..	7,148 16 5
Brothers	6,241 0 0	..	6,241 0 0	..	6,241 0 0
Cape Brett	5,181 10 5	5,703 9 7	10,885 0 0	110 11 9	10,995 11 9
Cape Campbell	4,218 3 9	..	4,218 3 9	..	4,218 3 9
Cape Egmont	3,354 6 4	..	3,354 6 4	..	3,354 6 4
Cape Foulwind	6,955 9 1	..	6,955 9 1	..	6,955 9 1
Cape Kidnappers	2,109 11 7	..	2,109 11 7	..	2,109 11 7
Cape Maria van Diemen	7,614 13 11	..	7,614 13 11	..	7,614 13 11
Cape Palliser	6,712 9 6	600 0 0	7,312 9 6	..	7,312 9 6
Cape Saunders	6,066 6 3	..	6,066 6 3	..	6,066 6 3
Centre Island	5,785 19 0	..	5,785 19 0	..	5,785 19 0
Cuvier Island	7,405 9 11	..	7,405 9 11	..	7,405 9 11
East Cape	9,270 13 9	..	9,270 13 9	..	9,270 13 9
Fog-signals	1,656 15 2	..	1,656 15 2	..	1,656 15 2
French Pass Beacon	668 15 8	..	668 15 8	..	668 15 8
French Pass	1,427 17 5	..	1,427 17 5	..	1,427 17 5
Hokitika	801 9 7	..	801 9 7	..	801 9 7
Jackson's Reef Beacon	3,180 0 5	..	3,180 0 5	..	3,180 0 5
Jackson's Head Beacon	698 7 0	198 4 5	887 11 5	18 12 9	906 4 2
Jack's Point	1,204 10 9	..	1,204 10 9	..	1,204 10 9
Kahurangi Point	9,528 1 1	..	9,528 1 1	..	9,528 1 1
Kaipara	5,571 8 0	..	5,571 8 0	..	5,571 8 0
Manukau Heads	600 13 11	..	600 13 11	..	600 13 11
Marine Store	499 11 3	..	499 11 3	..	499 11 3
Moeraki	2,943 1 11	..	2,943 1 11	..	2,943 1 11
Moko Hinou	8,185 11 0	..	8,185 11 0	..	8,185 11 0
Nugget Point (dwellings)	746 6 6	..	746 6 6	..	746 6 6
Portland Island	6,554 14 5	..	6,554 14 5	..	6,554 14 5
Puysegur Point	9,958 19 5	..	9,958 19 5	..	9,958 19 5
Stephen Island	9,454 18 5	..	9,454 18 5	..	9,454 18 5
Timaru	1,116 17 3	..	1,116 17 3	..	1,116 17 3
Tiritiri Cable	1,085 19 6	..	1,085 19 6	..	1,085 19 6
Tory Channel	353 7 7	..	353 7 7	..	353 7 7
Tuahine Point	623 6 4	261 0 3	884 6 7	..	884 6 7
Waipapapa Point	5,969 18 11	..	5,969 18 11	..	5,969 18 11
Miscellaneous, including expenditure on s.s. "Hinemoa" and "Stella"	20,866 18 1	..	20,866 18 1	..	20,866 18 1
Total Lighthouses	171,752 19 6	6,762 14 3	178,515 13 9	129 4 6	178,644 18 3
HARBOUR-WORKS.					
Awanui Wharf and shed	100 0 0	..	100 0 0	..	100 0 0
Horeke Wharf	350 0 0	2 6 6	352 6 6	..	352 6 6
Kaipara, removal of rocks	485 12 9	206 0 0	691 12 9	..	691 12 9
Raupo, Otamatea, wharf repairs	Cr. 80 8 9	..	Cr. 80 8 9	..	Cr. 80 8 9
Tangitiora Wharf	200 0 0	..	200 0 0	..	200 0 0
Maungaturoto Wharf	250 0 0	..	250 0 0	..	250 0 0
Wharf at Howick	1,087 18 2	..	1,087 18 2	..	1,087 18 2
Manukau Wharf at Sandspit	150 0 0	..	150 0 0	..	150 0 0
Pollok Wharf, Manukau	150 0 0	..	150 0 0	..	150 0 0
Whangarei Heads Wharf	600 0 0	..	600 0 0	..	600 0 0
Waipu, improvement of river	700 0 0	200 0 0	900 0 0	..	900 0 0
Waiwera Wharf	350 0 0	..	350 0 0	..	350 0 0
Wade River, clearing	104 11 6	0 10 0	105 1 6	..	105 1 6
Puhoi River, clearing	79 19 0	..	79 19 0	..	79 19 0
Awhitu Wharf	50 0 0	..	50 0 0	..	50 0 0
Matakana Wharf	556 10 3	..	556 10 3	..	556 10 3
Onehunga, examining-room and office	194 3 2	..	194 3 2	..	194 3 2
Onehunga, dredging, &c., near wharf	758 8 3	..	758 8 3	..	758 8 3
Orua Bay Wharf	144 16 4	..	144 16 4	..	144 16 4
Port Fitzroy, Great Barrier Wharf	..	8 0 0	8 0 0	..	8 0 0
Huia Wharf	252 17 3	..	252 17 3	..	252 17 3
Graham Beach Wharf	50 0 0	..	50 0 0	..	50 0 0
Waitemata : Deep Creek Wharf	50 0 0	..	50 0 0	..	50 0 0
Warkworth Wharf	..	1 16 6	1 16 6	..	1 16 6
Waiuku Channel	357 11 6	..	357 11 6	..	357 11 6
Waiuku-Waikato Canal survey	..	11 6 2	11 6 2	..	11 6 2
Mercury Bay Wharf	253 14 6	..	253 14 6	..	253 14 6
Coromandel Wharf	Cr. 0 10 0	..	Cr. 0 10 0	..	Cr. 0 10 0
Cabbage Bay Wharf	..	11 1 0	11 1 0	..	11 1 0
Omokoroa Wharf	..	50 0 0	50 0 0	..	50 0 0
Uretara Wharf	100 0 0	..	100 0 0	..	100 0 0
Opotiki Wharf	500 0 0	..	500 0 0	..	500 0 0
Waikokopu Harbour	831 19 7	..	831 19 7	..	831 19 7
Wairoa Harbour	1,500 0 0	..	1,500 0 0	..	1,500 0 0
Nuhaka, land for harbour purposes	141 12 6	..	141 12 6	..	141 12 6
Napier Harbour	3,597 14 9	..	3,597 14 9	..	3,597 14 9
Mokau Wharf	312 13 9	..	312 13 9	..	312 13 9
Waitara Harbour	2,000 0 0	..	2,000 0 0	..	2,000 0 0
Waikawau River, removal of rock at entrance	50 0 0	..	50 0 0	..	50 0 0
Patea River, removing eel-weirs	50 0 0	..	50 0 0	..	50 0 0
Patea River, snagging	..	100 0 0	100 0 0	..	100 0 0
Waitotara River, snagging	443 15 5	106 5 10	550 1 3	..	550 1 3

TABLE No. 8—continued.

STATEMENT showing the EXPENDITURE on LIGHTHOUSES, HARBOUR-WORKS, and HARBOUR DEFENCES, out of Public Works Fund—continued.

	Total Expenditure to 31st March, 1909.	Net Expenditure during 12 Months ended to 31st March, 1910.	Total Expenditure to 31st March, 1910.	Liabilities on Authorities, Contracts, &c., to 31st March, 1910.	Total Expenditure and Liabilities.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
HARBOUR-WORKS—continued.					
Manawatu River, snagging ..	214 13 3	..	214 13 3	..	214 13 3
Foxton Marine Reserve, Protection of Castlepoint Jetty ..	50 0 0	..	50 0 0	..	50 0 0
Pictou, removal of old wharf ..	51 14 1	..	51 14 1	..	51 14 1
Havelock Harbour ..	94 0 0	..	94 0 0	..	94 0 0
Wairangi Bay Wharf, Croixelles ..	159 0 11	562 7 1	721 8 0	0 13 5	722 1 5
Nelson, dredging harbour ..	8 13 8	50 0 0	58 13 8	..	58 13 8
Elmslie Bay Wharf ..	2,806 15 8	150 0 0	2,806 15 8	..	2,806 15 8
Motueka Wharf, protection ..	..	..	150 0 0	..	150 0 0
Tata Islands harbour of refuge ..	300 0 0	..	300 0 0	..	300 0 0
Takaka Harbour ..	14 8 6	1,718 13 1	1,733 1 7	..	1,733 1 7
Collingwood Harbour ..	4 1 6	..	4 1 6	..	4 1 6
Pakawau Wharf ..	1,170 18 8	..	1,170 18 8	..	1,170 18 8
Little Wanganui Wharf, wharf ap- proach, and snagging river ..	2 0 0	..	2 0 0	..	2 0 0
Karamea Wharf ..	386 0 10	..	386 0 10	..	386 0 10
Karamea River improvements ..	559 19 11	2 5 0	562 4 11	89 0 0	651 4 11
Karamea Harbour Light ..	753 14 9	9 16 0	763 10 9	..	763 10 9
Westport Harbour ..	100 3 11	..	100 3 11	..	100 3 11
Point Elizabeth Harbour ..	14,110 18 7	..	14,110 18 7	..	14,110 18 7
Greymouth Harbour ..	1,415 6 7	..	1,415 6 7	..	1,415 6 7
Hokitika Harbour ..	127,233 19 6	..	127,233 19 6	..	127,233 19 6
Okarito Harbour ..	58,780 5 10	..	58,780 5 10	..	58,780 5 10
Okuru Wharf and River improve- ments ..	1,504 17 7	..	1,504 17 7	..	1,504 17 7
Martin's Bay, removal of rock ..	504 2 0	308 13 9	812 15 9	..	812 15 9
Martin's Bay shed ..	5 0 0	..	5 0 0	..	5 0 0
Holyford River, removal of rocks ..	14 13 10	..	14 13 10	..	14 13 10
Jackson's Bay Jetty ..	0 18 2	369 13 11	370 12 1	..	370 12 1
Cape Campbell Lighthouse Jetty ..	32 6 4	..	32 6 4	..	32 6 4
Kaikoura Jetty and Harbour ..	6 5 0	..	6 5 0	..	6 5 0
Kaikoura Wharf ..	3,000 17 3	275 19 7	3,276 16 10	..	3,276 16 10
Akaroa—Le Bon's Bay Wharf, repairs ..	1,004 11 6	..	1,004 11 6	..	1,004 11 6
Lytelton, reclamation-works, Stick- ing Point ..	55 0 0	..	55 0 0	..	55 0 0
Port Levy Jetty ..	1,910 18 10	..	1,910 18 10	..	1,910 18 10
Timaru Harbour ..	250 0 0	..	250 0 0	..	250 0 0
Chattham Islands: Waitangi, removal and extension of wharf and store ..	100,000 0 0	..	100,000 0 0	..	100,000 0 0
Chattham Islands: Shed at Pitt Island ..	90 0 0	..	90 0 0	..	90 0 0
Taiaroa Heads Lighthouse, enlarging and repairing dwelling ..	1 10 0	..	1 10 0	..	1 10 0
Moeraki Boat-slip ..	83 7 1	..	83 7 1	..	83 7 1
Dunedin, St. Clair, protection of Ocean Beach ..	175 0 0	..	175 0 0	..	175 0 0
Waikouaiti River improvements ..	532 12 8	..	532 12 8	..	532 12 8
Toitois Jetty ..	100 0 0	..	100 0 0	..	100 0 0
Balclutha Jetty ..	1,000 0 0	..	1,000 0 0	..	1,000 0 0
Nugget Bay, landing-slip, &c. ..	250 0 0	..	250 0 0	..	250 0 0
Tautuku Wharf and River improve- ments ..	374 2 3	3 10 0	377 12 3	..	377 12 3
Catlin's River, removal of rocks ..	200 0 0	..	200 0 0	..	200 0 0
Catlin's River Jetty ..	277 19 0	..	277 19 0	..	277 19 0
Queenstown Beacon ..	1,015 7 7	..	1,015 7 7	..	1,015 7 7
Queenstown Jetty ..	35 0 0	..	35 0 0	..	35 0 0
Stewart Island Wharf, Horseshoe Bay ..	297 8 0	..	297 8 0	..	297 8 0
Stewart Island, snagging Fresh-water River ..	230 0 0	250 0 0	480 0 0	..	480 0 0
Stewart Island: Wharf, Golden Bay ..	500 0 0	..	500 0 0	..	500 0 0
Stewart Island: Wharf, Half-moon Bay ..	100 0 0	150 0 0	450 0 0	..	450 0 0
Raising dredge "Hapuka" ..	300 0 0	..	300 0 0	..	300 0 0
Grab dredge for harbour-works ..	777 7 9	..	777 7 9	..	777 7 9
Miscellaneous ..	635 0 10	..	635 0 10	..	635 0 10
Total Harbour-works ..	405 12 6	..	405 12 6	..	405 12 6
HARBOUR DEFENCES.	340,559 14 3	4,548 4 5	345,107 18 8	89 13 5	345,197 12 1
Guns ..	147,768 18 10	..	147,768 18 10	..	147,768 18 10
Ammunition ..	24,531 6 7	..	24,531 6 7	..	24,531 6 7
War Office stores ..	9,933 10 9	..	9,933 10 9	..	9,933 10 9
Torpedo-boats and torpedoes ..	20,203 13 7	..	20,203 13 7	..	20,203 13 7
Submarine-mining stores ..	17,665 2 2	..	17,665 2 2	..	17,665 2 2
Miscellaneous ..	18,009 5 10	..	18,009 5 10	..	18,009 5 10
Works in Dominion ..	254,984 10 10	5,371 14 5	260,356 5 3	67 2 8	260,423 7 11
Land for depots and batteries ..	38,327 14 6	..	38,327 14 6	..	38,327 14 6
Total Harbour Defences ..	531,424 3 1	5,371 14 5	536,795 17 6	67 2 8	536,863 0 2
Grand total ..	1,043,736 16 10	16,682 13 1	1,060,419 9 11	286 0 7	1,060,705 10 6

APPENDICES TO THE PUBLIC WORKS STATEMENT, 1910.

APPENDIX A.

AUDITED STATEMENT OF EXPENDITURE ON PUBLIC WORKS
OUT OF THE PUBLIC WORKS FUND FOR THE YEAR 1909-10.*Prepared in compliance with Section 8 of the Public Works Act, 1908.*

SIR.—

Public Works Department, Wellington, 31st May, 1910.

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

I have, &c.,

RODERICK MCKENZIE,
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 1909-10.

CLASS.	Votes.	Summary.	Appropriation.	Expenditure.	Credits.	Net Expenditure.
		PUBLIC WORKS FUND.	£	£ s. d.	£ s. d.	£ s. d.
XVI	90	Public Works, Departmental ..	43,994	42,238 2 11	1,062 8 8	41,175 14 3
XVII	91, 92	Railways	1,203,292	1,168,037 11 0	64,627 4 4	1,103,410 6 8
XVIII	93-101	Public Buildings	339,271	282,458 2 3	5,509 2 6	276,948 19 9
XIX	102-104	Lighthouses, Harbour-works, and Harbour Defences ..	20,800	16,914 19 11	232 6 10	16,682 13 1
XX	105	Tourist and Health Resorts ..	18,500	14,739 12 8	232 2 8	14,507 10 0
XXI	106	Immigration	10,000	30,702 19 3	13,700 10 5	17,002 8 10
XXII	107-109	Roads, Bridges, and other Public Works	477,810	364,734 1 8	25,971 11 9	338,762 9 11
XXIII	110	Development of Goldfields ..	30,325	18,912 17 10	315 3 7	18,597 14 3
XXIV	111	Telegraph Extension	120,000	138,542 16 9	15,120 19 8	123,421 17 1
XXV	112	Contingent Defence	10,000	4,989 9 8	12 9 5	4,977 0 3
XXVI	113-115	Lands Improvement	32,744	7,941 10 1	1,031 16 6	6,909 13 7
XXVII	116	Purchase of Native Lands ..	30,000	31,454 9 8	887 18 9	30,566 10 11
		Unauthorized	..	207 13 4	..	207 13 4
		Total Public Works Fund ..	2,336,736	2,121,874 7 0	128,703 15 1	1,993,170 11 11

G. J. CLAPHAM,
Accountant.

H. J. H. BLOW,
Under-Secretary.

Examined and found correct.

ROBERT J. COLLINS,
Controller and Auditor-General.

NOTE.—Charges and expenses of raising loans not included in above figures.

(Details on next page.)

Vote No.	Name of Vote.	Appropriation.	Expenditure.	Credits.	Net Expenditure.
		£	£ s. d.	£ s. d.	£ s. d.
	PUBLIC WORKS FUND.				
	Public Works, Departmental—				
90	Public Works, Departmental	43,994	42,238 2 11	1,062 8 8	41,175 14 3
	Railways—				
	Railway-construction—				
	Kaihu Railway Extension	2,500			
	Kawakawa-Grahamtown	40,000	51,349 19 5	212 13 11	51,137 5 6
	Kawakawa-Kaikohē	2,500			
	North Auckland	80,000	59,476 12 0	177 7 2	59,299 4 10
	East Coast Main Trunk—				
	Tauranga - Te Puke	10,000			
	Gisborne-Rotorua	70,000	68,617 14 4	986 3 6	67,631 10 10
	Marton - Te Awamutu	20,000	27,639 17 11	27,645 2 11	5 5 0
	Mount Egmont Branch	5,000	405 11 4		405 11 4
	Stratford-Ongarue	60,000	93,477 16 9	242 12 2	93,235 4 7
	Blenheim-Waipara	45,000	49,859 7 9	238 15 8	49,620 12 1
	Midland Railway—				
91	Nelson-Inangahua	25,000	27,674 11 4	47 17 6	27,626 13 10
	Reefton-Inangahua	15,000	20,532 4 9	98 4 6	20,434 0 3
	Otira Railway-station to Tunnel	5,000			
	Otira Tunnel	65,000	66,086 6 6	81 11 7	66,004 14 11
	Broken River to Bealey	60,000	59,852 4 9	92 11 9	59,759 13 0
	Westport-Inangahua	20,000	15,786 0 7	4 2 6	15,781 18 1
	Ngahere-Blackball	30,000	29,754 9 6	2,627 18 11	27,126 10 7
	Greymouth - Point Elizabeth	50,000	53,696 4 4	92 18 3	53,603 6 1
	Greymouth-Hokitika (Extension to Ross)	4,000	2,849 0 5	189 1 11	2,659 18 6
	Lawrence-Roxburgh	12,500	14,086 10 2	21 4 10	14,065 5 4
	Catlin's-Waimahaka	80,000	64,759 10 4	346 13 1	64,412 17 3
	Gore-Waikaka	3,000	2,483 15 4	34 10 0	2,449 5 4
	Riversdale-Switzers	20,000	18,908 4 2	479 4 1	18,429 0 1
	Orepuki-Waiau	15,000	11,769 13 9	448 1 10	11,321 11 11
	Land Claims, &c.	1,000	880 8 9	745 16 4	134 12 5
	Surveys, New Lines of Railway	2,000	1,953 18 11	759 1 0	1,194 17 11
	Permanent-way Materials	100,000	83,694 15 9	3,136 12 3	80,558 3 6
	Total Vote, Railway-construction	842,500	825,594 18 10	38,648 5 8	786,946 13 2
92	Additions to Open Lines	360,792	342,442 12 2	25,978 18 8	316,463 13 6
	Public Buildings—				
93	General	48,750	50,077 7 6	4,956 6 4	45,121 1 2
94	Judicial	52,465	31,618 16 7	12 8 0	31,606 8 7
95	Postal and Telegraph	85,376	68,880 16 6	307 2 6	68,573 14 0
96	Customs	250	233 3 1		233 3 1
97	Agricultural	7,500	5,895 0 2		5,895 0 2
98	Mental Hospitals	25,000	19,913 16 3	75 9 0	19,838 7 3
99	Hospitals and Charitable Institutions	16,500	7,258 18 4		7,258 18 4
100	Public Health	2,000	332 19 0	13 14 2	319 4 10
101	School Buildings	101,430	98,247 4 10	144 2 6	98,103 2 4
	Lighthouses, Harbour-works, and Harbour Defences—				
102	Lighthouses	6,900	6,772 14 3	10 0 0	6,762 14 3
103	Harbour-works	5,900	4,767 1 6	218 17 1	4,548 4 5
104	Harbour Defences	8,000	5,375 4 2	3 9 9	5,371 14 5
	Tourist and Health Resorts—				
105	Tourist and Health Resorts	18,500	14,739 12 8	232 2 8	14,507 10 0
	Immigration—				
106	Immigration	10,000	30,702 19 3	13,700 10 5	17,002 8 10
	Construction and Maintenance of Roads, Bridges, and other Public Works—				
107	Roads, &c.	216,360	189,940 12 0	19,985 6 8	169,955 5 4
108	Back-blocks Roads, &c.	210,200	132,654 19 9	4,677 13 5	127,977 6 4
109	Road and other Works on Goldfields and Mineral Lands	51,250	42,138 9 11	1,308 11 8	40,829 18 3
	Development of Goldfields—				
110	Development of Goldfields	30,325	18,912 17 10	315 3 7	18,597 14 3
	Telegraph Extension—				
111	Telegraph Extension	120,000	138,542 16 9	15,120 19 8	123,421 17 1
	Contingent Defence—				
112	Contingent Defence	10,000	4,989 9 8	12 9 5	4,977 0 3
	Lands Improvement—				
113	Improved-farm Settlements	22,800	1,935 18 6	1,030 15 2	905 3 4
114	Lands, Miscellaneous	4,944	3,569 19 9		3,569 19 9
115	Irrigation and Water-supply	5,000	2,435 11 10	1 1 4	2,434 10 6
	Purchase of Native Lands—				
116	Purchase of Native Lands	30,000	31,454 9 8	887 18 9	30,566 10 11
	Unauthorized—				
	Services not provided for		207 13 4		207 13 4
	Total Public Works Fund	2,336,736	2,121,874 7 0	128,703 15 1	1,993,170 11 11

APPENDIX B.

STATEMENT of all LIABILITIES in respect of the Services of the Public Works Department outstanding at the Close of the Financial Year ended 31st March, 1910, prepared in Terms of Section 36, Part IV. of the Public Revenues Act, 1908, and forwarded, as therein provided, to the Audit Office.

Class.	Votes.	Summary.	Total.
PUBLIC WORKS FUND.			
XVI	90	Public Works, Departmental	£ 47 3 3
XVII	91	Railways	577,887 6 2
XVIII	93-98	Public Buildings	200,275 2 0
XIX	104	Harbour Defences	67 2 8
XXII	107-8	Construction of Roads, Bridges, &c.	69,553 9 4
XXVI	115	Lands Improvement	12 13 3
			847,842 16 8
CONSOLIDATED FUND.			
V	17-19	Public Buildings, Domains, and Maintenance of Roads	4,274 16 10
OTHER ACCOUNTS.			
	126	Loans to Local Bodies Account	7,645 12 8
	127	National Endowment Account	725 5 0
	..	Land for Settlement Account	782 12 7
			9,153 10 3

Vote No.	Name of Vote.	Total.
PUBLIC WORKS FUND.		
90	Public Works, Departmental	£ 47 3 3
91	Railway-construction—	
	Kawakawa-Grahamtown	16,508 1 2
	North Auckland	1,012 11 5
	Gisborne-Rotorua	12,272 15 8
	Marton - Te Awamutu	35 10 0
	Mount Egmont Branch	3 0 0
	Stratford-Ongarue	2,323 3 1
	Blenheim-Waipara	19,103 17 11
	Midland—	
	Nelson-Inangahua	105 19 10
	Reefton-Inangahua	639 5 8
	Otira Tunnel	510,330 15 6
	Broken River to Bealey	2,960 15 2
	Westport-Inangahua	34 8 9
	Ngahere-Blackball	3,236 9 1
	Greymouth-Point Elizabeth	1,770 9 11
	Greymouth-Hokitika (extension to Ross)	15 14 7
	Lawrence-Roxburgh	136 3 4
	Catlin's-Waimahaka	198 5 0
	Riversdale-Switzers	2,052 1 6
	Orepuki-Waiau	1,553 2 5
	Permanent-way Materials	3,594 16 2
		577,887 6 2
	Public Buildings—	
93	General	4,612 5 9
94	Judicial	1,378 14 9
95	Postal and Telegraph	185,626 3 3
97	Agricultural	958 10 0
98	Mental Hospitals	7,699 8 3
		200,275 2 0
104	Harbour Defences—	
	Harbour Defences	67 2 8

APPENDIX B—*continued.*STATEMENT of all LIABILITIES in respect of the Services of the Public Works Department
—*continued.*

Vote No.	Name of Vote.	Total.
PUBLIC WORKS FUND— <i>continued.</i>		£ s. d.
Construction of Roads, Bridges, &c.—		
107	Roads, &c.	54,620 2 5
108	Back-block Roads, &c.	14,933 6 11
		<u>69,553 9 4</u>
Lands Improvement—		
115	Irrigation and Water-supply	12 13 3
	Total, Public Works Fund.. .. .	<u>847,842 16 8</u>
CONSOLIDATED FUND.		
Public Buildings, Domains, and Maintenance of Roads—		
17	Public Buildings	663 9 4
19	Maintenance and Improvement of Roads.. .. .	3,611 7 6
		<u>4,274 16 10</u>
OTHER ACCOUNTS.		
Loans to Local Bodies Account—		
126	Roads to open up Crown Lands	7,645 12 8
National Endowment Account—		
127	Roads to open up National Endowment Lands	725 5 0
..	Land for Settlement Account (Roads portion)	782 12 7
	Total other accounts	<u>9,153 10 3</u>

G. J. CLAPHAM,
Accountant.H. J. H. BLOW,
Under-Secretary.

Public Works Department, 30th April, 1910.

APPENDIX C.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910.

Date of Contract.	Lines of Railway and Branches.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
RAILWAYS.							
Feb. 10, 1909	Kawakawa-Grahamtown	Three Platelayers' Cottages, Ramarama	H. G. Foster	June 10, 1909	June 19, 1909	£ 1,219 0 0	s. d.
" 25, "	"	Grahamtown Wharf	"	Feb. 25, 1911	"	17,675 0 0	
" 25, "	"	Supply of Ironbark Telephone-poles	J. W. Wallace and Co.	Aug. 25, 1909	"	354 5 0	
Mar. 25, "	"	Station Buildings, Towai	H. G. Foster	June 25, "	Aug. 7, 1909	602 0 0	
April 26, "	"	Supply of Hardwood Timber for Bridges	S. Brown (Limited)	Oct. 26, "	Oct. 26, "	936 15 1	
Mar. 13, 1908	North Auckland	Land Plan Survey	A. L. Foster	Aug. 13, 1908	"	253 15 0	
April 29, "	"	Hardwood Timber for Bridges	J. W. Wallace and Co.	Oct. 29, "	June 10, 1909	1,510 4 11	
Oct. 19, "	"	Erection of Te Hana Bridge and Wharf	Brown and Sons	July 19, 1909	"	1,618 1 6	
Aug. 4, "	"	Te Hana Station Buildings	W. Brown and Sons	Dec. 4, "	Dec. 20, 1909	509 14 11	
Nov. 16, 1907	Gisborne-Rotorua	Erection of Waikohu Bridges	P. McLaughlin and Co.	Sept. 16, 1908	April 30, "	8,174 12 6	
Feb. 12, 1910	"	Otoko Viaduct	G. W. Griffiths and Co.	May 12, 1911	"	11,773 0 0	
" 8, 1909	Stratford-Ongarue	Kiote Station Buildings	A. B. Burrell	June 8, 1909	June 26, 1909	866 0 0	
June 24, "	"	Supply of Hardwood Piles and Timber	S. Brown (Limited)	Sept. 24, "	Dec. 15, "	216 0 8	
Dec. 8, "	"	Te Wera Station-buildings	J. W. Boon	April 8, 1910	"	1,700 0 0	
May 28, "	Blenheim-Waipara (North End)	Supply of Hardwood Timber for Flaxbourne Bridges	E. F. Broad	Sept. 28, 1909	Nov. 6, 1909	407 3 10	
Aug. 6, "	"	Kaparu Station Buildings	Ward and Sons	Nov. 6, "	Mar. 24, 1910	697 13 7	
Oct. 11, "	"	Platelayers' Cottages, Hauwai and Ward	Bythell and Co.	Jan. 11, 1910	"	845 0 0	
" 11, "	"	Erection of Flaxbourne Bridges	B. Garham	Feb. 11, "	"	474 11 8	
Jan. 8, 1910	"	Hauwai Station Buildings	Bythell and Co.	May 8, "	"	623 13 0	
Feb. 26, 1909	" (South End)	Platelayers' Cottages, McKenzie Section	Hardie and Thomson	May 26, 1909	July 29, 1909	875 0 0	
May 19, "	"	Waiau-a Bridge	G. M. Fraser	Nov. 19, 1910	"	20,467 4 0	
Jan. 6, 1910	"	Mina Station Buildings	H. Green	June 6, "	"	2,380 3 9	
Feb. 12, "	Midland (Reefton-Inangahua)	Supply of Hardwood Timber and Piles	S. Brown (Limited)	Aug. 12, "	"	622 19 9	
Aug. 1, 1907	" (Otira End)	Otira Tunnel	J. McLean and Sons	Aug. 1, 1912	"	599,794 0 0	
July 11, "	" (Broken River to Bealey)	Slover's Creek Viaduct	G. M. Fraser	Mar. 11, 1909	Feb. 11, 1910	21,451 3 0	
Feb. 10, 1909	"	Two Platelayers' Cottages, Cass Section	Paynter and Hamilton	May 10, "	May 10, 1909	1,043 12 0	
Mar. 8, 1910	"	Supply of Fencing Material, Cass Section	New Zealand Farmers' Co-operative Association of Canterbury (Limited)	May 31, 1910	"	298 19 2	
" 18, "	Westport-Inangahua	Land Plan Survey	C. Hastings Bridge	Aug. 18, "	"	135 0 0	
" 5, 1908	"	Erection of Orawaiti Bridges	H. Lange	Dec. 5, 1908	May 5, 1909	1,139 0 11	Assigned to S. and R. Atkinson.
" 3, "	Ngahere-Blackball	Soldier's and Ford's Creeks Bridges	W. G. Mount	July 16, "	"	1,713 9 10	
Jan. 22, 1909	"	Station Buildings, Ngahere	R. Mordaunt	May 22, 1909	Oct. 5, "	884 15 8	
" 10, 1910	"	Blackball (No. 3 Contract)	Kelsall and Son	" 10, 1910	"	1,410 11 6	
" 11, "	"	" and Cottage, Blackball (No. 2 Contract)	E. and W. Sweetman	" 11, "	"	779 2 0	
Feb. 21, "	Greymouth - Point Elizabeth	Five Platelayers' Cottages, Blackball	A. Cundy	June 21, "	"	1,202 17 6	
Sept. 21, 1908	"	Platelayer's Cottage, Dunollie	E. and W. Sweetman	Dec. 19, 1908	April 14, 1909	398 7 6	

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910—continued.

Date of Contract.	Lines of Railway and Branches.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks
						£ s. d.	
Jan. 4, 1910	Greymouth—Point Elizabeth	Supply of Hardwood Timber for Bridges	J. W. Wallace and Co.	July 4, 1910	..	601 7 10	
Mar. 15, "	"	"	Millar's West Australian Hardwood Company (Limited)	Sept. 15, "	..	1,140 4 7	
Aug. 17, 1908	Lawrence—Roxburgh	Erection of Bridges, Bowler's Creek Section..	W. Rhodes and Son	Aug. 7, 1909	July 5, 1909.	397 2 3	
April 26, 1909	"	Station Buildings, Evan's Flat and Bowler's Creek	"	" 26, "	Sept. 22, "	566 0 9	
Sept. 22, 1908	Catlin's—Waimahaka	Officers' Cottage, Waimahaka	H. Morris	Dec. 22, 1908	May 3, "	431 9 0	
Jan. 9, 1909	"	Goods-shed, Houipapa	J. Barry	April 9, 1909	April 3, "	235 17 0	
Feb. 19, "	"	Platelay's Cottage, Papatupu	A. McNeil	May 19, "	May 24, "	419 18 6	
Oct. 14, "	"	"	R. Templeton	Jan. 14, 1910	Dec. 21, "	278 6 4	
May, 8, 1908	Gore—Waikaka	Land Plan Survey	N. and E. S. Paterson	Nov. 8, 1908	May 28, "	135 0 0	
Dec. 11, "	Riversdale—Switzers	Station Buildings	T. Rhodes and Son	April 11, 1909	Sept. 30, "	1,701 7 6	
Oct. 15, 1909	"	No. 2 Contract	Henderson and Gerrie	Feb. 15, 1910	..	3,670 13 0	
July 2, 1908	Orepuki—Waiau	Te Tua	E. W. Bone	Dec. 2, 1908	July 8, 1909.	877 8 0	
April 22, 1909	"	Tuatapere	Shields and Andrews	Oct. 22, 1909	Mar. 28, 1910	4,462 11 7	
Jan. 5, 1910	"	Erection of 2,000-Gallon Tank and Stand, Tuatapere	W. Rhodes and Son	Feb. 16, 1910	Mar. 7, "	236 7 6	
Feb. 25, 1909	Various Lines	Supply of Ironbark Telephone-poles	Richardson and Blair	Aug. 25, 1909	..	2,031 5 11	
Sept. 21, "	"	Manufacture of Rivets	J. and A. Anderson	Dec. 21, "	Dec. 16, 1909	361 0 0	

RAILWAYS—continued.

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910—continued.

Date of Contract.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
AUCKLAND.						
July 30, 1908	Post-office, Whangarei ..	W. E. Hutchison, Auckland ..	April 30, 1909	April 1, 1909	£ 2,889 0 0	d 0 0
Sept. 18, "	" Pukekohe ..	J. W. Dixon, Drury ..	May 18, "	Feb. 25, "	2,375 0 0	0 0
" 28, "	" Huntly ..	E. Morris, Auckland ..	June 28, "	Aug. 20, "	2,280 0 0	0 0
Dec. 7, "	Police Residence and Lockup, Hamilton East ..	G. Jack, Hamilton East ..	April 7, "	July 9, "	816 1 2	0 0
" 8, "	Post-office, Morrinsville ..	R. C. Humphreys, Hamilton ..	May 8, "	June 28, "	1,270 16 0	0 0
" 8, "	Courthouse, Cambridge ..	F. Potts, Cambridge ..	June 8, "	" "	1,044 3 4	0 0
" 29, "	Post-office, Taumarunui ..	J. Wright, Hamilton ..	" 18, "	May 8, "	720 7 0	0 0
" 29, "	Police-station, Thames ..	W. A. Clarke, Auckland ..	July 29, "	Aug. 13, "	1,889 10 9	0 0
Jan. 8, 1909	Harbourmaster's House, Hokianga ..	W. Cook and Son, Waimate North ..	May 8, "	April 24, "	498 0 0	0 0
Feb. 26, "	Post-office, Te Puke, Additions, &c. ..	F. G. Whiting, Auckland ..	April 26, "	June 15, "	202 11 6	0 0
Mar. 16, "	" Maungaturoto ..	A. M. Mackay, Waipu ..	June 18, "	July 28, "	758 15 0	0 0
" 18, "	" Epsom ..	W. Ball, Devonport ..	Oct. 18, "	Nov. 18, "	1,332 0 0	0 0
" 18, "	Police-station, Kaikohe ..	W. Cook and Son, Waimate North ..	Sept. 18, "	Sept. 22, "	985 0 0	0 0
" 25, "	Post-office, Otorohanga ..	J. G. Aitken, Frankton Junction ..	July 25, "	" 28, "	872 3 3	0 0
April 16, "	" Mount Eden ..	W. E. Hutchison, Auckland ..	Nov. 16, "	Oct. 20, "	1,548 0 0	0 0
" 16, "	Courthouse, Rotorua, Additions ..	Herd and Shepherd, Rotorua ..	June 16, "	July 31, "	209 0 0	0 0
" 22, "	Postmaster's Residence, Whitianga ..	J. W. Noble, Whitianga ..	July 22, "	" 22, "	357 13 0	0 0
" 22, "	Post-office, Ngāruawāhia ..	L. McKinstry, Ponsonby ..	Nov. 22, "	Nov. 24, "	1,868 0 0	0 0
" 22, "	Police-station, Rotorua, Additions ..	H. Judge, Rotorua ..	July 22, "	" "	437 0 0	0 0
May 25, "	New Post-office, Auckland ..	J. and W. Jamieson (Limited), Christchurch ..	Nov. 25, 1911	" "	95,551 0 0	0 0
Oct. 15, "	Mental Hospital, Auckland—Wolfe Bequest Hospital ..	A. J. Jenkin, Auckland ..	April 15, 1910	" "	6,098 0 0	0 0
Mar. 22, 1910	Courthouse, Taumarunui ..	T. Dickson, Taumarunui ..	Aug. 22, "	" "	556 12 0	0 0
HAWKE'S BAY.						
Sept. 23, 1908	Post-office, Hastings ..	J. Renouf, Wellington ..	July 23, 1909	Dec. 21, 1909	5,125 0 0	0 0
Mar. 16, 1909	" Nuhaka ..	A. R. Gardiner, Wairoa ..	" 16, "	Oct. 8, "	770 0 0	0 0
June 7, "	" Napier, Additions ..	Bull Bros., Port Ahuriri ..	Sept. 7, "	Nov. 30, "	886 0 0	0 0
Sept. 22, "	" Ongaonga ..	Coles Bros., Ongaonga ..	Jan. 22, 1910	" "	676 15 1	0 0
Feb. 5, 1910	" Wairoa ..	A. R. Gardiner, Wairoa ..	Oct. 5, "	" "	3,100 0 0	0 0
Jan. 5, "	" Hastings, Manufacture and Erection of Turret-clock ..	W. Littlejohn and Son, Wellington ..	" "	" "	470 0 0	0 0
TARANAKI.						
Jan. 12, 1909	Police-station, New Plymouth ..	R. W. Bond, New Plymouth ..	June 12, 1909	Nov. 27, 1909	1,189 10 0	0 0
Mar. 1, "	Post-office, Stratford, Additions ..	Haine and McAneny, Hawera ..	April 26, "	July 31, "	360 0 0	0 0

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910—continued.

Date of Contract.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks
					£ s. d.	
					40,780 10 0	
Dec. 10, 1906	Public Trust Office, Wellington	J. and A. Wilson (Limited), Wellington	Aug. 3, 1909	April 28, 1909		
" 24, 1908	"	Turnbull and Jones (Limited)	May 24, "	July 10, "	768 18 6	
April 6, 1909	Supply and Erection of Passenger-lift Fittings	J. and A. Wilson (Limited), Wellington	June 1, "	"	718 0 0	
May 4, 1908	Post-office, Weraoa	W. Pringle, Weraoa	Sept. 4, 1908	April 27, 1909	696 0 0	
Sept. 18, "	" Foxton	A. Cooper and Son, Wellington	May 18, 1909	July 15, "	2,531 0 0	
" 24, "	" Te Aro	Sanders Bros., Wellington	July 24, "	July 22, "	5,687 0 0	
Oct. 19, "	" Waverley, Additions	Woolston and Hewetson, Wanganui	Jan. 19, "	April 30, "	319 0 0	
Dec. 10, "	Courthouse, Feilding	Adams and Smart, Wellington	July 10, "	June 14, "	2,244 0 0	
Feb. 25, 1909	Post-office, Ohakune	J. Wright, Taumarunui	June 25, "	July 1, "	770 0 0	
May 12, "	Post-office, Ashhurst, Additions, &c.	F. Rolfe, Palmerston North	Aug. 12, "	Sept. 15, "	350 0 0	
July 15, "	Police-station, Pongaroa	Robertson and Whittaker, Pongaroa	Dec. 15, "	"	749 0 0	
" 15, "	" Shannon	Townshend and Johnston, Wellington	Nov. 15, "	Nov. 15, 1909	720 1 6	
June 30, "	New Government House, Wellington, Timber-supply	lington South New Zealand Powell Wood Process Company (Limited)	Sept. 30, "	" 30, "	2,652 17 8	
" 30, "	" Jarrah Timber	Millar, W. A., Hardwoods Company (Limited)	" 30, "	" 30, "	449 3 6	
Oct. 11, "	"	Sanders Bros., Wellington	Dec. 20, "	"	848 18 0	
Nov. 5, "	"	F. E. Encmark, Wellington	Jan. 7, 1910	"	350 0 0	
Jan. 5, 1910	"	Prouse Timber Company, Wellington	Mar. 16, "	"	749 19 0	
" 21, "	"	Marbette Patent Plaster Company, Wellington	April 21, "	"	708 10 0	
Feb. 12, "	"	T. Foley and Sons, Wellington	May 12, "	"	420 0 0	
July 26, 1909	Government Printing Office, Wellington, Radiators and Fittings	A. and T. Burt (Limited), Dunedin	Nov. 26, "	Nov., 26, 1909	255 0 0	
Oct. 27, "	Post-office, Wellington, Additions	J. and A. Wilson (Limited), Wellington	Oct. 27, 1911	"	96,923 0 0	
Nov. 15, "	Mental Hospital, Porirua, Addition to Auxiliary Building	J. Wood, Wellington	Mar. 31, "	"	6,147 0 0	
Dec. 24, "	Government Insurance Buildings, Wellington, Electric Elevator	Andersons (Limited), Christchurch	April 24, "	"	612 0 0	
Jan. 14, 1910	Post-office, Bull's, Restoration	W. H. Taylor, Bull's	May 14, "	"	1,678 0 0	
Dec. 10, 1908	School of Mines Building, Westport	J. H. Carew, Westport	Aug. 10, 1909	Nov. 15, 1909	1,912 5 10	
Jan. 26, 1909	Post-office, Richmond	W. E. Wilkes, Richmond	May 26, "	June 16, "	743 16 0	
Feb. 13, "	Police-station, Takaka	W. Sloan and Benson, Nelson	June 13, "	Aug. 13, "	733 5 6	
May 18, "	Drill-shed, Westport, Alterations	H. A. Datson, Westport	Aug. 18, "	Sept. 30, "	460 17 4	
" 29, "	Post-office, Wakefield	J. K. Johnston, Nelson	Oct. 29, "	Jan. 15, 1910	879 16 8	

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910—continued.

Date of Contract.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
PUBLIC BUILDINGS—continued.						
WESTLAND.						
Mar. 12, 1908	Departmental Buildings, Hokitika	G. Garner, Wellington	Mar. 12, 1909	June 8, 1909	£ 6,966	s. 0
June 30, "	Police-station, Dunollie	E. and W. Sweetman, Cobden	Nov. 30, 1908	April 14, "	657	10 0
Oct. 7, "	Post-office, Wallaseid	"	Feb. 7, 1909	July 24, "	664	18 0
Dec. 17, "	Hokitika Hospital, New Ward, Operating Theatre	Kelsall and Son, Greymouth	Sept. 17, "	Dec. 17, "	3,782	16 0
Mar. 16, 1909	Railway and Public Works Offices, Greymouth	"	Dec. 16, "	Jan. 31, 1910	5,740	2 0
July 6, "	Courthouse, Ross	Graham and Denia, Ross	Nov. 6, "	"	586	7 0
CANTERBURY.						
Sept. 21, 1908	Magistrate's Court, Christchurch, Additions	J. Porter, Richmond	June 21, 1909	July 20, 1909	3,550	0 0
Nov. 5, "	Post-office, Christchurch, Additional Sanitary Conveniences	F. Turvey and Co., Christchurch	Feb. 5, "	May 8, "	480	0 0
Jan. 25, 1909	Police Residence and Stable, Rakaia	Paynter and Hamilton, Christchurch	May 25, "	April 7, "	762	0 0
May 21, "	Courthouse, Fairlie	T. Foden, Fairlie	Sept. 30, "	Nov. 14, "	555	15 0
June 1, "	Police-station, Lincoln	R. A. Forbes, Tai Tapu	Oct. 1, "	Dec. 19, "	781	0 0
Aug. 5, "	" Chatham Islands	E. A. Wharton, Christchurch	Dec. 5, "	Feb. 13, "	720	0 0
" 9, "	" Sydenham	E. Henshall, Christchurch	" 9, "	Feb. 10, 1910	799	0 0
Sept. 18, "	Police Inspector's Residence, Christchurch	J. Taylor, Christchurch	Jan. 18, 1910	" 26, "	695	0 0
Feb. 16, 1910	Safety-carriage Store, Addington	C. Calvert, Christchurch	April 27, "	"	388	8 9
OTAGO AND SOUTHLAND.						
Aug. 3, 1908	Government Insurance Buildings, Dunedin	H. Lyders, Dunedin	Aug. 3, 1909	"	10,746	5 0
Jan. 7, 1910	Government Insurance Buildings, Dunedin, Electric Elevator	A. and T. Burt (Limited), Dunedin	July 7, 1910	"	554	0 0
Sept. 22, 1908	St. Helens Hospital, Dunedin, Additions	R. Orr, Dunedin	Dec. 22, 1908	April 22, 1909	797	9 0
Nov. 5, 1909	Residence for Postmistress, Ophir	T. Wilkinson, Ophir	Feb. 5, 1909	May 5, "	270	12 0
Dec. 11, "	Post-office, St. Bathans	J. Drummev, Alexandra South	April 11, "	Oct. 20, "	685	4 0
Feb. 9, "	" Queenstown, Additions	R. Orr, Dunedin	June 9, "	June 26, "	413	13 9
Mar. 2, "	" George Street, Dunedin, Alterations	McKinnon and Hamilton, Dunedin	May 11, "	May 21, "	350	0 0
June 1, "	" Wyndham	A. Speden, Gore	Mar. 11, "	"	1,748	0 0
Dec. 31, "	" Pembroke, Alterations and Additions	W. Henderson, Dunedin	Mar. 11, "	"	218	10 0
Feb. 1, 1910	Otekaieke Special School for Boys, Water-supply and Drainage	J. and R. Scott, Dunedin	June 1, "	"	1,742	0 0
AUCKLAND.						
Jan. 1, 1908	Road Bridge, Frasertown	J. Brown, Gisborne	April 16, 1908	Oct. 12, 1909	6,403	0 0

ROAD WORKS.

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910—continued.

Date of Contract.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
					£ s. d.	
ROAD WORKS—continued.						
HAWKE'S BAY.						
Nov. 11, 1908	Road-formation, &c., Opouti to Mangapouke River	J. Mullins, Wairoa ..	Feb. 28, 1909	Feb. 12, 1910	1,210 1 2	
" 26, "	Mangapouke Valley (east end)	B. Dennehy, Gisborne ..	May 31, "	Mar. 14, "	3,205 0 0	
TARANAKI.						
Feb. 8, 1909	Wanganui Bridge, Cylinder-castings	S. Lake and Co. (Limited), Wellington	..	June 22, 1909	578 0 0	
Jan. 1, "	Road-formation, &c., Carrington Road	A. Turner and H. Beadle, New Plymouth	Oct. 1, 1909	Oct. 22, "	597 0 0	
Dec. 22, 1908	" Dawson's Falls	J. Krieger, Phama ..	Mar. 22, "	June 29, "	300 0 0	
Feb. 14, 1909	" Ohura (South of Parora Stream)	R. H. Cameron and P. G. Brooking, Stratford	June 14, "	..	5,566 19 0	
Dec. 29, 1908	" " (North ")	C. J. Ryan, Taumarunui ..	Mar. 29, "	April 1, 1909	735 0 0	
WELLINGTON.						
Nov. 20, 1908	Mangawhero River Bridge, Raupiu	R. Craig, Putiki ..	Jan. 11, 1909	May 22, 1909	145 16 0	
Jan. 13, 1909	Tokiahuru Bridge (Parapara-Karioi)	A. H. Christie and W. H. Taylor, Wanganui	May 13, "	June 14, "	615 7 10	
" 20, "	Mataroa to Mangaweka	P. and M. Power, Mataroa ..	" 20, "	" 5, "	396 18 0	
" 14, "	" Tawai	W. Peck, Waione ..	April 14, "	Mar. 31, 1910	249 3 3	
NELSON.						
Jan. 4, 1909	Mokihinui River Bridge..	T. Freeman and W. Browning, Westport	July 4, 1910	..	3,801 13 3	Assigned to E. Freeman and G. Griffiths, Westport.
Feb. 4, "	Little Wanganui Road Bridge	V. Hill, Little Wanganui ..	Nov. 4, 1909	..	1,137 0 0	
" 23, "	Tidal Creek Bridge	S. and R. Atkinson, Westport ..	Aug. 23, "	Nov. 21, 1909	362 10 4	
Mar. 15, 1910	Big Wanganui Traffic Bridge, South Westland	J. O'Donnell, Wellington ..	Mar. 15, 1912	..	7,908 4 7	
OTAGO AND SOUTHLAND.						
Mar. 18, 1910	Road-formation, Felling, Clearing, Forming, Metalling, &c.,—No. 1 Contract, Alton Survey District, Blocks I, III, and X	C. Withington and Son, South Invercargill	Nov. 18, 1910	..	675 0 0	
" 18, "	No. 2 Contract, Alton Survey District, Blocks II, III, and XI	Ditto ..	" 18, "	..	544 0 0	
" 18, "	No. 3 Contract, Alton Survey District, Block VI, Sections 9 and 10 (reserve for landless Natives)	" ..	" 18, "	..	762 10 0	
" 18, "	No. 4 Contract, Alton Survey District, Blocks X, XI, and III	" ..	" 18, "	..	771 15 0	

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910—continued.

Date of Contract.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
AUCKLAND.						
Jan. 8, 1909	Ironwork for Cape Brett Lighthouse	C. Judd	May 8, 1909	June 14, 1909	£ 930	d. 9
May 4, "	Coal and Firewood Supply, Government Buildings, Auckland	J. J. Craig (Limited)	Mar. 31, 1910	Mar. 31, 1910	Schedule rates	
" 4, "	Devonport and Forts	"	31, "	" 31, "	"	
June 4, "	Stores-supply, Auckland, Classes I, VII, XIV	Briscoe and Co. (Limited)	Mar. 31, 1912	"	"	
" 4, "	Classes II, III, IV, V, IX	J. Burns (Limited)	"	"	"	
" 4, "	Class VI	Wingate and Co.	"	"	"	
" 4, "	Classes VIII, XIII	Porter and Co.	"	"	"	
" 4, "	Class X	New Zealand Portland Cement Company (Limited)	"	"	"	
" 4, "	Class XI	J. J. Craig (Limited)	"	"	"	
" 4, "	Class XII	C. J. Owen	"	"	"	
" 4, "	Gisborne, Class II	Hutcheson, Wilson, and Co.	"	"	"	
" 4, "	Class VI	T. Hall and Sons	"	"	"	
" 4, "	Classes X, XI	New Zealand Portland Cement Company (Limited)	"	"	"	
" 4, "	Class XIII	Porter and Co.	"	"	"	
" 4, "	Class XIV	Sargood, Son, and Ewen	"	"	"	
WELLINGTON.						
May 7, 1908	Seddon Memorial	Edwards and Son	Nov. 11, 1908	"	2,746	0 0
June 4, 1909	Stores Supply, Wellington, Classes II, III, Items 7 and 8; VI	E. W. Mills and Co. (Limited)	Mar. 31, 1912	"	Schedule rates	
" 4, "	Class III, Items 1 and 5	Briscoe and Co. (Limited)	"	"	"	
" 4, "	Class III, Items 2, 6, and 9; XV, Items 1 to 13A	Harris and Bastin (Limited)	"	"	"	
" 4, "	Class III, Items 3 and 4	Vacuum Oil Company Proprietary (Limited)	"	"	"	
" 4, "	Class III, Item 10	Reid and Reid	"	"	"	
" 4, "	Class VII	Hutcheson, Wilson, and Co.	"	"	"	
" 4, "	Class X	P. Hutson and Co. (Limited)	"	"	"	
" 4, "	Class XI	J. J. Craig (Limited)	"	"	"	
" 4, "	Class XII	Avondale Brick and Pottery Company (Limited)	"	"	"	
" 4, "	Class XIII	Bannatyne and Co. (Limited)	"	"	"	
" 4, "	Class XIV	Sargood, Son, and Ewen (Limited)	"	"	"	
" 4, "	Class XV, Items 14 to 68	Needham, Niven, and Co. (Limited)	"	"	"	

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910—continued.

Date of Contract.	Name of Contract.		Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
	MISCELLANEOUS—continued.						
	OTAGO AND SOUTHLAND.						
Sept. 18, 1908	Channel Buoys	.. ..	.. ..	.. ..	May 7, 1909	£ 341 0 0	
June 4, 1910	Stores-supply, Dunedin,	Classes II, III, Items 1, 5, 8, and 10; Classes XIII and XIV	Dunedin Engineering and Steel Company J. Edmond ..	Jan. 18, 1909	..	Schedule rates	
" 4, "	"	Class III, Items 2, 3, 4, and 9	Vacuum Oil Company Proprietary (Limited)	Mar. 31, 1912	..	"	
" 4, "	"	Class III, Items 6 and 7; Class XII	Briscoe and Co. (Limited)	" 31, "	..	"	
" 4, "	"	Classes X, XI	Milburn Lime and Cement Company (Limited)	" 31, "	..	"	
" 4, "	"	Invercargill, Classes II, III, XIII, XIV	J. Edmond ..	" 31, "	..	"	
" 4, "	"	Class X	Burnside Hydraulic Lime and Cement Company (Limited)	" 31, "	..	"	
" 4, "	"	Class XI	Milburn Lime and Cement Company (Limited)	" 31, "	..	"	
" 4, "	"	Class XII	Briscoe and Co. (Limited)	" 31, "	..	"	

APPENDIX D.

SCHEDULE of SLEEPER CONTRACTS CURRENT on 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1910, showing Deliveries to the latter Date.

Date of Contract or Agreement.	Contractor's Name.	Address.	No. of Sleepers contracted for, and Class of Timber.	Rate per Sleeper.	Place of Delivery.	Date for Completion.	Total delivered to Date.	Date of Completion.
NORTH ISLAND.								
WHANGAREI DISTRICT.								
11 Sept., 1908	Eru Kako	Kawakawa	500 puriri	s. d. 4 0	Kawakawa	11 Mar., 1909	Nil	Contract cancelled.
26 Jan., 1909	Millar's West Australian Hardwood Company	Wellington	210 crossing 17s. per 100 ft. (16,000 hardw'd 3 9)		Opua	26 Sept., "	206 (16,950)	7 July, 1909.
15 Dec., 1909	H. Bradford	Marlow	600 totara 3 6		Ramarama	15 Feb., 1910	617	8 Feb., 1910.
22 Jan., 1910	C. Grant	Ngunguru	1,400 puriri 4 3		Opua	13 Mar., "	1,480	13 Mar., "
Various ..	Sundry small contractors	Various	795 " Various (200 totara)		Various	Various	(892) (197)	Various.
AUCKLAND DISTRICT.								
6 June, 1906	E. McMillan	Tahakeroa	500 totara 3 3		Tahakeroa	6 Dec., 1906	Nil	..
7 Feb., 1908	F. G. Worker	Wellford	500 " 3 3		Wellford	31 Mar., 1908	410	..
27 Mar., "	E. Brenstrum	Dargaville	2,000 puriri 4 3		Helensville	27 " 1909	2,000	16 Aug., 1909.
26 Jan., 1909	Millar's West Australian Hardwood Company	Wellington	20,000 hardw'd 3 9		Auckland	26 Sept., "	19,884	7 July, "
27 Feb., "	E. Brenstrum	Dargaville	1,200 puriri 4 3		Helensville	27 July, "	412	..
23 Feb., "	S. Brown (Limited)	Wellington	1,500 hardw'd 3 6		Auckland	30 Sept., 1909	1,580	1 April, 1909.
29 Mar., "	C. Walker	Tauhoa	1,000 totara 4 3		Hoteo	5 Oct., 1910	321	..
5 Oct., "	E. Brenstrum	Dargaville	2,000 puriri 3 3		Helensville	31 Jan., "	406	..
14 Dec., "	E. O. Struthers	Warkworth	500 totara 3 3		Ahuroa	30 April, "	412	..
9 Feb., 1910	W. H. Taylor	Ahuroa	500 " 3 3		Ahuroa	30 April, "	Nil	..
26 Jan., 1909	Millar's West Australian Hardwood Company	Wellington	370 hardw'd 17s. per 100 ft. crossing		Auckland	26 Sept., 1909	369	7 July, 1909.
GISBORNE DISTRICT.								
26 Jan., 1909	Nelson and Robertson	Sydney	15,195 hardw'd 4 2		GISBORNE	26 Sept., 1909	17,435	11 Dec., 1909.
WELLINGTON DISTRICT.								
26 Jan., 1909	G. Morris	Horopito	3,000 silver-pine 3 3		Raurimu	26 June, 1909	2,963	9 March, 1910.
26 "	Southland Timber Company	Dunedin	185 hardw'd 3 6		Wellington	26 Sept., "	185	15 July, 1909.
9 July, 1908	S. Brown (Limited)	Wellington	10,000 " 3 8		Stratford and Wellington	9 Mar., "	8,163	..
28 Mar., 1909	South-west Timber-hewers' Co-operative Society (Limited)	West Australia	10,000 jarrah 3 7		Wellington	12 Sept., "	10,116	1 July, 1909.

APPENDIX D—continued.

SCHEDULE of SLEEPER CONTRACTS CURRENT on 1st April, 1909, and CONTRACTS ENTERED INTO by the Public Works Department, &c.—continued.

Date of Contract or Agreement.	Contractor's Name.	Address.	No. of Sleepers contracted for, and Class of Timber.	Rate per sleeper.	Place of Delivery.	Date for Completion.	Total delivered to Date.	Date of Completion.
SOUTH ISLAND.								
WESTLAND DISTRICT.								
3 April, 1909	Stratford and Blair	Greymouth	700 silver-pine	3 3	Kaimata	4 April, 1909	620	Balance cancelled.
13 "	A. Greig	Gronadun	1,500 ditto	3 3	Cronadun	24 "	1,332	Ditto.
16 "	J. Chapman	Rimu	3,000 "	3 6	Greymouth	16 Dec.,	3,000	16 Dec., 1909.
16 "	L. Zala	Okarito	2,100 "	3 6	"	16 "	943	"
16 "	W. A. Sadler	Nelson Creek	3,000 "	3 3	Ngahere	16 "	3,000	22 Dec., 1909.
16 "	J. Minehan	Ross	700 "	3 3	Ross	16 April,	684	Balance cancelled.
5 May,	J. Nyberg	Ruru	600 "	3 3	Ruru	6 May,	593	Ditto.
5 "	Church and Peat	Moana	1,000 "	3 3	Moana	6 "	965	"
10 "	D. Wallace	Kokiri	800 "	3 3	Kokiri	10 "	794	"
29 "	H. Myers	Nelson Creek	1,300 "	3 3	Ngahere	29 "	1,300	29 May, 1909.
29 "	W. Ryan	Kokiri	1,000 "	3 3	Kokiri	29 "	881	Balance cancelled.
5 June,	Church and Peat	Moana	1,000 "	3 3	Moana	6 June,	1,000	6 June, 1909.
15 "	A. Graham	Hokitika	500 "	3 3	Hokitika	15 "	500	15 "
20 "	D. Joseph	Nelson Creek	500 "	3 3	Ngahere	21 "	472	Balance cancelled.
22 "	J. Minehan	Ross	1,000 "	3 3	Ross	23 "	1,031	23 June, 1909.
28 "	J. Hunt	Gronadun	750 "	3 3	Gronadun	29 "	748	Balance cancelled.
7 Aug.,	R. Arthur	Kokiri	700 "	3 3	Kokiri	9 Aug.,	674	Ditto.
26 Jan., 1909	J. W. Wallace	Wellington	6,000 hardw'd	4 6	Westport	26 Sept.,	6,000	August, 1909.
26 "	D. Michael	Sydney	6,597 "	4 6	Greymouth	26 "	6,597	14 Feb., 1910.
Various..	Sundry small contracts	Various	3,302 silver-pine	3 3	Various	Various	3,302	Various.
CHRISTCHURCH DISTRICT.								
26 Jan., 1909	Southland Timber Company	Dunedin	55,800 hard-wood	3 6	Lyttelton	26 Sept., 1909	46,494	"
26 "	Ditto	"	242 ditto	4 0½	"	26 "	180	"
26 "	"	"	183 "	5 0	"	26 "	160	"
26 "	"	"	193 "	5 6	"	26 "	193	"
28 May,	"	"	150 "	3 8	"	28 Aug.,	104	2 Mar., 1910.
28 "	"	"	310 "	4 2½	"	28 "	Nil	"
28 "	"	"	200 "	4 8	"	28 "	278	16 Feb., 1910.
28 "	"	"	250 "	5 2	"	28 "	Nil	"
28 "	"	"	290 "	5 8	"	28 "	Nil	"
DUNEDIN DISTRICT.								
10 May, 1909	J. W. Wallace	Wellington	800 ha-dw'd bridge	5 6	Dunedin	16 Aug., 1909	811	16 Aug., 1909.
26 Jan., 1909	Southland Timber Company	Dunedin	618 hardw'd £147 14s., con- crossing tract		Dunedin	26 Sept.,	637	2 "

APPENDIX E.

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

(1ST JULY, 1909, TO 30TH JUNE, 1910.)

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

SIR,—

Public Works Office, Wellington, 30th June, 1910.

I have the honour to submit the following report on the various work completed and in progress throughout the Dominion during the past year.

RAILWAYS.

ABSTRACT.

The following table shows the expenditure and liabilities on Government railways in New Zealand up to the 31st March, 1910:—

Name of Railway.	Total Length of Railway or Section.	Open for Traffic.	Expenditure to 31st March, 1910.	Liabilities on 31st March, 1910.
	M. ch.	M. ch.	£ s. d.	£ s. d.
Kaihu Valley	19 40	17 21	55,044 17 1	..
Opua Wharf - Grahamtown	58 6	30 13	429,706 2 6	16,508 1 2
North Auckland (Kaipara Northwards)	110 0	33 30	393,182 17 0	1,012 11 5
Kaipara-Waikato, with Branches	151 1	151 1	1,506,100 12 4	..
Waikato-Thames, with Branches	75 18	75 18	487,532 13 3	..
Thames Valley - Rotorua	69 33	69 33	355,576 11 1	..
Gisborne-Motu	52 44	23 74	283,255 15 2	12,272 15 8
Wellington-Napier and Palmerston North (including Te Aro Extension and Greytown Branch)	233 12	233 12	2,409,259 15 9	..
Wellington-Waitara, with Branches	289 27	285 59	2,507,764 3 4	3 0 0
Stratford-Ongarue	101 0	15 68	249,477 19 5	2,323 3 1
North Island Main Trunk	209 69	209 69	2,682,054 9 5	35 10 0
Pictou-Waipara—				
Pictou southwards	129 9	33 45	468,851 17 5	2,171 2 3
Waipara northwards	44 21	31 68	267,366 8 9	16,932 15 8
Nelson-Roundell	22 73	22 73	186,614 10 11	..
Midland Railway*	241 67	123 65	1,135,675 3 0	514,036 16 2
Westport-Ngakawau	19 56	19 56	188,008 17 3	..
Westport-Ngakawau Extension to Mokihinui†	7 12	7 12	..	..
Mokihinui Colliery Line‡	3 69	3 69	..	..
Westport-Inangahua	26 0	..	57,419 14 8	34 8 9
Ngahere-Blackball	3 40	..	134,170 17 5	3,236 9 1
Greymouth-Coal Creek	8 70	5 1	144,140 13 6	1,770 9 11
Greymouth-Brunner	7 51	7 51	150,512 11 11	..
Greymouth-Ross	40 32	38 68	335,267 19 7	15 14 7
Culverden-Hammer Motor-cars and Repairs to Road	..	..	3,834 0 0	..
Hurunui-Waitaki, with Branches	483 72	443 8	2,417,945 9 7	..
Canterbury Interior Main Line—Oxford-Temuka	83 0	11 44	59,343 9 2	..
Waitaki-Bluff, with Branches	616 68	507 17	4,361,277 5 4	2,386 9 10
Otago Central	182 56	134 78	1,280,433 9 9	..
Invercargill-Kingston, with Mararoa Branch	117 4	97 44	334,649 2 9	..
Forest Hill Railway—Winton-Hedgehope§	12 40	12 40	22,983 14 5	..
Western Railways	71 6	70 31	326,108 17 0	1,553 2 5
Preliminary Surveys	..	..	40,375 8 11	..
Miscellaneous	..	..	10,336 19 11	..
Stock of Permanent-way on hand	..	..	61,865 3 3	3,594 16 2
Value of Permanent-way in hands of Railway Department	..	..	25,000 0 0	..
Rolling-stock	..	..	4,754,635 0 11	109,117 0 0
Total	3,491 26	2,716 48	28,125,772 11 9	687,004 6 2
PROVINCIAL GOVERNMENT LINES, ETC.				
Canterbury (lengths included above)	..	..	731,759 0 0	..
Otago	..	..	372,522 2 5	..
Gisborne to Ormond Tramway	..	..	4,975 1 7	..
Midland Railway, valuation of works constructed by company	..	..	¶683,460 3 1	..
Grand total	3,491 26	2,716 48	29,918,488 18 10	687,004 6 2

* The amount shown as expenditure represents the net amount charged against the Dominion.

† The funds for this extension—namely, £35,501 2s. 11d.—were provided by the Westport Harbour Board.

‡ The funds for purchase of this line, £15,745, were provided by the Westport Harbour Board.

§ The expenditure on this line as a tramway was made by the Lands Department.

¶ Includes expenditure on railways under Hutt Road and Railway Improvement, Railway Improvement Authorization Act, and Wellington-Manawatu Railway Purchase Act Accounts.

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

During the financial year a total length of 35 miles 21 chains of railway was opened for general traffic, as shown in the following table:—

Railway.	Section.	Length.	Date of handing over to Working Railways Department.
		M. ch.	
North Auckland ...	Waby-Wellsford ...	3 18	1 April, 1909.
Gisborne-Rotorua ...	Waikohu Bridge - Waikohu	0 35	1 April, 1909.
Greymouth-Hokitika-Ross ...	Ruatapu-Ross ...	7 21	1 April, 1909.
Riversdale-Switzers ...	Riversdale-Waikaia ...	13 70	1 October, 1909.
Orepuki-Waiiau ...	Waihoaka-Tuatapere...	8 7	1 October, 1909.
Catlin's - Seaward Bush ...	Catlin's-Houipapa ...	2 30	17 December, 1909.
		35 21	

Appended hereto is a coloured diagram showing the lengths of railway opened for traffic each year since the initiation of the public-works policy.

OPUA-GRAHAMTOWN RAILWAY (58 miles).

Kawakawa Southwards Section (7 m. 16 ch. to 19 m. from Opuā Wharf).—The formation of this section was completed in October, 1909, but a few slips have yet to be removed in three cuttings, and some narrow banks widened. The bridges at 17 m. 60 ch., 18 m. 19 ch., and 18 m. 66 ch. were completed by October. Rails have been laid to the end of section, and the first and second lifts of ballast put down. Fencing on both sides of the line has been completed, and gates and private crossings provided. Culverts and drains, with the exception of an open culvert at 18 m. 18 ch. to carry off heavy flood-waters, have also been finished. At Te Kopuru ballast-pit new sidings were laid in order to provide improved facilities for loading; four new headings were driven into the hill to accommodate the trucks during loading; and an engine, crusher, elevator, and bins were erected. This plant enables the whole of the material from the hill to be utilized for ballasting purposes, thereby increasing the output from the pit by fully 30 per cent., improving the quality of ballast, and reducing the cost. The section from Kawakawa to 15 m., though completed, has not been taken over by the Railway Department, and is therefore being maintained by this Department.

Ramarama Section (19 m. to 27 m. 64 ch.).—On this section occurs the bulk of the heavy work requiring to be carried out on this line. The formation from 19 m. to 26 m., principally in clay and rock cuttings, was completed in December. Slips at 19 m. 17 ch. and 21 m. 38 ch. have been the cause of considerable trouble. The work of clearing and stopping the same is in progress. Completion of the section from 26 m. to 27 m. 63 ch. was seriously delayed by large slips, especially in cuttings at 26 m. 43 ch., 26 m. 70 ch., 27 m. 28 ch., and 27 m. 59 ch. Slips in the three latter cuttings assumed very large proportions, necessitating widening of cuttings and flattening of batters. The removal of material is being actively proceeded with. All formation-work, with the exception of removal of these slips, was finished early in June. A bad slip in the cutting passing through a cemetery necessitated removal of bodies and deviation of the adjacent road-line. Completion of this cutting was considerably expedited by use of the ballast-train in removing excavated material.

Bridges at 19 m. 34 ch., 21 m. 29 ch., 23 m. 55 ch., 24 m. 56 ch., 25 m. 32 ch., and 26 m. 11 ch. were all completed by May.

Concrete culverts have been put in at 20 m. 61 ch., 22 m. 57 ch., 26 m. 62 ch., 26 m. 76 ch., 27 m. 11 ch., 27 m. 33 ch., 27 m. 45 ch., and 27 m. 50 ch., and 12 in. and 18 in. drainage-pipes put in where necessary. Only a small amount of fencing has as yet been done on this section. Erection of the telephone-line from Scoria Flat to Towai is well under way.

As soon as cuttings and bridges were completed rail-laying was commenced, and by the end of June the rail-head from the north had advanced from 19 m. to 26 m. 30 ch., and from the south (Towai Section) to 27 m. 60 ch., leaving a gap of 110 chains. It is expected that rail-heads will be linked up by the middle of July.

Ballasting was commenced from 19 m., and has been actively proceeded with up to nearly the end of the section.

Formation of the Ramarama Station yard has been completed, sidings put in, and a great deal of ballasting done on the sidings and road-approaches.

A contract has been let for the erection of the Ramarama Station buildings.

The completion of this section was considerably delayed owing to the heavy slips before mentioned.

The work remaining to be done consists of finishing-up of ballasting, erection of about 7 miles of fencing, widening slip-cuttings, removing slips, erection of station buildings at Ramarama, a few culverts and cattle-stops, private crossings and gates, general drainage in cuttings, and stone protection to some of the banks and cuttings.

Towai Section (16 m. to 21 m. from Kamo).—The whole length of this section is formed, including 50-odd chains beyond Towai Station yard, which connects with the northern section. The ballasting of line over this length was completed by November. Station buildings at Towai and Akerama were finished about the same time, and fencing to Towai yard also completed. The section was taken over by the Railway Department at the beginning of May last.

An additional 6,000-gallon vat still requires to be erected at Towai, as also does a telephone-line between Hukerenui and Towai. The portion of line north of Towai Station still requires one culvert, a private-road crossing, the removal of extensive slips from 20 m. 65 ch. to 21 m. (end of section), and a few stone drains and stone walls, to be completed.

Extension to Grahamtown (2 m. 49 ch.).—Work in connection with the completion of formation, which was held over pending construction of wharf being commenced, was put in hand again in November. Formation to 4 m. 4 ch. was trimmed, and slips removed from cuttings at 3 m. 35 ch., 3 m. 65 ch., and 3 m. 78 ch. A stone-and-tile drain was put in for the whole length of the cutting from 3 m. 26 ch. to 3 m. 43 ch., and also in cutting from 3 m. 74 ch. to 3 m. 79 ch. A considerable quantity of stone was placed in several cuttings in the form of dwarf walls to prevent slips. The cutting from 4 m. 5 ch. to 4 m. 13 ch. was finished, but a heavy slip necessitated moving the line out about 14 ft. The material from this cutting is being utilized to widen station-yard. Practically all the formation in Grahamtown or Onerahi Station yard has been finished, with the exception of about 2 chains at end of wharf. The yard itself has been trimmed, and some further draining, and a stone wall at foot of hill to prevent slip, have been completed.

Rails have been laid from present Kioreroa Wharf, 2 m., to 4 m. 4 ch.; the line fully ballasted from 2 m. to 2 m. 66 ch., and about one-third ballasted to 4 m. 4 ch.

Some repairs were effected to the Kioreroa Bridge, and permanent-way was laid across it. The additions to the opening span to increase speed of working are being placed in position.

In March a commencement was made with excavation of siding into the Parakiore quarry, from which rock is to be obtained for protective purposes on this section. The laying of siding has been finished, as also has the inclined tramway. The quarry itself is being opened out, and will shortly be ready for use. The stone in this quarry is easily worked, and is of excellent quality for protective purposes.

Grahamtown Wharf: It was not until March that the contractors for this work received all their timber. This delay considerably retarded pile-driving. Since the arrival of the timber, however, the contractors have carried the work on in a most energetic manner, having driven fifty-five out of fifty-eight piers. It is anticipated that the last pile will be driven by about the middle of July. Caps, stringers, and longitudinal braces have been fixed in position as far as the fifty-fifth bay. Wales and braces have been put on several piers, and a short length of decking put in. This contract will probably be completed by the end of the year—some months before the expiry of the contract date.

The laying of rails in Grahamtown Station yard and on the wharf will be proceeded with in October, and the balance of ballasting and stone protective works put in hand. This work should not take more than three months to complete.

NORTH AUCKLAND RAILWAY.

Wellsford Section (66 m. to 69 m. 18 ch.).—A new and permanent water-supply has been put in at Waby Station.

Te Hana Section (69 m. 18 ch. to 72 m. 45 ch.).—During the year this section was completed, and handed over to the Working Railways Department on the 16th May, 1910. The traffic was worked during the first month by the Public Works Department's ballasting-locomotive. Several of the banks and cuttings are in rotten ground, so it was considered advisable to thoroughly test the track before running over it with the Railway Department's heavier engines.

The Hoteo quarry at 64 m. 46 ch., on the Waby Section, has been continuously worked during the year to provide material for protection-work along the line generally.

Kaiwaka Section (72 m. 45 ch. to 81 m. 30 ch.).—The earthworks on this section, which were during the previous year brought to an advanced stage as far as 77 m. 30 ch., have been completed, except a large bank at 77 m. 20 ch. and the cutting at 77 m. 40 ch., which are not yet quite finished. The Mainene tunnel is partly enlarged and lined. It has been completed for 4 chains 20 links from the north end. Enlarging has been commenced and carried forward for 2 chains at the south end, and has also been started in the middle. Lining will be carried on from these points.

Formation of the Topuni Station yard has been completed.

Mainene Bridge has also been completed. In the Topuni Bridge seven of the piers have the piles driven. There are still six piers in the middle of the bridge to be erected. The contract for supply of ironwork for these bridges has been completed.

Beyond 77 m. 30 ch. all concrete culverts, pipes, and stone drains are completed to the Kaiwaka Station yard at 81 m. 30 ch. Formation on the same length is all in hand and in an advanced stage.

Piercing of the tunnel at Ross's Hill has been commenced at both ends. A heading is in $2\frac{1}{4}$ chains at the south end, and about $3\frac{1}{4}$ chains at the north end, where also the tunnel front is completed. A special front had to be designed for the south end of tunnel, and this work is partly completed.

Fencing is in progress.

Service roads giving complete communication with all parts of the work on this section were completed during the year, and a landing has been prepared on the Kaiwaka Creek for launches and punts, by which material for the works is being conveyed from Te Hana and elsewhere.

Platelaying and ballasting have been proceeded with. Rails are now laid as far as 75 m. 49 ch., and bottom lift of ballast to the same point has been placed in position. The second lift has been carried as far as 72 m. 75 ch.

A contract for erection of platelayers' cottages at Kaiwaka Station yard is in progress.

A telephone-line has been erected from Te Hana to Kaiwaka Station. A movable school for the children of men employed on the works has also been erected.

Otamatea Station (81 m. 30 ch. to 83 m. 75 ch.).—This section is now being opened up. Clearing of scrub along the line is in hand, and a party of workmen are engaged in putting in pipes and culverts. A service road is being constructed alongside the line, and a commencement has been made with some of the cuttings.

GISBORNE—ROTORUA.

Otoko Section (23 m. 50 ch. to 31 m. 45 ch.).—Work on this section up to 31 m. has practically all been completed, and the Department's train is running daily. The Otoko Viaduct, which occurs just before reaching the end of the section, being incomplete, has for general convenience necessitated the construction of a temporary station at the viaduct, which has been completed. A contract has been let for the erection of the viaduct. The workshop at the viaduct-site has been erected, and is now being fitted up. Materials have been ordered, and work on foundations commenced.

Rakauoa Section (31 m. 45 ch. to 38 m. 25 ch.).—Earthworks are in hand throughout the whole of this section, and for a considerable distance are nearly completed. Construction of bridges and culverts is very much delayed by the difficulty of obtaining gravel for concrete, which can only be carted during summer months owing to the bad roads.

Matawai Section (38 m. 25 ch. onward).—Survey-work is still in hand on this section. Formation has been commenced on the first two miles.

STRATFORD—ONGARUE RAILWAY.

Te Wera Section (15 m. 68 ch. to 22 m. 65 ch.).—Work on this section was practically completed and the line handed over to the Railway Department on the 20th June, 1910. There are a few minor items still to be attended to.

Pohokura Section (22 m. 65 ch. to 31 m. 40 ch.).—All formation-work on this section is now complete, and rails have been laid to 28 m. The tunnel through the Pohokura Saddle, at 28 m. 14 ch., is now finished, and platelaying has been resumed from this point towards Pohokura Station. The second lift of ballast has been put on up to Ngatimaru Station yard (26 m. 34 ch.), and fencing and telephone-line are complete to 28 m. One cottage has been built at Pohokura, and the station-buildings at Ngatimaru are in progress. A three-span beam bridge is being built at 22 m. 67 ch.

Whangamomona Section (31 m. 40 ch. to 37 m. 40 ch., approximately).—The formation, with exception of culverts, is practically finished to 34 m. Clearing and further formation is in progress up to 36 m. This length shows some of the heaviest work met with so far in the construction of this line, and includes a tunnel 29½ chains in length through the ridge forming the divide between the Patea and Wanganui River basins. Driving the tunnel has been commenced at the Whangamomona end. At the Stratford end the long approach cutting is being taken out.

MOUNT EGMONT BRANCH.

Prospecting the stone-deposit at Manganui has been completed with favourable results. Survey-work on line has been completed sufficiently to enable the best method of conveying stone from the quarry to rail-head, as regards locomotive traction, to be considered, which is now being done.

BLenheim—WAIPIARA, NORTH END.

Seddon-Blind River Section (33 m. 45 ch. to 37 m. 7 ch.).—This section, though completed some time, has not yet been handed over to the Railway Department, and consequently it has been necessary for this Department to maintain it and run goods traffic. The Blind River Station yard and approach road have been gravelled.

Ward Section (37 m. 7 ch. to 48 m. 9 ch.).—Practically the whole of the earthworks on this section are now complete.

A length of 37 chains of the bank across Lake Grassmere has yet to be widened from 12 ft. to 16 ft.

Stream-diversions have been made at various points where necessary, and catch-water drains cut for the full length of the section.

The formation of the station-yard at Kaparu has been completed, the resulting excavated material going towards the lake-bank and station-approach road. The Hauwai Station yard has been completed, also the approach road, and extra widening is now in hand. Bridges aggregating twenty-two short spans have been erected, and culverts put in where necessary.

Platelaying has been completed from 40 m. 60 ch. to 48 m. 10 ch., including Hauwai and Ward Station yards.

A first lift of ballast has been put in from 40 m. to 48 m. 10 ch., including Kaparu, Hauwai, and Ward sidings. The second and third lifts of ballast have been completed from 37 m. 7 ch. to 40 m. 20 ch. The Lake Grassmere bank from 39 m. 75 ch. to 40 m. 50 ch. has been protected with round-stone pitching.

Goods traffic has been carried from Kaparu since the 1st December, 1909; from Hauwai since the 12th February, 1910; and from Ward since the 27th April, 1910. Control of the completed portion of this line is being retained by this Department so as to reduce as much as possible interference with the haulage of ballasting-material from the Awatere pit.

Fencing: The Railway Reserve has been fenced on both sides from 39 m. 4 ch. to 39 m. 70 ch., and the left-hand side has been netted from 37 m. 7 ch. to 39 m. 70 ch. to make it rabbit-proof. Fencing has also been done from 41 m. 60 ch. to 45 m. 47 ch. on the left-hand side and from 43 m. 45 ch. to 45 m. 47 ch. on the right-hand side. The fence along the Kaparu Station approach-road has also been netted on one side. Nine crossing-gates have been erected.

Station buildings: Kaparu Station buildings were completed in March, Hauwai platelayers' cottages in May, Ward platelayers' cottages in May, and the Hauwai and Ward Station buildings are in course of erection.

MIDLAND RAILWAY.

Nelson-Westland Section, North End.

Tui (Manu) Station (46 m. 38 ch. to 49 m. 55 ch.).—During the year earthworks have been completed. Tui Station yard has been completed, including approach roads and metalling. Platelaying and ballasting have been completed, and a quantity of materials for the erection of the Tui Station buildings have been delivered.

Glenhope Section (49 m. 55 ch. to Hope Junction).—The smaller cuttings are nearly completed, but the large cutting commencing at 52 m. 1 ch. could not be commenced until the road had been diverted. This, however, is now being put in hand. A slight deviation of the line from 52 m. 24 ch. to 52 m. 45 ch. was necessary to enable a station-yard to be put in at Kaka. The main line is completed at this place, and widening-out for the station-yard is in progress. From this point up to the Tadmor Saddle good progress has been made, nearly all the smaller cuttings and banks being completed.

The drive through the large cutting at the saddle has been completed, and two shafts sunk to assist in getting the material out. The material met with has not turned out favourably for removal owing to the quantity of water to contend with, which has prevented good progress being made. Very little formation-work has been done beyond the saddle, the total extent being about 30 chains of shallow earthwork in various places between 55 m. 50 ch. and 57 m. 15 ch.

The overbridge at the south end of Tui Station yard (49 m. 54 ch.), concrete abutments for the bridge at 50 m. 68 ch. (five 20 ft. spans), and staging have been completed. Erection of the bridge is now in hand.

Bridge at 53 m. 16 ch. (one 40 ft. and five 22 ft. spans): Gravel and cement for concrete piers have been carted. Foundations are excavated for four of the piers, and concreting commenced in three of them. The ironwork necessary for bridges at 53 m. 16 ch. and 55 m. 39 ch. has been delivered.

Nine concrete culverts and twenty stoneware and concrete pipe drains have been put in. Platelaying was resumed in October, and rails have been laid up to 50 m. 66 ch. Ballasting has been partly completed up to 50 m. 66 ch. A stone-crushing plant to provide material for ballast has been erected at the ballast-pit at Kiwi.

A considerable quantity of fencing-posts have been split in readiness for fencing.

A platelayer's cottage has been erected at Kaka.

A movable school for the children of workmen engaged on the line has been built.

The telephone-line has been extended from Tui Station to 57 m. 40 ch.

Nelson-Westland Section, South End.

Cronadun-Landing Section (45 m. 40 ch. to 54 m.).—The earthwork on this section has been nearly completed during the year.

Fencing has been nearly completed, and a telephone-line laid up to 54 m. 28 ch.

Timber is now arriving for the small pile bridges.

Platelaying has been commenced.

About 30 chains of formation has been nearly completed beyond the end of the section.

Canterbury-Westland Section, West End.

Arthur's Pass Tunnel Contract (51 m. 40 ch. to 59 m. 40 ch.).—During the year exactly half a mile of tunnel (both ends) has been completed.

At the Otira end 37½ chains has been finished from the west portal at 52 m. 67 ch. to 53 m. 28 ch. The bottom heading has been advanced to 53 m. 61 ch., a distance of 64 chains from the mouth. Partial excavation for enlargement has been done for 20 chains from the end of the finished work, and a considerable length is standing on timber.

At the Bealey end the bottom heading has been driven 11 chains, and the tunnel excavated and lined for 2½ chains. An accident occurred in May whereby a chain of excavated, but not lined, tunnel caved in. This is now being picked up. In addition to the tunnel-work, the contractors erected the piers for the Bealey Bridge, which are now ready for the superstructure.

Otira Section (50 m. 39 ch. to 51 m. 40 ch.).—Formation of the line between Otira Station and commencement of the tunnel contract was finished last year, and the rails laid and ballasted. The groin protection up to 51 m. 40 ch. has been completed during the year. Work was discontinued and the men dispensed with in August.

Canterbury-Westland Section, East End.

Cass Section (12 m. 18 ch. to 27 m. 40 ch.).—Earthworks, tunnels, and retaining-walls have been completed. The viaduct at Sloven's Creek and the small pile bridges have also been finished.

Delay in completion of the viaduct kept platelaying back somewhat, but rails are now laid over the full length of the section with exception of part of the sidings at Avoca and Craigieburn Stations.

A good ballast-pit is being worked at 24 m. with steam navvy. The first lift is completed from Broken River Station (12 m. 18 ch.) to 24 m., and in places to the Cass Station at 27 m. 40 ch. The second lift is now being proceeded with.

Very little fencing has been done, but all necessary material is now on the ground.

Cattle-stops have been put in throughout the section.

Tenders are being invited for the erection of station-buildings.

This section should be ready for traffic next summer.

Bealey Section (27 m. 40 ch. to 41 m. 53 ch., the end of the Arthur's Pass Tunnel Contract).—Earthworks are in hand up to 35 m. They are largely in rocky country, and are fairly heavy in character. A considerable length is in the river-bed. The necessary protective works are well in hand.

No bridge-work has as yet been started.

Platelaying is completed to 28 m. 31 ch., and the line will shortly be laid to the Cass Bridge, at 29 m. 9 ch., when a halt will have to be made.

No ballasting has yet been done on this section.

NGAHERE—BLACKBALL RAILWAY (3 m. 40 ch. in length).

The formation, platelaying, and ballasting of this line have been completed during the year. Owing to the Blackball Station yard being all in solid stone cutting, it was impossible to put the station buildings in hand until the excavation was nearly finished, to avoid damage by flying stones. In consequence of this, the last work to be done on this line is the completion of the station-buildings.

For the past six months the line throughout has been sufficiently complete to allow of coal traffic being run, first by ballast-engine and latterly by the Railway Department's engines. Additional accommodation at Ngarere for timber-skids and cattle-yards is being provided.

GREYMOUTH—POINT ELIZABETH COLLIERIES RAILWAY EXTENSION.

Coal Creek Extension (3 m. 69 ch.).—Very good progress has been made with the earthwork, which at the beginning of the year was only just commenced on the upper half of the line. The formation is now practically complete for a mile and a half beyond present terminus. Beyond that point all cuttings are in hand, and considerable portions are complete. Slips at 6 m. 30 ch., 7 m. 58'66 ch., and on the bins station necessitated much more material being handled at those points than was anticipated. Work on the cliffs is well in hand, more than half the length being finished. The remainder is under way, and the heading for small tunnel at 7 m. is being driven.

No. 1 Tunnel was completed during the year, and No. 2 Tunnel was converted into an open cutting.

The necessary timber for bridges is being procured, and erection can be proceeded with in three months' time.

WESTPORT—INANGAHUA RAILWAY.

Te Kuha Section (5 miles 74 chains in length).—Ballasting was commenced in October, and completed to the Te Kuha Station, at 5 m. 65 ch. All narrow banks on this section have been widened out with the ballast-train. Ballasting has been put in hand, and the bottom lift has been carried as far as 4 m. 25 ch. A good deal of work has been done in final excavation and trimming up in Te Kuha Station yard, where a temporary goods-shed has been erected. A temporary engine-shed and coal-store have also been erected at the Westport end of the line. Telephone-line has been erected from Westport to Te Kuha Station.

A movable school for the children of workmen has been built at Te Kuha Station.

Extension Section.—Bush has been felled from 6 m. 74 ch. to 7 m. 53 ch. during the year. In August there were fourteen co-operative parties on the rock-excavations between 6 m. and 7 m. 12 ch. Owing to the commencement of ballasting and the decision to carry out the work by contract, the number of parties was gradually reduced, until, in January, there were only three co-operative parties on this section on rock-excavation. The cutting from 5 m. 78 ch. to 6 m. 3 ch. is almost completed, and the cuttings between 6 m. 7 ch. and 6 m. 23 ch. are now in progress. The cutting at 6 m. 53 ch. is now completed.

The top drive of the tunnel 6 m. 15 ch. to 6 m. 20 ch. has been put through. The rock through which the heading has been pierced proved to be a hard flinty slate, fairly easily excavated, but requiring timber all through.

In May six contracts were let for carrying out work from 6 m. 35 ch. to 7 m. 38 ch. From 5 m. 78 ch. to 6 m. 34 ch. (the commencement of the contract-work) all cuttings and the tunnel are in progress under co-operative contracts.

BLENHEIM—WAIPARA RAILWAY, SOUTH END.

Mackenzie Section (31 m. 67 ch. to 35 m. 50 ch.).—This section has been completed, except for a few chains of fencing and some metalling, and is now practically ready for handing over to the Railway Department. During the year earthworks, platelaying, ballasting, erection of station-buildings at Nonoti and Mina, and fencing have been put in hand and completed.

Parnassus Section (35 m. 50 ch. to 44 m.).—This section has been repegged throughout. Earthworks are practically complete to 36 m., but beyond that point nothing has been done except a little work on the service road.

The bridge over the Waiau River is being built by contract, and is about one-third finished.

CATLIN'S—WAIMAHAKA RAILWAY.

Catlin's End.

Houipapa Section (21 m. 60 ch. to 24 m. 10 ch.).—The portion of this section to Houipapa Station (24 m. 8 ch.) was completed and opened for traffic on the 17th December, 1909.

The stone-crusher was removed, before the opening of the section, from 22 m. 34 ch. to 24 m. 20 ch. in order to provide ballast and metal for concrete culverts to Puketiro without running over the opened portion of the line.

Papatupu Section (24 m. 10 ch. to 25 m. 60 ch.).—This section is completed ready to hand over to the Railway Department, but is being retained for the present, as the ballast-pit is situated on it.

Puketiro (Table Hill) Section (25 m. 60 ch. to 31 m. 30 ch.).—The portion of this section beyond 29 m. has been resurveyed, and the deep ravine at Christie's Creek has been negotiated by making a detour higher up the gully, thus avoiding the necessity for a viaduct. The earth-work, however, is heavy, the gullies being deep, with rugged spurs intervening. This section has been pushed on energetically during the year, and, considering wet weather and the state of roads, very fair progress has been made.

Clearing, logging, and burning has been continued from 29 m. 32 ch. to 32 m. 20 ch.

The earthwork between 25 m. 70 ch. and 28 m. 40 ch. is now completed, and made good after several slips. The portion to 29 m. 68 ch. is also nearing completion.

Culverts with concrete foundations have been put in at sixteen places.

An overhead bridge has been built across the cutting at 26 m. 3 ch., and a subway put in at 27 m. 2 ch.

A second platelayer's cottage has been erected at Papatupu (27 m. 32 ch.).

Platelaying has been completed to Blunder Creek at 28 m. 44 ch.

Ballasting has been completed to 27 m. 44 ch., and the first lift only to 28 m.

Fencing is complete on the left to 27 m. 40 ch., also on both sides to 29 m., with the exception of a few gaps which had to be left for the service tramway.

Formation and clearing for service tramway are completed to 31 m., and rails laid and packed to 30 m. 60 ch.

Waimahaka End.

Tokanui Section (24 m. 48 ch. to 32 m. 75 ch.).—Bushfelling is completed to the end of section. Clearing and grubbing is also completed with exception of a few isolated patches.

Formation, on which most of the men have been employed, is now in hand up to and including Tokanui Station, at 32 m. 58 ch., and is completed to 29 m. 48 ch., excepting some additions required to banks which have become shrunken with rains. A few slips require removing. From 29 m. 48 ch. to 32 m. formation is two-thirds completed. From 32 m. to end of section it is one-third completed.

In the way of water openings not much now remains to be completed, the principal uncompleted work being Tokanui Bridge at 32 m. 42 ch., and some 12 in. and 18 in. pipe culverts. The year's work includes 259 lin. ft. of 12 in. piping, 173 yards of 18 in. piping, 45 yards of 3 ft. arched masonry culvert, 35 yards of 4 ft. arched masonry culvert, and about 26 chains of stone drain.

Diversion of Tokanui Stream on left of 32 m. 44 ch. is done, and that on the left of 32 m. 50 ch. is two-thirds completed.

Fencing has been done on both sides from Waimahaka to 28 m. 40 ch.; on the left, from 32 m. to 32 m. 41 ch.

The service tramway has been extended to about 31 m. 30 ch.

Trimming of formation is completed from 24 m. 48 ch. to 27 m. 65 ch. in readiness for platelaying.

The rail-head has been extended from 24 m. 47·88 ch. to 24 m. 57·12 ch. with the help of surplus material from Tuatapere. About 10 acres of land is being acquired opposite Titiroa Station, on the opened line, and a ballast-pit is being opened thereon.

A water-supply to Te Peka Station (25 m. 78 ch.) is being obtained by gravitation from a creek at a point 49 chains distant. The work is about a quarter completed.

Wet weather and other adverse circumstances have militated against the progress of work on this railway.

LAWRENCE-ROXBURGH RAILWAY.

Evans Flat Section (21 m. 76 ch. to 25 m. 35 ch.).—Platelaying on the main line and sidings was complete last year. Ballasting has now been completed. Siding into ballast-pit has been lifted, and the material stacked at Evans Flat Station.

The necessary platforms, station-buildings, cattle-yards, and a platelayer's cottage at Evans Flat Station have been completed.

Five cattle-stops and four private-crossing gates have been erected complete, and all approaches formed and gravelled.

A traffic-bridge over Weatherstone Creek at Derwent Street, Lawrence, has been erected on pile piers. This was to replace a structure belonging to the Borough Council, injured by heavy carting in connection with railway-works.

Wing fences and fencing generally on this section have been completed.

Big Hill (25 m. 35 ch. to 29 m. 33 ch.).—Earthwork is completed to 29 m. 35 ch. Water-tables and catchwater drains have been cut.

Four private crossings with gates and one with cattle-stops, also three public-crossing cattle-stops, have been constructed, and all crossings formed and gravelled.

Bowler's Creek and Big Hill Stations have been formed, and approaches put in complete.

Formation-trimming is completed to 29 m. 33 ch., and platelaying on main line and sidings, also ballasting, completed to the same point.

Station-buildings, platforms, loading-bank, and platelayer's cottages (two) have been completed at Bowler's Creek, and a gravel platform and shelter-shed have been erected at Big Hill.

A telephone-line on ironbark poles has been erected over the whole length from Lawrence to Big Hill.

Fencing has also been finished.

The line to Big Hill being now completed, material along the line has been gathered up and stacked, and some of it transferred to Catlin's. The track being in good order, maintenance has been discontinued and all men paid off.

Work in the Big Hill tunnel and beyond is in the same condition as reported last year, except that several sets of timbering have fallen, and rock from the roof has partly blocked the heading.

RIVERSDALE-SWITZERS RAILWAY.

Formation was continued from 13 m. 23 ch. to the terminus 13 m. 70 ch. Fencing was completed from 12 m. 4 ch., and platelaying from 12 m. 14 ch., and ballasting from 10 m. 40 ch., including Waikaia (Switzers) Station yard. Dome Creek Bridge was also finished.

Station-buildings Contract No. 1, for erection of buildings at Waipounamu, Plains, Keith, and Freshford, and two cottages at Riversdale, was completed. Contract No. 2, for the remainder of necessary buildings, has just been completed.

A concrete dam 8 ft. high and $\frac{1}{2}$ chain long was constructed to conserve water in a creek near Waikaia Station, the water gravitating to the service-tank for engine purposes.

The line was handed over to the Working Railways Department on the 1st October, being then practically complete with exception of the buildings previously referred to.

OREPUKI-WAIAU RAILWAY.

Tuatapere Section (40 m. 16 ch. to 48 m. 23 ch.).—The small amount of fencing, platelaying, ballasting, &c., remaining to be done at the commencement of this year has since been completed. Goods traffic was carried on by this Department until the 1st October, on which date the section was handed over to the Working Railways Department.

The only work then incomplete was the erection of station-buildings at Tuatapere. These were not completed until March.

SURVEYS OF RAILWAYS UNDER CONSTRUCTION, NEW LINES OF RAILWAY, AND LAND-PLAN SURVEYS, ETC.

Kawakawa-Kaikohe Railway.—A survey of this line was commenced on the 14th May, and at the end of June a trial line, following Ngapipito Valley, was pegged from the junction with the ballast-pit line at Scoria Flat (off the Kawakawa Southwards line) to 6 m. 41 ch., and the permanent line was pegged to 3 m., and plans, and estimates, and report made.

North Auckland Railway Permanent Survey.—The survey of the line except in respect of a few minor matters on the last mile is now completed as far as 87 m., about 3 miles beyond the Otamatea Bridge. Pegging of the permanent survey is completed, and plans are roughly finished as far as 95 m. Trial-line work has been carried out to 98 m., near McCarroll's Gap.

Waihi-Tauranga-Opotiki Trial Survey.—This survey has been carried as far as the Tarawera Swamp, across which a trial line has been explored to near Te Teko, a distance of about 88 miles from Waihi. Plans, longitudinal and cross sections, have been completed up to 55 m., which is three-quarters of a mile beyond Te Puke Station yard. In addition to the above, plans, longitudinal and cross sections are nearly complete up to 60 m. Plans have been partially completed up to 76 m., between Otomarakau and Matata.

Gisborne-Rotorua.—The line this year has been permanently pegged from 34 m. to 40 m. A trial line has been run for a further four miles, and plan prepared.

Stratford-Ongarue.—The permanent line is now being pegged between 36 m. and 37 m., and a trial line has been run for a mile beyond the Whangamomona Township.

Mount Egmont Branch Railway.—A survey of the proposed incline to a quarry-site at the head of the Mangonui, on the Surrey Road track, is in progress, and men are employed sinking shafts for prospecting for the rock.

Blenheim-Waipara (South End).—The line has been repegged throughout from 35 m. 40 ch. (Mina) to 44 m. (Parnassus). The line has been located to 60 m. 50 ch. (Conway River), at which point it was discontinued.

Reefton-Inangahua.—A reconnaissance survey was made of the suggested deviation from Inangahua Landing to Berlin's, in the Buller Gorge.

Pareora River Branch Railway.—A reconnaissance survey has been made, and report submitted.

Pleasant Point - Raincliff Railway.—A reconnaissance survey has been made of this route, and also of the route Temuka-Kakahu, to tap the same country, and reports submitted.

Catlin's-Waimahaka (Catlin's End).—The survey of the permanent line has been completed from 30 m. 14 ch. to 36 m. 50 ch. (Papatowai), the end of the authorized line, and a sufficient distance—about 2 miles—beyond to insure the line being in correct position.

Wright's Bush - Heddon Bush, &c.—Proposed lines of railway, Wright's Bush - Heddon Bush, Winton - Heddon Bush, Hedgehope-Gore, and Hedgehope-Mataura, have been investigated and reported upon.

LAND-PLAN SURVEYS.

Midland Railway (Bealey Section).—The land-plan survey of this section is in hand.

Otago District.—Land-plan surveys have been made in connection with Waikaia Railway-station water-supply, Tuatapere Railway-station water-supply, Awamoko Stream diversion, Steward Settlement, and the proposed ballast-pit at Titiroa, on the Seaward Bush Railway, and plans prepared.

Otago Central Railway.—The opened line from Omakau to Clyde, 23 miles 39 chains in length, was surveyed, and plans made showing all works as constructed.

ROADS AND BRIDGES.

A very considerable amount of work has been done under this head during the past year, as shown by the following table:—

New dray-roads constructed	...	...	...	...	342 miles.
Dray-roads metalled	...	...	...	...	232 „
Bridle-roads converted to dray-roads	...	...	...	...	115 „
New bridle-tracks constructed	...	...	...	...	216 „
Bridges constructed 30 ft. in length or over	...	...	...	...	177
Engineering survey made	...	...	...	...	373 miles.
Dray-roads maintained	...	...	...	...	2,597 „
Bridle-roads maintained	...	...	...	...	1,246 „

The total expenditure on roads during the last financial year amounted to £371,778.

The amount expended during the quarter ending 30th June, 1910, was £53,828.

Few individual works of any magnitude have been undertaken, but the following bridges are worthy of mention.

The Kaihu Creek Bridge, Maropiu-Karara Road.—This bridge consists of two 24 ft. and one 82 ft. spans on timber piers. The work is being carried out by the Hobson County Council.

Opouteke River Bridge, Kaikohe - Mangakahia Church Road.—The construction of this bridge is now in hand, and consists of one central truss of 61 ft. 3 in. span and two ferro-concrete spans of 24 ft. at each end, with 11 ft. 8 in. clear roadway, all built on ferro-concrete piling.

Kaimarama Bridge, Coromandel.—This bridge has been erected in ferro-concrete by the Department. It consists of three spans, two of which are 35 ft. each, and one 60 ft. The roadway is 11 ft. The approaches are now under construction.

Thames River Traffic-bridge, Te Aroha (pound for pound).—This bridge was constructed by the Te Aroha Borough Council, and consists of two 19 ft. stringer spans, five 40 ft., two 42 ft., and two 80 ft. truss spans. The roadway is 14 ft. wide.

Hamilton Traffic Bridge.—This bridge is being erected in steel, and consists of two spans of 40 ft. 9 in., two spans of 40 ft. each, and one arch span over the water of 340 ft. The deck is 24 ft. 6½ in. wide, and there is also a footpath 4 ft. 6 in. wide. The bridge is almost complete. The work is being carried out by the Hamilton Borough Council, with the assistance of a Government subsidy.

Puniu Bridge, Te Awamutu - Otorohanga Road, consists of one 80 ft. truss and six 26 ft. spans. The approaches are now being filled in. The work is being carried out by the Department.

Tokiohuru Bridge, Parapara-Karioi Road.—This bridge has been completed, and consists of one 70 ft. truss span on timber piers, with a 14 ft. roadway. Approaches 20 chains in length were also completed.

Maraekakaho Stream Bridge, Mangataki Road, consists of seven 25 ft. spans on ferro-concrete piles, and was completed last December.

Wairoa Bridge, Frasertown.—This bridge consists of six 20 ft. spans and two 147 ft. spans on pile piers, and has now been completed.

Wanganui Town Bridge.—The sinking of the cylinders of Nos. 5 and 6 piers was finished early in December last, having been effected without interruption to the traffic.

Kawhatau Bridge (pound for pound) consists of one 120 ft. and four 40 ft. spans. The work was carried out by the Rangitikei County Council.

Manawatu Bridge (Lower Gorge).—This bridge consists of seven 147 ft. and one 36 ft. spans. The work was carried out by the Oroua County Council. The Government subsidized this work to the extent of £8,500. The cost of the bridge was approximately £20,000.

Wairau Bridge, Kaituna-Tuamarina-Blenheim Road.—The erection of this bridge, which is 481 ft. in length, consisting of five 80 ft., three 20 ft., and one 21 ft. spans, was carried out under the direct supervision of the Spring Creek Road Board.

O'Sullivan's Bridge, Belgrove-Westport Road.—This bridge, erected by the Department, consists of one 20 ft., one 80 ft., one 147 ft., and one 60 ft. spans, with concrete piers. The total length of the bridge is 370 ft., and it was completed in November last. The approaches were also completed.

Mokihinui River Bridge, Coast Road from Westport northwards.—Eight spans of this bridge were completed; it was then found impossible to drive any more piles in the bed of the river, and the contractor was given an extra price for constructing two cylinder-and-concrete piers, which work is now in hand under the supervision of the Department.

Little Wanganui River Bridge, Coast Road from Westport northwards.—This bridge consists of two 40 ft. and three 25 ft. spans, and two small land-spans. It is built of brown-birch, and was completed last May. The approaches are now being finished.

Otira Bridge (Upper).—This dray-bridge of one span of 120 ft. in length has been completed. It is on the main coach-road between Canterbury and Westland.

Otira Bridge (Lower).—The erection of this bridge is progressing. One truss has been completed, and the second truss is now being placed in position. This bridge is of similar design to the Upper Otira Bridge.

Waikukupu Bridge.—This bridge has now been completed. It is on the main road between Waiho and Karangarua, and consists of four 40 ft. and two 20 ft. spans.

Big Wanganui Bridge.—A contract has been accepted, and the works are now under way for the construction of the above bridge, which consists of eight spans of 100 ft. on timber pile piers, and one concrete abutment.

CENTRAL OTAGO IRRIGATION.

The first work done during the year was the contour-survey and levelling of the Serpentine Reservoir site in Taieri River above the Styx junction. This work took a very considerable time, there being in all about 175 miles of traverses and levels. A dam 50 ft. high will impound all the water available annually, which is in the neighbourhood of 10,000 million cubic feet.

A reservoir-site was also surveyed in the Taieri River at Canadian Flat, some twelve miles above the Styx. This, with a dam 64 ft. high, would conserve about 888 million cubic feet of water. It would, however, submerge the workings of the Taieri Falls Sluicing Company, and would probably be available at present only at great cost.

A dam-site and contours have been surveyed in Styx River to show the cost of raising the water to divert it—with a large race sufficient to carry the flood-water—into the Serpentine Reservoir at the level of 1,860 ft. The dam would be about 25 ft. high, and the race 15 chains long.

Two reservoir and dam sites were surveyed at the head of the Poolburn, the area of the upper one being 975 acres, with a capacity of 992 million cubic feet, while the area of the lower one is 446 acres, and its capacity about 298 million cubic feet. The drainage-area is unfortunately only 16 square miles at the lower site, and 8 square miles at the upper. The dams will be 65 ft. and 50 ft. high respectively, to hold all available annual water.

A race-line was roughly surveyed from the Great Moss Swamp to Sutton Creek, in connection with a project for generating electric power at the Sutton, and a similar race, also for electric-power purposes, from the Loganburn below Great Moss Swamp to the Taieri Valley near the Loganburn Junction, as well as three alternative dam-sites.

A dam-site has been surveyed in the Taieri River, about a mile and a half above the mouth of the gorge below Styx. This is to raise the river to a height sufficient to command the country fit for irrigation on the right side of the Taieri River down to Waipiata, with the idea of saving some miles of heavy race-construction. From this dam-site contours have been run at heights of 1,450 ft. and 1,350 ft. as far as the Sowburn, and another contour at 1,250 ft. for about four miles in the same direction.

Contour-lines have been run between Totara Creek and P.R. No. 1 on Waitoi Creek, at heights of 1,450 ft., 1,350 ft., and 1,250 ft., and also lines have been chained and levelled between trig. on the lower country. The contour 1,450 ft. practically runs at the foot of the rocky hills, there being little or no irrigable country at a higher level for the distance mentioned. Races at or below the level of 1,450 ft. will be cut at a small fraction of the cost of the originally projected upper race, as they will be all in earthwork, with practically no gorges.

A site for a small reservoir has been surveyed just above the stock-bridge over the Taieri River at the Patearoa-Paerau Road crossing.

The Taieri River was traversed and levelled from the Styx down to the mouth of the gorge, about 10½ miles of rough country.

The total length of traverses and levelled lines done during the year amounts to over 400 miles.

Plans and sections have been drawn of the Serpentine Reservoir, the reservoir at Canadian Flat, the Sutton Race, the Loganburn race and dam sites, the Serpentine dam and contours, the Poolburn reservoirs, and a plan showing various contours and traverses between Styx and Linnburn.

Some information was obtained regarding irrigable areas along the Clutha River from Cromwell to Hawea Lake, including a few barometric heights.

Early in the present year a commencement was made with the investigation of the Roaring Meg River as a source of electric power for irrigation and other purposes. Reservoir-sites were surveyed in the Plankburn, Tinselburn, and the Roaring Meg itself, also pipe-line, and canal to utilize the tail-water for irrigating the Cromwell Flat. This canal is 10 miles 28 chains in length. Contours, levels, and sections have been taken at the three reservoir and dam sites, power-house site, and on the Cromwell Flat. Plans of these are now being prepared. High-flood sections of the Roaring Meg were taken to ascertain the maximum discharge for waste-weir calculations.

STEWART SETTLEMENT IRRIGATION-WORKS.

Plans, specifications, and contract papers were prepared, and tenders invited, for the first section of this work; but as the tenders were considerably above the estimate they were declined, and it was decided to carry out the undertaking by co-operative contract. The first portion of the work is nearing completion, and the cost so far would appear to indicate that the total cost of the main race and distributaries will be within the estimate.

OHINEMURI SILTING.

Plans were prepared and data obtained for the use of the Royal Commission appointed to report on this matter. A considerable amount of survey-work was necessary in cross-sectioning the river.

SEACLIFF MENTAL HOSPITAL WATER-SUPPLY.

An engineering survey was made in connection with a scheme to bring in water from a stream near Waitati, a distance of 7¼ miles. Plans are being prepared.

NEW RIVER ESTUARY RECLAMATION SCHEME.

The proposal to reclaim by prison labour a large portion of the New River Estuary, Invercargill, has been investigated, and report and estimate furnished. An engineering survey has also been made for extension of the Otatara Tramway, in order to obtain material for the reclamation-work.

OTEKAIKE SPECIAL SCHOOL.

The construction of a new system of water-supply and drainage is now practically completed.

MARINE.

Matakana Harbour.—The question of improving some of the bends of the river, instead of improving the facilities for turning at the wharf, has been investigated, and a report prepared. It has now been decided to improve the bends in the river and remove rocks. This work will be undertaken when the winter level of the river lowers.

Mangere Beacon, Manukau Harbour.—The beacon has been re-erected.

Tokatoka Wharf.—This structure, which is falling into disrepair, has been examined, and report and estimate prepared for lengthening and repairing same.

Bickerstaffe Wharf.—This wharf, which is being threatened by movement of the ground at the root, has been examined, and a report and recommendations for overcoming the difficulty are being prepared.

Cape Brett Lighthouse.—The cast-iron tower was received from the contractors in July and August, and has been erected on the site. A dry-store and oil-store have also been erected, and the land belonging to the lighthouse fenced in. Erection of the crane on concrete base has been finished, and the tramway and water-cisterns completed. During November the lantern and light apparatus arrived. The fitting of this is being attended to by the Marine Department light-house artificer.

Nelson Harbour.—A plan was prepared showing the correct position of leading-lights in relation to the new entrance.

Karamea Training-wall.—A contract for erection of a training-wall, 10 chains in length, for the purpose of improving the Karamea Harbour was let in May, and work is in progress.

Lyttelton (Quail Island).—The wharf-approach was rebuilt, and wharf repaired.

Nuggets Boat-landing.—An oil-engine and winch have been purchased, but have not yet been placed in position.

Nuggets Point Lighthouse.—A contract has been let for supply of a ventilating-apparatus.

Cape Saunders Lighthouse.—A landing-crane has been erected.

Havelock.—The channel up to the wharf and the berth at wharf have been dredged deeper, so that the steamers are now independent of the tide.

Godley Head Lighthouse.—Protecting covering of the pathway leading down face of cliff at Godley Head to the fog-signal was erected for some distance, to prevent accidents through continually falling stones during storms.

Whakatane Harbour was inspected, and a report prepared.

Bean Rock Lighthouse, Auckland.—The bearings of sectors were checked.

Karamea Wharf Shed was extended.

Holyford River.—The blasting of the rocks so as to leave a clear channel on the south or sand-spit side was completed, and marks fixed with bearings for guidance in entering.

Jackson's Head Beacon.—During March last the old Wigham oil-light, which has caused a lot of trouble and expense to keep going, and then could not be depended on, has been replaced by a Pintsch-gas occulting light showing a three-seconds white light all round and three seconds darkness alternately. The supply of gas is taken off in cylinders from Wellington, and run into the two stationary cylinders there under pressure. It was lighted in April last. So far, very satisfactory results have been obtained, and there has been no failure of this light since.

Tuahine Point Light, Gisborne.—Owing to heavy gales the point itself has started to break away, and it has been necessary to remove the small lighthouse structure and put a temporary light here till it is settled what permanent arrangements can best be made to suit the port and the coast here.

TRAMWAYS.

Auckland Electric Tramways.—The Grey Lynn extension, 54 chains 68 links, was passed as safe for traffic. A crossover track in lower Queen Street was satisfactorily completed in December. A siding leading into Ponsonby barn has been altered and improved. During the year certificates have been given for two new cars, subject to certain provisions regarding bells and brakes. The company has had air brakes fitted on two of their cars, and has tested them under ordinary working-conditions for experimental purposes.

Takapuna Tramway.—During the year the formation of the Takapuna Tramway, which was all in hand at the beginning of the year, has been completed, as also has the rail-laying and ballasting. The car-shed and engine-shed have been erected. The reinforced concrete wharf at O'Neill's Point has been completed by the Auckland Harbour Board, and the causeway out to the wharf made, and protected with stone pitching. The Harbour Board has still to dredge the channel approaching the wharf. A considerable amount of regrading and improvement has been done on the road along which this line runs, in order that stopping-places may be made safe. It is intended to improve the road right through. Six cars have been built by a local firm and delivered at the car-shed, and one of the steam-locomotives is working on the line hauling ballast.

The work being carried out on this tramway has been closely inspected from time to time, and is generally of a satisfactory character. It is expected that the tramway will be ready for opening in September.

Wanganui Electric Tramways.—One new car has been inspected and passed as fit for traffic.

Wellington.—The extension of the tramway to Lyall Bay was constructed during the year. It was inspected, as well as two cars, and passed as safe for traffic.

Christchurch.—The following lines have been constructed during the year, and passed as safe for traffic: Loop-line to trotting-track, Addington; Crawford Street line; extension from Colombo Street to Shirley Road. The Cashel Street line and various sidings are under construction. The Fendalton-Opawa route has been electrified, and the Burwood line is now being electrified. Several cars have been built, and passed for use.

UTILIZATION OF WATER-POWER.

Kaituna Water-power Scheme.—Gauge levels of the varying water-levels of Lake Rotoiti have been and are still being taken. The flow of the lake has also been gauged on several occasions to ascertain the discharge under different conditions. The gauges have been referred to permanent bench-marks.

Huka Falls Power Scheme.—Records are being kept of the rainfall at Lake Taupo, and gauge-readings, which show the altering levels of the lake and of the Waikato River, have been continually observed. The gauges have been referred to permanent bench-marks.

DEFENCES.

Various works in connection with defences have been carried out at Auckland, Wellington, Dunedin, and other places.

CONTRACTS.

A complete schedule of the contracts entered into during the year for constructing railways, roads, bridges; supplying timber, ironwork, and other bridge-material; erecting station buildings, public buildings; executing repairs to public buildings; constructing lighthouses, wharves, and other marine work; as well as contracts for the supplying of all stores and other materials connected with public works, is given in Appendix C.

I have, &c.,

R. W. HOLMES,
Engineer-in-Chief.

Enclosure to Appendix E.

TABLE of LENGTHS of GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, and SURVEYED up to 31st March, 1910.
NORTH ISLAND.

State of Line.																			
Appropriation.	Division.	Mileage.	Section.	Main Line.	Sidings.	Total.	Opened.												
							Surveyed.	Under Formation.	Under Plate-laying.	Date.		1904-5	1905-6	1906-7	1907-8	1908-9	1909-10	Total.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
		M. chs.		M. chs.	M. chs.	M. chs.	M. chs.	M. chs.	M. chs.		M. chs.	M. chs.	M. chs.	M. chs.	M. chs.	M. chs.	M. chs.	M. chs.	
Kawakawa-Grahamtown (Onerahi)	Kawakawa	7 41	Opua Wharf - Kawakawa	7 41	0 57	8 18	..	..	..	..	..	..	..	..	..	..	..	7 41	
	Kawakawa-Kamo	41 24	Kawakawa-Ramarama	18 9	0 28	18 37	..	2 0	16 9	..	..	..	..	..	..	..	..	..	
			Ramarama-Towai	2 64	0 33	3 17	..	2 64	..	..	..	..	..	..	..	..	..	..	
			Towai-Hukerenui	4 31	0 33	4 64	..	..	4 31	..	..	..	..	..	..	..	..	..	
			Hukerenui-Kamo	16 0	3 29	19 29	..	..	..	..	..	..	..	..	..	..	..	22 52	
Kamo-Grahamtown	Kamo-Kioreroa	9 21	Kamo-Kioreroa	6 52	2 27	8 79	..	..	..	..	..	..	..	..	..	..	..	..	
	Kioreroa-Grahamtown		Kioreroa-Grahamtown	2 49	..	2 49	..	2 49	..	..	..	..	..	..	..	..	..	..	
	Kawakawa-Hokianga	32 0	Kawakawa-Kaikohu	14 0	..	14 0	14 0	..	..	..	..	..	..	..	..	..	..	..	
	Kaikohu-Hokianga		Kaikohu-Hokianga	18 0	..	18 0	18 0*	..	..	..	..	..	..	..	..	..	..	..	
	Kaihu Valley	Kaihu Valley	19 40	Dargaville-Booms	17 21	0 75	18 16	..	..	..	..	..	..	..	..	..	..	17 21	
North Auckland Railway	Kaipara Northwards	110 0	Booms-Waima	2 19	..	2 19	..	2 19	..	..	..	..	..	..	..	..	..	..	
		Extension	47 73	..	47 73	47 73	estim.	..	..	..	..	..	..	..	..	..	..	..	
		McCarroll's - Otamatea	14 0	..	14 0	14 0	..	..	..	..	..	..	..	..	..	..	..	..	
		Otamatea - Kaiwaka	2 45	..	2 45	2 45	..	..	..	..	..	..	..	..	..	..	..	..	
		Kaiwaka-Te Hana	8 65	1 03	9 68	..	6 61	2 4	..	..	..	..	..	..	..	..	..	..	
		Te Hana-Wellsford	3 27	0 58	4 5	..	..	3 27	..	..	..	..	..	..	..	..	..	..	
		Wellsford-Wayby	3 18	0 28	3 46	..	..	..	1 April, 1909	..	..	..	..	..	..	..	..	..	
		Wayby-Tauhoa	3 40	0 13	3 53	..	..	..	13 May, 1908	..	..	..	..	..	..	..	..	..	
		Tauhoa-Kaipara Flats	2 45	0 13	2 58	..	..	..	11 June, 1907	..	..	..	2 45	..	..	..	..	..	
		Kaipara Flats-Woodcock's	3 5	0 16	3 21	..	..	..	17 Nov., 1905	..	..	3 5	..	..	..	..	..	..	
		Woodcock's-Ahuroa	2 41	0 16	2 57	..	..	..	18 May, 1905	..	..	2 41	..	..	..	..	..	..	
		Ahuroa-Helensville	18 41	1 75	20 36	..	..	..	..	..	..	..	..	..	..	..	..	..	
		Helensville-Newmarket	35 73	6 66	42 59	..	..	..	..	..	..	..	..	..	..	..	..	..	35 73
		Penrose - Onehunga Wharf	2 73	1 70	4 63	..	..	..	..	..	..	..	..	..	..	..	..	..	2 73
		Auckland-Waikato	100 13	Auckland-Te Awamutu	100 13	16 66	116 79	..	..	..	..	..	..	..	..	..	..	..	100 13
Auckland-Penrose—Deviation via Beach	Auckland City Branch	6 50	Deviation via Beach	6 50	..	6 50	6 50	..	..	..	..	..	..	..	..	..	..	..	
		2 60	Auckland City Branch	2 60	..	2 60	2 60	Prelim.	..	..	..	..	..	..	..	..	..	..	
		12 5	Paerata-Waiuku	12 5	..	12 5	12 5	..	..	..	..	..	..	..	..	..	..	..	
		62 58	Frankton Junction-Thames	62 58	10 17	72 75	..	..	..	..	..	..	..	..	..	..	..	..	62 58
		Paeroa-Waihi	12 40	Paeroa-Waihi	12 40	1 30	13 70	..	..	..	9 Nov., 1905	..	12 40	..	..	..	..	..	12 40
Waihi - Opotiki, or East Coast Railway via Matata	Waihi-Tauranga	130 40	Waihi-Tauranga	41 0	..	41 0	41 0	..	..	..	..	..	..	..	..	..	..	..	
		Tauranga-Te Maunga Junction	4 0	..	4 0	4 0	..	..	..	..	..	..	..	..	..	..	..	..	
		Te Maunga Junction-Te Puke	10 0	..	10 0	10 0	..	..	..	..	..	..	..	..	..	..	..	..	
		Te Puke-Opotiki	70 0	..	70 0	70 0*	..	..	..	..	..	..	..	..	..	..	..	..	
		Mount Maunganui - Te Maunga Junction	5 40	..	5 40	5 40	..	..	..	..	..	..	..	..	..	..	..	..	
Hamilton-Cambridge	Thames Valley-Rotorua	12 2	Ruakura Junction-Cambridge	12 2	3 14	15 16	..	..	..	..	..	..	..	..	..	..	..	12 2	
		69 33	Morrinsville-Rotorua	69 33	5 27	74 60	..	..	..	..	..	..	..	..	..	..	..	69 33	
		Gisborne-Opotiki	Gisborne Wharf-Kaiteratahi	92 44	Gisborne Wharf-Kaiteratahi	13 10	2 45	15 55	..	..	..	..	..	..	..	..	..	..	..
				Kaiteratahi-Karaka	5 5	0 71	5 76	..	..	..	13 April, 1905	..	5 5	..	..	..	..	..	..
				Karaka-Puha	1 75	0 24	2 19	..	..	..	20 May, 1907	..	..	1 75	..	..	..	..	..
Puha-Waikohu Bridge	3 29			..	3 29	..	..	..	28 May, 1908	..	..	3 29	..	..	..	..	..		
Waikohu Bridge-Waikohu	0 35			0 32	0 67	..	..	..	1 April, 1909	..	..	..	..	..	0 35	..	..		
New survey	Napier-Gisborne	120 0	Waikohu-Otoko	7 75	0 32	8 27	..	0 45	7 30	..	..	..	..	..	..	..	..	..	
		Otoko-Rakauaroa	6 60	0 32	7 12	..	6 60	..	..	..	..	..	..	..	..	..	..	..	
		Rakauaroa-Matawai	5 75	..	5 75	5 75	..	..	..	..	..	..	..	..	..	..	..	..	
		Matawai-Motu	8 0	..	8 0	8 0	..	..	..	..	..	..	..	..	..	..	..	..	
		Motu-Opotiki	40 0	..	40 0	40 0	estim.	..	..	..	..	..	..	..	..	..	..	..	
Napier-Woodville	Napier-Wairoa River	96 65	Napier-Wairoa River	58 0	..	58 0	58 0	Prelim.	..	..	..	..	..	..	..	..	..	..	
		Wairoa River-Gisborne	62 0	..	62 0	62 0	Prelim.	..	..	..	..	..	..	..	..	..	..	..	
		Napier Spit-Woodville	96 65	15 5	111 70	..	..	..	..	..	..	..	..	..	..	..	..	96 65	
		Woodville-Palmerston North	17 21	0 51	17 72	..	..	..	..	..	..	..	..	..	..	..	..	17 21	
		Woodville-Wellington North	115 79	21 73	137 72	..	..	..	..	..	..	..	..	..	..	..	..	115 79	
Rimutaka Incline Deviation Surveys	Woodville-Wellington [Te Aro]	3 7	Woodside-Greytown	3 7	0 64	3 71	..	..	..	..	..	..	..	..	..	..	..	3 7	
		Coach road Route	9 0	..	9 0	9 0	Prelim.	..	..	..	..	..	..	..	..	..	..	..	
		Tauherenikau Route	21 30	..	21 30	21 30	..	..	..	..	..	..	..	..	..	..	..	..	
		Wainui-o-mata Route	31 40	..	31 40	31 40	..	..	..	..	..	..	..	..	..	..	..	..	
		Petone-Pigeon Bush	52 0	..	52 0	52 0	..	..	..	..	..	..	..	..	..	..	..	..	
Foxton-New Plymouth	Coast Route	70 0	Petone-Pigeon Bush	52 0	..	52 0	52 0	..	..	..	..	..	..	..	..	..	..	..	
		70 0	Petone-Carterton, via Martinborough	70 0	..	70 0	70 0	..	..	..	..	..	..	..	..	..	..	..	
		83 37	Wellington-Longburn	83 37	15 76	99 33	..	..	..	7 Dec., 1908†	..	..	..	..	..	83 37	..	83 37	
		120 44	Foxton-Patea	120 44	14 75	135 39	..	..	..	..	..	..	..	..	..	..	..	120 44	
		26 7	Turakina-Matarawa	11 67	..	11 67	11 67	..	..	..	..	..	..	..	..	..	..	..	
Stratford-Ongarue	Aramoho-Goat Valley Tunnel	7 40	Aramoho-Goat Valley Tunnel	7 40	..	7 40	7 40	..	..	..	..	..	..	..	..	..	..	..	
		3 60	Kai Iwi-Okehu	3 60	..	3 60	3 60	..	..	..	..	..	..	..	..	..	..	..	
		3 0	Nukumaru-Waitotara	3 0	..	3 0	3 0	Prelim.	..	..	..	..	..	..	..	..	..	..	
		72 29	Patea-New Plymouth Breakwater	72 29	11 52	84 1	..	..	..	..	..	..	..	..	..	..	..	72 29	
		3 79	Bull's Branch	3 79	..	3 79	3 79	Prelim.	..	..	..	..	..	..	..	..	..	3 29	
Stratford-Ongarue	Wanganui Branch	3 29	Aramoho-Wanganui	3 29	2 23	5 52	..	..	..	..	..	..	..	..	..	..	..	..	
		101 0	Stratford-Toko	6 26	0 40	6 66	..	..	..	..	..	..	..	..	..	..	..	..	
		4 72	Toko-Oruru	4 72	0 36	5 28	..	..	..	..	..	..	..	..	..	..	..	..	
		4 50	Oruru-Huiroa	4 50	0 35	5 5	..	..	..	..	..	..	..	..	..	..	..	..	
		6 77	Huiroa-Te Wera	6 77	1 16	8 13	..	..	6 77	..	..	..	..	..	..	..	..	..	
North Island Main Trunk Railway	Te Wera-Pohokura	8 55	Te Wera-Pohokura	8 55	0 65	9 40	..	3 40	5 15	..	..	..	..	..	..	..	..	..	
		6 0	Pohokura - Whangamomona	6 0	..	6 0	4 0	2 0	..	..	..	..	..	..	..	..	..	..	
		63 40	Surveyed	63 40	..	63 40	63 40	..	..	..	..	..	..	..	..	..	..	..	
		33 40	Mangaroa-Puketutu	33 40	..	33 40	33 40	..	..	..	..	..	..	..	..	..	..	..	
		14 0	Kaitake-Hangatiki	14 0	..	14 0	14 0	..	..	..	..	..	..	..	..	..	..	..	
Opunake-Mountain Road	Opunake-Stratford	30 0	Aramatai-Hangatiki	30 0	..	30 0	30 0	Prelim.	..	..	..	..	..	..	..	..	..	..	
		23 10	Opunake-Eltham	23 10	..	23 10	23 10	Prelim.	..	..	..	..	..	..	..	..	..	..	
		22 0	Opunake-Te Roti	22 0	..	22 0	22 0	Prelim.	..	..	..	..	..	..	..	..	..	..	
		25 58	Opunake-Stratford	25 58	..	25 58	25 58	Prelim.	..	..	..	..	..	..	..	..	..	..	
		9 48	Manganui Section	6 0	2 3	8 3	..	..	..	1 April, 1908	..	..	..	..	..	6 0	..	6 0	
Waitara-Tangarakau Urenui Route	Marton-Te Awamutu	209 69	Te-popo Section	3 43	..	3 48	3 48	..	..	..	..	..	..	..	..	..	..	..	
		31 67	Marton Junction-Mangaweka	31 67	4 61	36 48	..	..	..	..	..	..	..	..	..	..	..	..	
		13 1	Mangaweka-Taihapa	13 1	1 61	14 62	..	..	..	10 Sep., 1904	..	13 1	..	..	..	..	..	..	
		5 70	Taihapa-Mataroa	5 70	0 61	6 51	..	..	..	1 June, 1907	..	..	..	5 70	..	..	..	..	
		18 10	Mataroa-Waiouru	18 10	..	..	..	..	..	30 June, 1908	..	..	..	..	..	18 10	..	..	
Central Route—Deviation Surveys	Marae-Kowhai-Ohura Valley	30 63	Waiouru-Erua	30 63	..	97 28	..	..	..	..	..	..	..	..	..	..	..	..	
		35 65	Erua-Taumarunui	35 65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
		74 33	Taumarunui-Te Awamutu	74 33	6 20	80 53	..	..	..	..	..	..	..	..	..	..	..	74 33	
		30 0	Ohakune to Mokau Retaruke Divide	30 0	..	30 0													

NOTE—For detail information as to dates of openings of such portions of lines in Public Works Statement 1904-5, see columns 11 to 42 of tables of lengths of lines in Public Works Statement 1904-5.

* Approximate. † Date of purchase.

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

TABLE of LENGTHS of GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, and SURVEYED up to 31st March, 1910—*continued.*
SOUTH ISLAND.

[illegible]

APPENDIX F.

ANNUAL REPORT ON BUILDINGS BY THE GOVERNMENT ARCHITECT.

The GOVERNMENT ARCHITECT to the Hon. the MINISTER OF PUBLIC WORKS.

SIR,—

Public Works Office, Wellington, 1st July, 1910.

I have the honour to submit the following report on the various building-works carried out by the Department during the year ended 30th June last:—

Viceregal Residence, Wellington.—This work has been in progress throughout the entire year, and the main building is rapidly approaching completion. The erection of stable buildings, dairy, guardhouse, and gardener's cottage is still in hand.

Government House, Auckland.—A few small repairs required to keep the building in order have been carried out from time to time. The upkeep of the grounds has been attended to during the year as usual. Most of the furniture has been forwarded to Wellington for use in the new viceregal residence.

DEPARTMENTAL BUILDINGS.

Auckland Departmental Buildings.—Office furniture, fittings, and linoleum have been provided for the rooms in the recently completed addition, some of the walls cleaned and renovated, and necessary repairs to floors effected.

Thames Departmental Buildings.—Some minor works in connection with the rearrangement of offices in these buildings have been attended to.

Gisborne Departmental Buildings.—A bicycle-shed for the use of officers has been erected, and alterations to the sanitary conveniences effected.

New Plymouth Departmental Buildings.—Some additional fittings required in the Deeds Office have been supplied.

Wanganui Customhouse.—This building was painted and renovated throughout, and new fittings supplied.

Blenheim Departmental Buildings.—The custodian's cottage was painted and renovated, and a verandah added.

Nelson Departmental Buildings.—The concrete roof has been repaired and made watertight, fittings supplied, and renovations to the caretaker's cottage carried out.

Railways and Public Works Offices, Greymouth.—This building was completed in January, and has since been occupied by the officers of the Railways and Public Works Departments.

Hokitika Departmental Buildings.—Radiators have been installed in strong-rooms, and necessary fittings provided throughout the buildings.

Provincial Buildings, Christchurch.—Various small repairs have been attended to at different times, and efforts made to cope with the depredations of the wood-borer.

Christchurch Departmental Buildings.—Tenders are being invited for the erection of Departmental Buildings on the site at the corner of Cathedral Square and Worcester Street.

Dominion Chambers, Dunedin.—The erection of this building for the Government Insurance Department was completed in May last. A separate contract has been let for the installation of an electric elevator, and the work is approaching completion. The old building on the adjoining section was demolished, and the exposed portion of the new western wall strengthened. Drainage-works to serve the new building have been carried out under contract.

Public Works Office, Dunedin.—A small contract was let for alterations and renovations, which was duly completed.

Invercargill Departmental Buildings.—A contract was let in May last for the erection of Departmental Buildings (in brick) adjoining the Post-office block, and the work is now in progress.

POST-OFFICES.

Whangarei.—A new Telegraph store was erected.

Mangapai.—A separate wooden building was erected.

Auckland.—The contractors for the erection of the new Chief Post-office have made steady progress during the year: the foundations have all been put in, and the masonry walls are up to the ground-floor level. Minor repairs and improvements to the existing Chief Post-office have been made during the year.

Epsom.—The new brick office was completed in November, 1909.

Mount Eden.—A new brick office was completed in October last.

Mount Roskill.—A contract has been let for the erection of a brick office, and the work is in progress.

Port Albert.—Tenders are being invited for providing additional accommodation.

Helensville.—A contract has been let for the erection of a new building.

Pukekohe.—A brick building was finished in September last.

Mercer.—Additions are being made to the lineman's cottage.

Huntly.—A new brick office was completed early in the year.

Ngauruahia.—A new building (in brick) was completed during November.

Frankton Junction.—A contract has been let for the erection of a new building, and the work is in hand.

Otorohanga.—After some delay at the start the new building was completed in September last.

Paeroa.—A battery-room was finished under contract in January last.

Kawhia.—Tenders have been invited for additions and alterations.

Kahukura.—Additions and renovations have been carried out.

Nuhaka.—A new building has been erected.

Hangarua.—A new building has been erected.

Wanganui.—Necessary repairs after a fire were effected.

Bull's.—The building, destroyed by fire in March, 1909, is being restored.

Marton.—Alterations and repairs have been effected.

Mangaweka.—Necessary additions have been made.

Hunterville.—Drainage, water and gas supplies have been installed.

Rangataua.—The old building from Ohakune has been re-erected here.

General Post Office, Wellington.—The foundations were completed in September. Steelwork for the first and second floors has been received by the contractors, and about 4,000 ft. of Tonga Bay stone is ready for setting. Dobson stone for the base has been slow in coming to hand.

Te Aro.—The building was completed and occupied early in the year.

Ashhurst.—Additions and alterations have been carried out.

Carterton.—Restorations were carried out during the year.

Dannevirke.—A telephone bureau was built, and alterations made to the main building.

Foxton.—The erection of a new brick office has been finished.

Greenmeadows.—A contract has been let for the erection of a new building.

Hastings.—A new brick building has been completed and opened.

Levin.—Tenders are being invited for necessary additions.

Ongaonga.—A new building has been erected.

Porangahau.—Tenders have been invited for additions and renovations.

Takapau.—Tenders for the erection of a new office have been received.

Wairoa.—The erection of a new brick building is in progress.

Wakefield.—A new building was completed during the year.

Westport.—A contract was let for the erection of a new office in brick, and the work is in progress.

Hokitika.—A small addition has been made, and general renovations effected.

Addington.—A contract has been let for the erection of a brick building.

Christchurch.—Some minor improvements and alterations to premises have been carried out.

Fairlie.—A contract for additions is in hand.

Linwood.—Extensive alterations have been effected.

Lyttelton.—The premises have been connected with the new sewage system.

Rakaia.—Tenders have been invited for the erection of a new brick building.

Sydenham.—Water and drainage services have been installed.

Timaru.—Alterations have been made, and a destructor built.

Waiatu.—A contract has been let for the erection of a new building, and the work is now in progress.

Waimate.—A tender has been accepted for the erection of a new brick and stone building.

Wyndham.—A new office in brick was completed in April last.

St. Bathans.—A new office in wood was completed early in the year.

Port Chalmers.—Tenders have been invited for a small addition and renovations.

St. Kilda.—A contract has been let for the erection of a new office in brick.

COURTHOUSES.

Onehunga.—Two rooms have been added for the use of the Magistrate and witnesses respectively.

Waipiro Bay.—A building has been erected by day-labour.

Gisborne.—Additions have been erected by day-labour.

Hunterville.—Drainage, water, and gas services have been installed.

Taumarunui.—A new building is in course of erection.

Petone.—Tenders have been received for the erection of a new building.

Wairoa.—Tenders have been received for additions and repairs.

Ross.—A new building was completed in March last.

Supreme Court, Christchurch.—Extra conveniences have been provided, the roof repaired, and electric light installed.

Magistrate's Court, Christchurch.—Electric light has been installed in the new building.

Fairlie.—A new building has been erected and furnished.

Temuka.—Tenders have been invited for additions.

Timaru.—Tenders have been invited for extensive additions.

POLICE-STATIONS.

Kaikohe.—A new building was completed during the year.

Rawene.—A lock-up was added to the station.

Thames.—A new brick building has been erected.

Rotorua.—Additions to the station have been completed.

New Plymouth.—A two-story wooden building has been erected.

Waitara.—Additions have been made to the existing building.

Hunterville.—Drainage, water, and gas services have been installed.
Martinborough.—Additions, repairs, and renovations have been carried out.
Palmerston North.—Additions and alterations have been made.
Pongaroa.—A new station has been erected.
Shannon.—A new station has been erected.
Weraera.—The old post-office has been converted into a police-station.
Manners Street, Wellington.—Additional cell accommodation is being provided.
Motuka.—A contract has been let for a new building.
Chatham Islands.—A new building has been erected.
Christchurch.—Sub-Inspector's residence has been completed. A new residence for Inspector has been built, and renovations to station carried out.
Islington.—A lock-up has been built.
Lincoln.—A new wooden building has been erected.
Sydenham.—A new building has been erected.
Dunedin.—A bathroom and wash-house were added to the Central Station.

MENTAL HOSPITALS.

Perirua.—Extensive additions to the Female Wing have been made during the year.
Mount View.—The buildings were demolished to permit of the site being utilized for the new viceregal residence.
Nelson.—Additional lavatories have been provided, and minor improvements effected. The fire-alarm system has been put in order.
Sunny-side.—Additional conveniences have been provided, hot-water supply improved, roofs repaired and several maintenance works attended to.

GAOLS.

Mount Eden.—Steady progress has been made during the year with the erection of the new wings. Some of the walls reached the first-floor level, and stone dressing and timber and iron work is being proceeded with.
Greymouth.—A contract has been let for additions to the police gaol, and the work is in progress.
Lyttelton.—The gaol and cottages have been connected with the borough sewage system, water laid on, and some repairs effected.
Invercargill.—The erection of new gaol by prison-labour was completed and the building opened during the year. Electric light, to be generated on the premises, is being installed.

MISCELLANEOUS.

Westport Drill-hall.—Additions to building, and the construction of a railway siding thereto, were completed during the year.
School of Mines, Westport.—The building was completed during the year.
Hokitika Hospital.—No. 2 Ward, with operating-theatre and lavatory block, have been completed during the year.
Burnham Industrial School.—The new building has been completed, and existing conveniences improved.
Te Oranga Home.—A De Laitte gas plant has been installed, irrigation-channel laid out, and drainage improved.
Otekaieke Special School for Boys.—A classification cottage, Principal's residence, laundry, and lavatories have been erected during the year. The installation of water-supply and drainage services is approaching completion.
Seddon Memorial, Wellington.—The bronze allegorical figure arrived from England, and was placed in position on top of the stone column. A contract has been let for enclosing the site with an iron railing.
Old Parliament Buildings.—The restoration of the portion known as Bellamy's has been completed, and twelve rooms equipped and occupied.

MAINTENANCE WORKS.

In addition to the foregoing, maintenance and repair works, renovations and minor additions to all classes of Government buildings throughout the Dominion, have been carried out from time to time as occasion required.

I have, &c.,

JOHN CAMPBELL,
Government Architect.

The Hon. the Minister of Public Works.



APPENDIX G.

HYDRO-ELECTRIC POWER PROPOSALS, REPORT ON, BY MR. LAWRENCE BIRKS

B.Sc., A.M.Inst. C.E., A.M.Inst. E.E.

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REPORT.

Mr. BIRKS to the Hon. the MINISTER OF PUBLIC WORKS.

SIR,—

Public Works Department, Wellington, N.Z., 26th October, 1910.

In accordance with your instructions I have the honour to report herewith on—

- (1.) The future demands for electric power in each of the centres of the Dominion, as influenced by—
 - (a.) The normal growth of the population and the existing industries of the Dominion.
 - (b.) The possibility of obtaining a supply of power in large quantities and at cheap rates by the development of the natural resources of the Dominion.
 - (c.) The popularizing of electricity as a general domestic agency, and the introduction of electrical appliances in the homes of the people for heating, cooking, and other purposes.
 - (d.) The possible electrification of the suburban and ultimately of the main trunk railways, particularly on the heavier grades and the Lyttelton and Arthur's Pass tunnels.
 - (e.) The establishment of special mechanical industries dependent on cheap power for their successful exploitation.
 - (f.) The use of the surplus power for the manufacture of nitrate fertilizers, calcium-carbide, aluminium, and for other electro-chemical industries.
- (2.) The most favourable of the various available sources of power for immediate development.
- (3.) The necessary plant and apparatus for developing and transmitting the power, with detailed capital costs.
- (4.) The estimated output, annual operating-costs, capital charges, and the prices at which the energy can be sold in order to make the undertakings remunerative.
- (5.) A comparison between these prices and the prices at which power can now be generated for various purposes within the Dominion and elsewhere.
- (6.) The influence of such cheap power-supplies on the industrial and social condition in America, Switzerland, Norway, and elsewhere, and the probable influence on the future of the Dominion.

In considering this question I understand it is to be approached with the object of conferring a public utility, improving the conditions of life of the people, and assisting in the development of the Dominion generally, rather than of yielding a large source of revenue to the Government. At the same time each undertaking must show a reasonable prospect of proving self-supporting, not only by paying interest and sinking fund, but also by building up a reasonable reserve or depreciation fund, so that the whole system can be kept up to the requirements without falling back on loan-moneys for necessary replacements or renewals.

The existing requirements and sources of power-supply, as extracted from the register kept by the Machinery Department, are shown in Table No. 1 herewith, amounting in all to 204,458-horse power, exclusive of the railways. This is generated by the various prime movers as follows:—

	Horse-power.	Per Cent.
Steam-engines	150,137	73.5
Water-power	19,353	9.5
Gas-engines	23,456	11.5
Oil-engines	11,512	5.5
	204,458	100.0

The fuller subdivision shown in Table No. 1 is intended to enable the following conclusions to be drawn. When power is available at a sufficiently cheap rate it will be taken advantage of practically at once by the local bodies and the mining companies to replace their existing steam plants. The sawmills and flax-mills cannot be considered as probable customers, the former because they already have free fuel available in their shavings and offcuts, and the latter because they are generally in remote spots and of non-permanent nature, and it would therefore not pay to run mains to pick up this class of load. These two items amount to 30,000 i.h.p. out of 150,137 i.h.p. of steam-engines.

The existing water-power, 19,353 h.p., must also be passed over as unavailable for an electrical development. But, deducting these amounts, it still leaves over 150,000 h.p. to be supplied. This figure is probably considerably on the low side, owing to the very conservative system of rating the nominal horse-power of the steam-boiler installations employed by the Machinery Department.

TABLE NO. 1.—STATIONARY POWER USED IN NEW ZEALAND.
(Taken from the Records of the Inspector of Machinery, 1910.)

District.	General.	Local Bodies.	Mining.	Sawmills.	Flax mills.	Total Boilers.	Total Steam-engine Power.	Water-power.	Gas-engines.	Oil-engines.	Electric Motors.	Total Horse-power (excluding Electric Motors).
Auckland	N.h.p. 10,442	N.h.p. 2,605	N.h.p. 6,236	N.h.p. 3,849	N.h.p. 584	N.h.p. 23,716	L.h.p. 35,574	H.p. 5,367	H.p. 6,144	H.p. 2,059	H.p. 3,551	49,144
Auckland South	1,851	..	599	1,943	527	4,920	7,380	385	387	677	..	8,829
Hawke's Bay	3,934	253	..	897	70	5,154	7,731	82	2,323	872	138	11,008
Taranaki	3,618	123	5	550	38	4,534	6,801	1,892	1,183	539	355	10,415
Wellington North	2,569	31	..	1,352	305	4,257	6,386	57	1,255	1,413	..	9,111
Wellington	9,715	2,819	..	1,824	626	14,984	22,475	637	5,006	1,692	5,666	29,810
Marlborough	637	..	75	711	81	1,504	2,256	282	382	218	882	3,138
Canterbury	6,439	1,523	14	473	117	8,566	12,850	439	2,633	1,257	2,573	17,179
Timaru	3,439	269	6	172	..	3,886	5,829	97	744	519	317	7,189
Otago	6,673	720	1,884	589	140	10,006	15,009	5,258	1,783	1,233	6,382	23,283
Southland	4,637	91	1,467	1,614	386	8,195	12,293	1,993	681	721	107	15,688
Nelson North	956	150	216	557	77	1,956	2,934	142	330	85	..	3,491
Nelson South	210	211	3,885	578	75	4,959	7,438	780	53	122	..	8,393
Westland	718	..	954	1,738	44	3,454	5,181	942	552	105	2,481	7,780
Totals	56,038	8,795	15,341	16,847	3,070	100,091	150,137	19,353	23,456	11,512	22,452	204,458

For Railway workshops, &c., add 1,200-horse power.

This figure also does not include the 22,452 h.p. of electric motors already installed, as these are supplied from the other prime movers included in the above total; but this figure is of importance in indicating the amount of motive power in the Dominion which is already applied electrically. Of this electric-motor power 22,000 h.p. has been installed during the past six weeks—that is, under present conditions 3,600 h.p. of electric motors are being installed per annum.

TABLE NO. 2.—COMPARISON OF TOTAL POWER (EXCLUSIVE OF RAILWAYS) IN USE IN NEW ZEALAND IN 1904 AND 1910.

	1904. (Mr. Hay's Report.) Horse-power.	1910. Horse-power.	Percentage.
Auckland	51,603	57,973	Inc. 12·3
Hawke's Bay	9,888	11,008	" 11·4
Taranaki	9,084	10,415	" 15·8
Wellington	28,568	38,921	" 36·2
Nelson South	8,724	8,393	Dec. 3·8
Nelson North	3,699	3,491	" 5·6
Marlborough	2,615	3,138	Inc. 20·0
Westland	7,156	7,780	" 8·7
Canterbury	13,576	17,179	" 26·7
Timaru	3,774	7,189	" 90·5
Otago	27,741	23,283	Dec. 16·0
Southland	14,160	15,688	Inc. 10·8
Total	180,588	204,458	Inc. 13·2

In Table No. 2 herewith the total power now installed in each district is compared with that in 1904, as published in Mr. P. S. Hay's report (parliamentary paper, 1904, D. 1A). The average increase for the six years is 13·2 per cent.—about 2 per cent. per annum. But the progress of the centres which offer the most likely markets for power-development is much larger than the average—viz.,

Canterbury	26·7 per cent. in 6 years.
Wellington	36·2 " "

Auckland District has progressed steadily (12·3 per cent.), and Southland shows a growth of 10·8 per cent. for the six years. Timaru District, showing an increase of 90·5 per cent., is adjacent to the Canterbury District, and would be supplied ultimately from the same power-scheme.

The figures for Otago are instructive—viz., a reduction of 4,458 h.p. It must be noticed that the latter figure does not include 6,382 h.p. of electric motors, of which 5,381 h.p. are supplied from the Waipori water-power system. Undoubtedly the Otago District has progressed industrially, and has not retrogressed, but the introduction of electric power with the consequent economies in direct application has enabled the greater industrial requirements to be met by a smaller rated horse-power of prime movers, showing the influence of the load-factor on the power installed, a point that will be discussed in dealing with each proposed power-system.

TABLE NO. 3.—DETAILS OF POWER REQUIREMENTS AND COSTS OF NEW ZEALAND CITIES, INCLUDING SUBURBS, YEAR ENDED 31ST MARCH, 1910.

	Wellington.	Auckland.	Christchurch.	Dunedin.
Population	76,390	97,929	78,605	62,584
Present power in use,—				
Steam-engines H.p.	17,500	14,500	10,800	9,800
Gas and oil engines	6,420	5,900	3,360	2,400
Pumping water and sewerage	1,000	660	450	300
Harbours and docks	560	260	500	460
Railway workshops	120	80	440	240
Total prime movers	25,600	22,400	15,550	13,200

TABLE NO. 3.—DETAILS OF POWER REQUIREMENTS, &c.—*continued*.

	Wellington.	Auckland.	Christchurch.	Dunedin.
Electric motors H.p.	5,580	1,400	2,500	6,200
Tramways,—				
Mileage, single track	28	36	51	21
Cars	81	92	43	43
Power installed K.w.	3,000	2,100	1,500	(say) 1,000
Output per annum units	4,418,595	6,386,082	2,654,285	2,153,249
Load-factor Per cent.	19.4	34.8	20.2	24.6
Working-cost Pence per unit	0.795	..	0.81	0.54
Interest and capital charges	0.472	..	0.42	0.44
Total cost	1.267	..	1.23	0.98
Total interest, sinking fund, and depreciation provided for in the above capital charges Per cent.	6.8	..	7.2	8.0
Electric lighting,—				
Total inhabited houses	15,200	14,802	13,138	13,130
Houses now supplied	4,147	400	337	820
Proportion supplied	28.1	2.7	2.9	6.2
Units sold for lighting	1,320,000	..	369,620	742,000
Charges per unit	7d. to 5d.	..	6d. to 3½d.	5d. to 1d.
Revenue from lighting	£34,616	£5,110	£7,854	£9,247
Average revenue Pence per unit	6.29	..	5.1	3.0
Average units per consumer	318	..	1,060	905
Average revenue per consumer	£8 6s.	£10 15s.	£23 4s.	£11 6s.
Street-lighting,—				
Units used per annum	562,000	..	Nil	102,000
Total revenue	£8,877	£21	..	£1,620
Average revenue Pence per unit	3.8	..	..	3.8
Electric motors, &c.,—				
Total power H.p.	2,937	..	520	3,000
Units sold for power	851,158	..	412,314	3,860,000
Load-factor of motors Per cent.	3.3	..	8.9	14.6
Charges per unit	3d. to 1½d.	..	3d. to 2½d.	2d. to ½d.
Revenue from motive power	£9,447	£1,984	£4,379	£16,669
Average revenue Pence per unit	2.66	..	2.55	0.58
Average cost of power to consumer per horsepower installed, per annum	£3 4s.	..	£8 8s.	£3
Electric-supply station,—				
Power installed K.w.	2,500	675	950	2,000
Total capital outlay	£218,000	£63,809	£74,113	£265,200
Capital outlay per k.w.	£87	£95	£78	£132
Units generated per annum	2,770,379	..	987,580	8,570,000
Units sold per annum	2,018,526	496,000	782,006	6,855,000
Efficiency of distribution Per cent.	73.0	..	79.2	80.0
Load-factor	12.6	8.4	11.8	49.0
Working-costs Pence per unit sold	3.08	2.00	2.60	0.40
Interest and capital charges	1.98	1.30	1.40	0.44
Total costs	5.06	3.30	4.00	0.84
Total revenue	£44,814	£7,100	£12,234	£28,112
Average revenue	5.36	3.52	4.24	0.98
Total interest, sinking fund, and depreciation provided for in above capital charges	7.6	4.2	6.2	4.9

Only a proportion of the total power now in use in each district could, of course, be relied on as load for a large power-scheme, the determining considerations of that proportion being,—

- The area covered by the distributing-mains ;
- The price at which power can be sold, as compared with the present cost of generation ;
- The first cost to the consumer of the electric-motor installation.

To deal with these points seriatim the transmission-lines proposed for the first development in each district would supply the main cities and suburbs, and all installations within, say, five miles on either side of the transmission-line. Taking the four main cities as the primary distributing centres, Table No. 3 herewith shows the actual power now in use in each within the area of distribution, including all suburbs, and amounts to the following totals :—

	Horse-power.
Wellington	25,600
Auckland	22,400
Christchurch	15,500
Dunedin	13,200

Each of these centres thus shows ample room for a development of 10,000 h.p. or more of cheap power.

The second consideration—viz., resulting economies—will be determined in each case by the operating costs, and the prices at which the current can consequently be sold. These are estimated in detail later on for each system, but taking as a preliminary basis figure the cost at which power was generated last year at the Waipori power-house of the Dunedin Corporation—viz., £9 per horse-power year, or £12 per kilowatt year, including working-costs and interest charges—this is equivalent to the following costs per unit :—

- $\frac{3}{4}$ d. for continuous working for 8,760 hours per annum. Load-factor, 100 per cent.
- $\frac{1}{2}$ d. for an average full load demand for 16 hours per day, or 5,850 hours per annum. Load-factor, 66 per cent.
- $\frac{3}{8}$ d. for an average full-load demand for 12 hours per day, or 4,380 hours per annum. Load-factor 50 per cent.
- $1\frac{1}{8}$ d. for an average full-load demand for 48 hours per week, or 2,496 hours per annum. Load-factor 28.5 per cent.
- 2d. for an average full-load demand for 4 hours per day, or 1,460 hours per annum. Load-factor 16.7 per cent.

To compare these with the actual cost of generation by steam plants in the other cities, taking the works costs only, and not including any interest or standing charges, these costs per unit are as follows :—

					Tramways. d.	Electric Light and Power. d.
Auckland ..	..	..	..	..	1.00 (approx.)	2.00
Wellington ..	..	..	..	..	0.79	3.08
Christchurch ..	..	..	..	..	0.81	2.60

Of these figures the working-costs shown in the second column of the municipal electric light and power stations in Auckland and Wellington will both show considerable reductions (probably to one-half of the above values) when the new plant now in hand is installed.

Again, taking the total costs, including capital charges, in each of these existing steam plants, the figures are as follows :—

					Tramways. d.	Electric Light and Power. d.
Auckland ..	..	..	..	..	1.50 (approx.)	3.30
Wellington ..	..	..	..	..	1.26	5.06
Christchurch ..	..	..	..	..	1.23	4.00

These figures show clearly that there is ample room to supply the tramway and the electric light and power plants in each of the three cities, Auckland, Wellington, and Christchurch, with electric energy in bulk from water-power at rates remunerative to both parties. In taking the Dunedin figures from their last annual report as a basis, it must be remembered that the Waipori water-power plant then had a capacity of only 2,000 kilowatts or 2,660-horse power, and the capital outlay includes the whole of the distributing reticulation. The power has since been increased to 4,000 kilowatts or 5,330-horse power, and consequently the above actual cost, £9 per horse-power-year, will be considerably improved upon with the larger plant and the corresponding smaller capitalization per horse-power. In the still larger power plants under consideration this reduction in cost will be much greater. But the above basis costs constitute a conservative rate on which to estimate the load in sight. Taking these figures as the basis, it is thus possible to effect a considerable saving to the ratepayers and the customers of each of these municipal plants by supplying them with power in bulk, both for tramways and for general lighting and power-distribution purposes, enabling their present steam plants to be held in reserve for meeting special demands. The tramway power-stations have been particularly selected for comparison, as they have been installed with the very highest type of power plant that modern engineering can produce, and are therefore working at the highest economy that is attainable. The smaller private plants of various descriptions are working under much less favourable conditions, and are costing from £15 to £30, and even much higher amounts per horse-power per annum. They would therefore find very much greater economies resulting from a bulk supply of electric power at the above rates than would the tramway stations.

I have found in actual experience of electric-power supply that, in Christchurch at 3d. per unit, it proved economical for the majority of small factories to replace their existing engines by electric motors, and when new plants were required it was much cheaper. When the power-rate was reduced to 2 $\frac{1}{4}$ d. per unit net, it was sought after by the power-users taking up to 15- to 20-horse power. Had it been reduced to 2d. it would have replaced all other power plants within the area of distribution. In Dunedin the average cost of production and distribution, including interest charges, is only 0.84d. per unit, so that we may have every confidence in providing for the majority of the power-users within the area supplied as soon as the rates can be reduced to those adopted in the above basis of comparison.

The third feature in determining the proportion of electric power that will be adopted—viz., the cost to the consumer of the electric-motor installation—does not come into consideration when new industries are being established. In such cases the power plant has to be provided, and electric motors can be installed complete for from £3 to £8 per horse-power, as compared with £10 to £20 per horse-power for steam-engines and £7 to £15 for gas or oil engines. In replacing existing plants, if the old plant is saleable, it frequently brings more, second-hand, than the electric motors cost new. If it is not saleable, the change involves a slight additional capital burden. In special cases steps should be taken to assist the consumer in this, as is done by the gas companies and the Wellington Corporation Electrical Department, either by letting the motors out on hire or supplying and installing them on time payments to encourage the immediate loading of the plant and the consequent improved financial returns.

From the above data the following are estimates of the electric-power requirements of the four main cities in five years' time.

TRAMWAYS.

The tramways will always remain a most important load. Their present consumption of power is as follows :—

	Passengers per Annum.	Car-miles per Annum.	Units used per Annum.	Cost of Power (working-costs only).	Plant- capacity.	Load- factor.
				£	K.w.	
Wellington	21,932,000	2,203,666	4,418,595	16,998	3,000	19.4
Auckland	28,736,000	2,401,580	6,386,082	..	2,100	34.8
Christchurch	12,676,000	1,584,522	2,654,285	8,914	1,500	20.2
Dunedin	11,445,000	1,108,212	2,153,000	6,762	1,000	24.6

Allowing for the probable increase, these figures for 1915 may be estimated as follows :—

	Passengers per Annum.	Car-miles per Annum.	Units used per Annum.	Annual Revenue at ½d. per Unit.	Average Load (Kilowatts).	Maximum Demand (Kilo- watts).
				£		
Wellington	25,100,000	2,540,000	6,100,000	19,000	700	2,100
Auckland	32,500,000	2,760,000	7,350,000	23,000	840	2,525
Christchurch	14,500,000	1,820,000	3,050,000	9,500	350	1,050
Dunedin	13,500,000	1,280,000	2,500,000	7,800	285	860

The maximum tramway load is estimated at three times the average load. Occasional "kicks" may exceed this limit for a few minutes. These would either be dealt with by storage batteries installed in Dunedin, Christchurch, and Auckland, or otherwise would be easily carried for a few minutes by the overload capacity of the plant.

The growth in traffic has been estimated well on the conservative side—namely, only 15 per cent. in five years.

The basis cost taken in estimating the above revenue is ½d. per unit, and at this price it will pay the tramways well to take high-tension current in bulk for conversion to direct current rather than to put in fresh plant to supply it. In Dunedin for the year ending March, 1909, the water-power plant supplied 2,158,696 units to the tramways, for which they charged £6,883, or 0.767d. per unit. This yielded, no conversion, 1,664,372 units, which thus cost 0.98d. per unit and showed an over-all efficiency of conversion of 77 per cent. It might be necessary, in order to induce the present steam tramway power plants to shut down altogether, to offer the power at slightly lower rates—say, 0.6d. to 0.7d. per unit—but it must be noted that in Dunedin it pays the tramways to take high-tension current for conversion at 0.767, although they have a reserve steam plant installed, and, when the other tramway authorities definitely shut down their steam plants, they will save not only the working-expenses, but the depreciation charges on them as well. It will be necessary, of course, to continue paying interest and sinking fund on the reserve steam plant until its cost is finally redeemed, but it is obviously unnecessary to maintain a depreciation fund on such plant, and the depreciation reserve already accrued on it may be legitimately used to purchase the necessary converter plant.

Other steady demands for power include pumping for water-supply and sewerage, harbour and dock-requirements, and railway workshops in each centre. The present power-installations and estimated load-factors for these purposes in each of the centres are as follows :—

	Wellington.	Auckland.	Christchurch.	Dunedin.
Water-supply and sewerage h.p.	1,000	660	450	300
Estimated load-factor	50	50	40	50
Harbour and dock power h.p.	560	260	500	460
Estimated load-factor	30	30	30	30
Railway workshops h.p.	120	80	440	240
Estimated load-factor	25	25	25	25

A basis price of 0.66d. per unit may be taken for pumping, with its high load-factor, and 1d. per unit for harbour and railway workshops consumption, with their lower load-factors. These compare very favourably with the costs now obtaining under the existing conditions. The latter is, for instance, about one-half of the present power-cost in the railway workshops. Or, again, the works costs of power-production in Wellington for pumping from the tramway power-station is 0.795d., and

the actual works cost of generation by the most modern gas plant in the Christchurch drainage-pumping station is 1.11d. per unit. In these two cases the proposed rate of 0.66d. per unit (that is, on a 50-per-cent. load-factor, £12 per kilowatt per annum, or £9 per horse-power per annum) would capture the business with profit to both parties.

Allowing for the normal growth in demand, I estimate the demand and the revenue from these sources in five years' time as follows :—

	Wellington.	Auckland.	Christchurch.	Dunedin.
Pumping,—				
Maximum horse-power	1,200	800	600	400
Maximum kilowatts	900	600	450	300
Units used per annum	3,960,000	2,640,000	1,980,000	1,320,000
Revenue	£11,000	£7,350	£5,500	£3,680
Harbour requirements,—				
Maximum horse-power	600	500	500	500
Maximum kilowatts	450	375	375	375
Units per annum	1,180,000	980,000	980,000	980,000
Revenue	£4,900	£4,100	£4,100	£4,100
Railway workshops,—				
Maximum horse-power	200	160	600	360
Maximum kilowatts	150	120	450	270
Units per annum	330,000	260,000	980,000	590,000
Revenue	£1,380	£1,080	£4,100	£2,460
Total output	5,470,000	3,880,000	3,940,000	2,890,000
Total revenue	£17,280	£12,530	£13,700	£10,246
Average load-factor (per cent.)	57	60	55	59
Maximum load (kilowatts)	1,100	740	810	560

GENERAL MOTOR-POWER.

Coming now to motive power for factories and general purposes, the total existing power in each city, excluding the classes of power already dealt with, is approximately as follows :—

	Wellington.	Auckland.	Christchurch.	Dunedin.
Steam-engine	10,200	10,000	7,600	7,000
Gas and oil	6,420	5,900	3,140	2,100
Electric motors	5,200	1,400	2,250	6,200
	21,820	17,300	12,990	15,300

The present output of the municipal electric-supply plants in each city for power purposes, and the charges and revenue per unit, are as follows :—

	Wellington.	Auckland.	Christchurch.	Dunedin.
Horse-power of motors connected	2,937	..	520	3,000
Units sold for power purposes	851,158	..	412,314	3,860,000
Load-factor of motors (per cent.)	3.3	..	8.9	14.6
Charges per unit	3d. to 1½d.	..	3d. to 2½d.	2d. to ½d.
Total revenue	£9,774	£1,984	£4,379	£16,669
Average revenue per unit sold	2.66	..	2.55	0.58
Units per rated horse-power per annum	290	..	792	1,285

Considering the low load-factor, the Dunedin charges are too low for general adoption. They are no doubt justified there in order to develop the motor-load; and in special cases, when power is taken largely at periods of very light load, a very low charge is justified. But, the charges for general motor-load operating at a maximum of forty-eight hours per week, and from that down to a few hours per week, as with lifts, the charges should be graded from 3d. down to ½d. per unit to yield an average revenue of 2d. per unit distributed, or 1½d. per unit at the substation, in order to give a satisfactory return. In the cities where the power is distributed by the local authorities this would still leave a reasonable margin of profit to those bodies in retailing at an average of 2d. per unit to cover the cost of distributing-network. Large consumers taking power direct from the various substations or the

transmission-line would get the benefit of the lower rate. At such rate I estimate that within five years the load taken over would be as follows, allowing for the normal growth in each city during that period, and allowing also—a most important point—that 100-horse power of steam and gas engines can usually be replaced by 60- to 80-horse power of electric motors, owing to the saving in shafting, belting, and mechanical transmission losses, and the capacity of the motors for occasional overloads. The probable power of steam-engines and gas and oil engines remaining is also shown :—

	Wellington.	Auckland.	Christchurch.	Dunedin.
Steam	4,200	4,800	2,200	2,500
Gas and oil .. .	6,000	6,000	3,200	2,200
Electric motors .. .	10,800	6,100	6,500	9,500
	21,000	16,900	11,900	14,200

These estimates show a reduction in the total nominal horse-power in each case, although the actual power employed in these factories will be from 10 to 20 per cent. greater than at present. It will also be noted that I do not estimate any serious falling-off in the business of the existing gas-supply concerns. No doubt a good many gas-engines will be replaced, but this should be quite counterbalanced by the normal increase of business in motive power, lighting, and cooking. The rates may have to be reduced slightly to retain this business; but such reduction need not threaten the stability or successful results of the gas companies undertakings.

Allowing an average load-factor of the factory and general motors of 12·5 per cent. and a maximum total demand at any moment at 55 per cent., the full rated output, the power-requirements, and the estimated revenue from this source in five years' time would be as follows :—

	Wellington.	Auckland.	Christchurch.	Dunedin.
Total rated horse-power .. .	10,800	6,100	6,500	9,500
Average horse-power for 48 hours per week ..	4,700	2,660	2,840	4,150
Average kilowatts for 7,200 hours per annum ..	1,230	700	740	1,080
Maximum demand (kilowatts) .. .	4,500	2,500	2,700	3,900
Consumption units per annum .. .	8,850,000	5,000,000	5,330,000	7,780,000
Total revenue .. .	£46,000	£26,000	£27,700	£40,500
Average revenue (pence) per unit .. .	..	..	..	1·25d.
Units sold per rated horse-power .. .	..	..	..	820
Average revenue per rated motor horse-power per annum .. .	..	..	..	£4 5s.
Revenue per average actual horse-power for forty-eight hours per week ..	..	..	..	£9 16s.
Revenue per maximum horse-power demand .. .	..	..	..	£7 14s.
Revenue per maximum kilowatts demand .. .	..	..	..	£10 5s.

These figures are well on the safe side. A load-factor of only 12½ per cent. is estimated, whereas the Dunedin motors already show a load-factor of 14·6 per cent. It is certain that this figure would be improved on, with consequent improvement in the revenue. The consumption per rated horse-power is estimated at only 820 units, whereas Dunedin already shows 1,285 units, and Christchurch, at 3d. to 2½d. per unit, 792 units, per rated horse-power.

This power-load would have a fairly steady maximum of the amounts shown from 8 a.m. till 5 p.m., with a dip from 12 to 1 p.m. It would then fall off to about 30 per cent. of the maximum throughout the evening till 9 p.m., and then down to about 20 per cent. for the all-night load.

ELECTRIC LIGHTING.

In estimating the future demand an enormous development must be provided for in electric lighting. The present charges for electric light range from 7d. to 5d. in Wellington, with an average revenue of 6·29d. per unit, and 6d. to 3½d. in Christchurch, with an average revenue of 5·1d. per unit. In Dunedin, on the other hand, the price is 5d. to 1d., with an average of 3d. per unit.

The proportion of houses already supplied in each city is as follows :—

	Total Houses.	Number supplied with Electric Light.	Proportion.
Wellington .. .	15,200	4,147	28·1
Auckland .. .	14,802	400	2·7
Christchurch .. .	13,138	337	2·9
Dunedin .. .	13,130	820	6·2

The power supplied and approximate full load for the electric lighting only in each city is now as follows :—

	Maximum Load (Kilowatts).	Units sold per Annum.	Units per Consumer.	Revenue per Consumer.
				£ s. d.
Wellington	1,500	1,320,000	318	8 6 0
Auckland	600	..	..	12 15 0
Christchurch	950	369,620	1,060	23 4 0
Dunedin	1,500	742,000	905	11 6 0

This leaves ample room for a large extension of business at lower rates, and I estimate that within five years the following provision will be necessary if current can be supplied at the existing Dunedin rates—viz., 5d. to 1d. per unit, with an average of 3d. per unit, as compared with the present average of 6.29d. per unit in Wellington.

The present working-costs of generation in Wellington, Auckland, and Christchurch municipal stations are 3.08d., 2.00d., and 2.60d. per unit, and the total costs 5.06d., 3.30d., 4.40d. This average covers also the energy generated for motor-power purposes, which is valued much lower than that for light. So that it will be possible to sell power in bulk to the municipalities for electric lighting from, say, 6 p.m. to 10 p.m. each day, at 2d. per unit, and still leave the municipalities a margin of 1d. per unit to cover the costs of distribution. This will be an ample margin in view of the fact that the power will be supplied from the main distributors in the most convenient centres for retailing to the customers, and will only require one transformation to reduce the pressure for this purpose, which can be done with an efficiency of 80 to 95 per cent. No conversion to direct current will be necessary, as in the case of the tramway supply. The present distributing transformers in Wellington, being designed for a frequency of 83 cycles instead of the standard frequency of 50 cycles, will require special consideration, and a slightly higher average retail price than 3d. might be necessary here for the first year or two. At the present generating costs it would pay the municipalities well to take current at this rate, holding their present steam plant in reserve, and as the demand grows it will pay much better to do so rather than install additional plant. The small quantity used for lighting during the daytime might be sold to the municipalities for the same rate as is proposed for general power purposes—viz., 1½d. per unit—thus leaving a much larger margin of profit to the municipalities on any lighting business for the remaining twenty hours per day.

As the smaller houses are connected up, the average units supplied per consumer and the average revenue per consumer will fall, and this has been provided in the following estimates of the probable lighting-load to be supplied in five years if power at the above rates has been available for three years

	Total Houses.	Houses Supplied.	Units per Consumer.	Total Output.	Total Revenue at 2d.
					£
Wellington	16,800	8,400	240	2,020,000	16,800
Auckland	16,300	6,500	250	1,620,000	13,500
Christchurch	14,500	6,200	300	1,860,000	15,500
Dunedin	14,400	6,400	260	1,660,000	13,800

At these estimates of the consumption (allowing for the municipalities retailing at an average of 3d. per unit) the average cost to the consumer will be £3 to £3 15s. per annum, or 5s. to 6s. 3d. per month. Taking an average load-factor on the lighting-load only as 8.3 per cent., the maximum load for electric lighting will be as follows :—

	Kilowatts.	Horse-power.
Wellington	2,780	or 3,700
Auckland	2,220	or 2,960
Christchurch	2,660	or 3,400
Dunedin	2,270	or 3,000

This lighting-load commences each day at half an hour before sunset, reaches a maximum at 8 p.m., and falls again by midnight. Quite this amount of factory-power will be cut off at 5 o'clock, so that this revenue can be taken into account, and still the whole output of the power-station be available for other purposes during the daytime.

The three cities giving returns distributed last year 2,431,620 units to 5,704 consumers, bringing in a total revenue of £51,717—that is, each consumer of electricity for lighting purposes took an average of 425 units at an average price of 5.1d. per unit, giving an average revenue of £9 per consumer per annum. The above estimates of 27,500 houses to be supplied in the four cities, taking 7,160,000 units per annum, and yielding a gross revenue of £89,300, works out as an average consumption of only 260 units per consumer per annum at an average of £3 5s. each per annum. These estimates are thus very safe indeed, and provide for the probability that thousands of small houses supplied would use only two or three lamps each, costing them only 2s. to 3s. per month. If these estimates err at all, it is therefore in the direction of underestimating the revenue, and even better financial results than those estimated may be anticipated.

STREET-LIGHTING.

Electric street lighting is already fairly well developed in Wellington and Dunedin, the results for the last financial year being as follows :—

	Wellington.	Dunedin.
Units used per annum	562,000	102,000
Total revenue	£8,877	£1,620
Average revenue (pence per unit)	3·8	3·8

In Auckland the Karangahape Road has been lit as a first instalment with flame arc lamps with great success, and no doubt the system will be extended to all the main thoroughfares. In Christchurch street-lighting by electricity has not yet been attempted, except for a few arc lamps maintained by the Tramway Board at the tramway stopping-places.

In view of the long hours of burning of street-lamps, the price charged per unit should be somewhat less than for general lighting purposes ; but, as it comes on the peak of the general lighting-load, it should be a little higher than the general motor-load—that is to say, it should be between 1½d. and 2d. per unit—say, 1½d. per unit. This is the price at which it might be sold to the municipal bodies, and, to cover the cost of distribution, would allow them to charge 2½d. per unit at the lamps. This compares very favourably with the present rates at which street-maintenance accounts in Wellington and Dunedin are debited by the electric-light accounts—viz., 3·8d. per unit. At the lower rate it should pay to light practically the whole of the main streets by arc lamps, and the less important thoroughfares by high-efficiency incandescent lamps.

The present street-lighting in each of the cities, including the suburban boroughs, is as follows :—

	Wellington and Suburbs.	Auckland and Suburbs.	Christchurch and Suburbs.	Dunedin and Suburbs.
Miles of street	190	149	170	182
Gas-lamps	10	913	1,040	740
Electric arcs	300	24	..	65
„ glow lamps	1,661	..	..	293
Kerosene-lamps	..	..	90	..
Total lamps	1,961	937	1,130	1,098
Total cost per annum	£8,877	£3,538	£3,851	£5,811
Lamps per mile of street	10	6·3	6·7	6·1
Average cost per lamp per annum	£4 10s. 6d.	£3 16s.	£3 8s.	£5 6s.

Providing for the probable increase in the lighting within five years resulting from the introduction of cheap electric power, and allowing that it will only be possible to replace from one-third to one-quarter of the existing gas-lamps by electric lamps, I estimate that the demand in five years' time will be as follows :—

	Wellington.	Auckland.	Christchurch.	Dunedin.
Miles of street	190	150	170	182
Gas-lamps	..	500	800	500
Electric arcs	220	200	220	240
Electric glow lamps	2,000	500	400	600
Total number of lamps	2,220	1,200	1,420	1,340
Units per annum	575,000	290,000	294,000	348,000
Maximum demand (kilowatts)	205	125	130	150
Revenue from electricity supplied	£3,600	£1,800	£1,840	£2,180
Lamps per mile of street	11·7	8	8·3	7·4
Total cost of street-lighting	£6,200	£4,500	£5,400	£5,100
Average cost per lamp per annum	£2 16s.	£3 15s.	£3 16s.	£3 16s.

In making up the revenue to be derived from street-lighting I have estimated on a basis of 1½d. per unit. In making up the total cost of street-lighting I have taken a basis of 2½d. per unit, allowing 1d. per unit for the cost of distribution. At this rate arc lamps burning for an average of six hours per night for 320 days per annum will cost £10 each per annum, and glow lamps of 40-candle power burning for an average of twelve hours per night will cost £2 each per annum. I have estimated the gas-lamps at £3 each per annum. In Wellington a number of the arc lamps in the suburbs will probably be replaced by large incandescent lamps, and this is shown in the estimates. These total costs show a considerable reduction in Wellington and Dunedin, which are now largely lit electrically, owing to the reduced price per unit, but they show an increase for Auckland and Christchurch, owing to the large increase in lighting provided for. The average lamps per mile would be increased from about 6½ to about 8 in these two cities, as compared with 10 at present in Wellington.

If these estimates of the lighting in five years' time err at all, it is again on the safe side for the purpose of this report—that is to say, the output and revenue of the power-supply station is, if anything, underestimated.

DOMESTIC HEATING AND COOKING.

(c.) As a domestic utility the demand for electricity will probably be quite as great as for electric lighting. Its usefulness is only beginning to be appreciated in Dunedin and Wellington, owing to the energy of the local authorities in popularizing electric appliances. At 1d. or 2d. per unit it will pay to do the whole of the heating and cooking required in a household by electricity. This alone will in time result in a demand for several thousand horse-power in each centre, and will give a very large profit to the undertaking.

Its industrial importance in this direction may be judged from the capital expenditure now laid out in chimneys alone, which, with electric heating and cooking, would be replaced with simple ventilators. The present outlay in chimneys in the Dominion is probably over £4,000,000, and is being added to at the rate of £50,000 per annum. The greater part of this amount has to come out of the pockets of the working-classes, and, allowing the cost of the existing coal-stoves to be approximately the same as the corresponding electric stoves, the whole of this outlay might be conserved were cheap electric power available. At the same time, the convenience and efficiency of the heating and cooking will be greatly increased, and the menial work of the home reduced to a minimum. In estimating the necessary capacity of a water-power plant, sufficient provision must be made for this demand. I estimate it, in five years' time, as follows, the revenue being estimated on the basis of 1d. per unit.

	Wellington.	Auckland.	Christchurch.	Dunedin.
Houses	16,800	16,300	14,500	14,400
Electric stoves and heaters	4,200	3,200	3,100	3,200
Consumption units per annum	4,620,000	3,520,000	3,410,000	3,520,000
Average load for twelve hours per day (kilowatts)	1,050	800	780	800
Revenue	£19,300	£14,700	£14,200	£14,700

ELECTRIFICATION OF RAILWAYS.

(d.) The electrification of the railways will give another important market for the energy. This will be necessary very shortly in the Lyttelton-Christchurch tunnel and in the Arthur's Pass tunnel, and will be found useful on many of the heavier grades. But the time is not yet ripe for general main-line electrification. The suburban lines, particularly the Wellington-Hutt and the Auckland-Penrose lines, will, however, call for electrification in the early future in order to enable them to cope with the increasing traffic expeditiously and economically. Taking the service time-table schedules on each of the suburban lines, and the average weights of trains hauled, as given by the Railway Department, I estimate the power-requirements for the electrification of the four suburban lines as follows:—

	Wellington-Lower Hutt.	Auckland-Onchunga.	Christchurch-Lyttelton.	Dunedin-Port Chalmers.
Length	8 m. 4 ch.	7 m. 60 ch.	6 m. 26 ch.	8 m. 33 ch.
Maximum grade	Approx. level	One in 40	One in 150	Approx. level
Ton-miles per year	33,000,000	12,700,000	27,800,000	17,800,000
Estimated watt-hours per ton-mile	60	100	80	75
Estimated units	2,000,000	1,270,000	2,220,000	1,330,000
Allow, say,	2,200,000	1,400,000	2,400,000	1,400,000
Average power (kilowatts)	370	230	370	230
Power-cost per annum	£9,200	£5,800	£10,000	£5,800

Owing to the very heavy fluctuations in this class of load, the load-factor will be low, and the power-cost is therefore based on a rate of 1d. per unit. The estimated consumption of power in watt-hours per ton-mile is taken from numerous exhaustive tests made in England and America. It varies with the different lines according to the grades and the class of service required. Comparing the above figures with those given by the Railway Engineers in 1908 for the Christchurch-Lyttelton line (parliamentary report, 1908, D.-4), it will be noted that our estimates compare as follows for this one line.

	Railway Department Estimates.	Author's Estimates.
Ton-miles provided for	22,119,500	27,800,000
Watt-hours allowed per ton-mile	82	80
Total units estimated per annum	1,812,200	2,220,000
Allow, say	1,900,000	2,400,000
Cost per unit	1½d.	1d.
Actual power-cost per annum	£13,854	£10,000

Without going into a detailed justification of my figures, I would point out that they are on the more conservative side than those taken by the Railway Department, and are therefore a safer guide for the purpose of the present report.

The other three suburban lines are not included in the totals, so no definite proposal has been made to electrify them within the five-year period on which the estimates are based; but the necessary provision must be made in the power-house designs.

The electrification of the Arthur's Pass tunnel must be considered at once. Were this the only electric power required in the neighbourhood, it would probably, owing to the very intermittent nature, pay better to supply it by means of a steam-power electric generating-station at Otira, in view of the low price at which coal will be obtainable; but I understand that it is proposed to develop a power of about 3,000-horse power near Kumara for mining purposes, for which the headworks are already in hand; and in this case it will prove cheaper to operate the tunnel service from the same source.

The length from Otira to Bealey Station is 9 miles, of which $7\frac{1}{2}$ miles is practically a steady grade of 1 in 33, including the whole length of the tunnel ($5\frac{1}{2}$ miles). Allowing total weights (including the loco motive) of 180 tons for passenger-trains running at a maximum speed of twenty miles per hour up to the grade, and 250 tons for goods-train running at a maximum speed of fifteen miles per hour up the grade the power required for each passenger-train will be 720 kilowatts (960-horse power) for twenty-two minutes, and for each goods-train 740 kilowatts (1,000-horse power) for thirty minutes. For starting on the grade a peak-load of 1,000 kilowatts (1,340-horse power) must be allowed for three minutes. If heavier or faster trains are required, these figures will be increased accordingly.

The electrification of other sections of the railways may be undertaken in the proximity of the power-stations later on, but cannot be relied upon as a likely demand in the present state of the industry.

SUMMARY OF BUSINESS AVAILABLE.

The foregoing figures give a conservative estimate of the whole of the available business immediately in sight, and are summarized in the following tables, showing the total power demand, annual output of energy, and the annual revenue which can be anticipated from each power-supply system in five years' time, provided power has been available at the rates given for two or three years.

	Wellington.	Auckland.	Christchurch.	Dunedin.
<i>Power required, in Kilowatts.</i>				
Tramways, maximum	2,100	2,525	1,050	860
„ average	700	840	350	285
Pumping, maximum	900	600	450	300
„ average	450	300	225	150
Harbour, maximum	450	375	375	375
„ average	165	136	136	136
Railway shops, maximum	150	120	450	270
„ average	46	36	136	82
Motor-power, maximum	4,500	2,500	2,700	3,900
„ average	1,230	700	740	1,080
Lighting, private, maximum	2,780	2,220	2,660	2,270
„ „ average	230	185	212	190
Lighting streets, maximum	205	125	130	150
„ average	65	33	33	40
Heating and cooking, maximum	1,050	800	780	800
„ average	530	400	390	400
Railway electrification, maximum	..	..	2,500	..
„ average	..	..	370	..
Maximum demand for lighting (kilowatts)	2,985	2,345	2,790	2,420
„ for motors, &c. (kilowatts)	9,150	6,920	8,300	6,500
Maximum demand (horse-power)	12,200	9,200	11,100	8,700
Average daily output (kilowatts)	3,416	2,630	2,592	2,326
„ (horse-power)	4,600	3,500	3,460	3,100

	Wellington.	Auckland.	Christchurch.	Dunedin.
<i>Total Output, Units per Annum.</i>				
	£	£	£	£
Tramways	6,100,000	7,350,000	3,050,000	2,500,000
Pumping	3,960,000	2,640,000	1,980,000	1,320,000
Harbour	1,180,000	980,000	980,000	980,000
Railway shops	330,000	260,000	980,000	590,000
Motor-power	8,850,000	5,000,000	5,330,000	7,780,000
Lighting, private	2,020,000	1,620,000	1,860,000	1,660,000
„ streets	575,000	290,000	294,000	348,000
Heating and cooking	4,620,000	3,520,000	3,410,000	3,520,000
Railway electrification	..	..	2,400,000	..
Total units	27,635,000	21,660,000	20,284,000	18,698,000
Load-factor of whole output, per cent. ..	34.5	35.8	28.0	33.0
<i>Revenue Per Annum.</i>				
Tramways, at 0.75d.	19,000	23,000	9,500	7,800
Pumping, at 0.66d.	11,000	7,350	5,500	3,680
Harbour, at 1d.	4,900	4,100	4,100	4,100
Railway shops, at 1d.	1,380	1,080	4,100	2,460
Motor-power, at 1.25d.	46,000	26,000	27,700	40,500
Lighting, private, at 2d.	16,800	13,500	15,500	13,800
„ street, at 1.50d.	3,600	1,800	1,840	21,180
Heating and cooking, at 1d.	19,300	14,700	14,200	14,700
Railway electrification, at 1d.	..	..	10,000	..
Total revenue	121,980	91,530	92,440	89,220
Average revenue (pence) per unit sold ..	1.06	1.01	1.08	1.14
Revenue per kilowatt of maximum output ..	£13 6s.	£13 4s.	£11 2s.	£13 14s.
Revenue per horse-power of maximum output	£10	£10	£8 6s.	£10 5s.

I attach herewith approximate load-curves for each class of load in each city, and a total load-curve in each case. As the maximum demand for intermittent-power purposes exceeds the maximum demand for lighting in each case, and as the majority of the intermittent power is cut off before sundown, the maximum load on the station is approximately equal to the total of the maxima power-loads. If anything, it will be less than this total, leaving a farther reserve of power in the generating-station available to meet a special emergency and raising the average load-factor.

The load-factor is fairly high, owing to the wide diversity of uses of the power. The maximum demand on the Christchurch power-station is much higher than it otherwise would be, owing to provision having been made for the electrification of the Christchurch-Lyttelton Railway. The load-factor of this particular service is fairly low—viz., 14.8 per cent.—and the effect of this is to reduce the total load-factor in Christchurch to 28 per cent., and to reduce the average revenue sold per kilowatt of maximum output to £11 2s., or, per horse-power of maximum output, to £8 6s., as compared with a load-factor of 33 to 36 per cent., and a revenue of £13 per kilowatt of maximum output, or £10 per horse-power of maximum output, in the case of the other three cities.

It must be noted also that the above estimates are in no sense speculative, but are only of business actually in sight. It will be sound policy to make provision for extensions to cover speculative business—in fact, I take it the main object of the power schemes is to induce the establishment of fresh industries, and thus the fuller employment of our people. In all cases such speculative business should be provided for by making the headworks sufficiently large to take the whole power available, and so designing the power-house and transmission-line that they can be extended at any time.

In working out the above estimates it has been necessary to make them concrete by taking a particular year in the history of the plant as a basis. In earlier years the revenue will be smaller, in later years much larger. It would have been desirable to estimate on the basis of the final development which each city can attain. But here one is met with the insurmountable difficulty of setting a limit to that development. Who can say what that final development will be? Moreover, estimates applying to the supposititious balance-sheet ten or twenty years hence would be of comparatively little value as a guide on which to base proposals for immediate outlay; though at the same time provision must, of course, be made in designing the power-house for extension to the full available capacity of the water-power as the business extends. On the other hand, to take a period too proximate would be equally misleading, as the business would then only be in the course of development. It will take a few years for many customers who fully intend to take the power, to make the necessary rearrangements of their factories in order to take full advantage of it. The “publicity” work—the education of the public to realize the advantage of electric power—will also take a couple of years. Taking these matters into consideration, a period has been selected five years hence, on the supposition that the power will be available within two years, leaving three years for the development of the business,

Many items which at first sight may appear as discrepancies between the various cities will be explained if this is kept in view. For instance, the energetic publicity campaign which is being carried on by the Wellington and Dunedin Corporation Engineers shows clearly in the estimates. The extraordinarily low prices at which motor-power is now being sold by the Dunedin Corporation will have an effect on the relative output in the various cities for some years to come. The output for lighting—public and private—in Wellington last year was double that in Dunedin, while the output for power in Dunedin for the same period was five times that of Wellington. In another item the whole of the street-lighting in Wellington is supplied electrically. In Dunedin about one-half is supplied electrically, and the other half by gas. In Auckland street-lighting by electricity is just being tried. In Christchurch no attempt has been made in this direction. In these three cities I have therefore estimated on a basis of the gas companies retaining a proportionate amount of the business.

(e.) In addition to the existing mechanical and manufacturing industries of the Dominion, there are a large number which could be worked to advantage and profit as soon as power is available at a cheap rate, and the introduction of cheap power to the present mechanical industries will enable them to operate to better advantage and to compete on better terms with the foreign manufacturer, besides giving employment to a larger number of hands. These will be very important factors in increasing the load and revenue of the power schemes; but, as it is impossible to make any accurate estimates of the amounts of such increases, they are not included in the above figures.

Amongst other industries that may be developed it is important to notice the opinion given by a Lancashire cotton-miller in the *Evening Post* of the 24th April, 1909, to the effect that the humid atmosphere of the west coast of the South Island is exactly the condition which is essential for successful cotton-spinning—a condition which in the drier atmosphere of the United States has to be imitated by steam-jets in the milling-rooms, which are disastrous to the health of the employees. This is the determining feature which has resulted in a large proportion of the cotton from America being taken to Lancashire for manufacture. The writer draws attention suggestively to the circumstances of potential cotton-fields in Queensland, and potential water-power and the necessary atmospheric conditions for cotton-spinning in Westland. In this connection it must be observed that some of the largest electric-power-transmission plants in the world have grown up to meet the needs of the cotton-mills of the Southern States of America, particularly that of the Southern Power Company. This concern has installed four water-power plants in the Piedmont District of North Carolina, with a total capacity of 82,000-horse power, of which 80 per cent. is used in various cotton-mills distant up to 142 miles from the power-house. The total distributing network of this system includes 640 miles of transmission pole-line, and the area supplied is 100 miles by 165 miles, the voltage of distribution being 100,000 volts on the main lines and 44,000 on the branch lines. This company has already five additional water-power stations in hand, which are designed to feed an additional 153,000-horse power into the same network, and to double the area of distribution supplied.

ELECTRO-CHEMICAL INDUSTRIES.

The introduction of cheap electric power will open up possibilities in the direction of electro-chemical industries which can only be realized by considering what has been done in other countries under similar circumstances. For instance, in Norway and Sweden nearly 1,000,000 electric horse-power has been installed, the greater part of which is used for the manufacture of nitrate fertilizers, calcium-carbide, and for iron-smelting. As this industry is not more than a few years old, and as the circumstances for its development are generally as favourable in New Zealand as elsewhere, it is impossible to foretell what its future may be here; but every water-power development must be made with the possibility of its full power-capacity being required in the early future for such industries. Small electro-chemical factories will be quite worth establishing at once in connection with each power scheme, with the object of utilizing the power at periods of light load, and thus raising the load-factor up to 80 or 90 per cent. This power could, of course, be used without increasing the operating costs at all, and might therefore be debited at a very low figure indeed, quite apart from the cost of operation—say, £2 per horse-power per annum at the power-station, and £4 per horse-power per annum at the sea-coast. These prices could in the meanwhile only be quoted for a comparatively small plant of, say, 3,000- to 5,000-horse power capacity, on condition the current were cut off for four to eight hours per day, when the more remunerative load is at its maximum.

Apart from the establishment of comparatively small electro-chemical factories with the object of raising the load-factor of a general power-station, it is only a matter of a few years before electro-chemical works supplied from special hydro-electric power-stations will be remunerative on a large scale in New Zealand. The main industries of this nature which have been developed hitherto are the manufacture of nitrate fertilizers (including nitrolim or calcium-cyanamide), calcium-carbide (for the production of acetylene gas), carborundum (to take the place of emery), and also for aluminium and iron smelting.

In his famous address before the British Association for the Advancement of Science in 1898, Sir William Crookes calculated how long the existing supplies of nitrates in the soil would last in the wheat-producing countries; and the results were very striking, emphasizing the necessity for systematic fertilization on an extensive scale if we are to continue our present dietary. The most important element to be supplied is combined nitrogen in the form of nitrates; and, apart from the quantities contained in decaying vegetable matter, coal-gas by-products, and mineral nitrate-beds, the main source of nitrogen in the future will be from the atmosphere, and the only means of fixation to render it serviceable for agricultural purposes is by means of electric power. Already enormous installations have been erected, particularly in Norway, for this purpose. The Anilin Soda Company, for instance, will shortly have

400,000-horse power in operation in Scandinavia for this purpose, and will be manufacturing 100,000 tons of nitrates per annum. In addition to the demand within our own Dominion, which is not yet very large, it will be possible to open up very large markets for these fertilizers in Australia.

The manufacture of calcium-carbide will also form an important outlet for electric power. The imports of this material into New Zealand, and value, for the past three years have been as follows :—

Year.	Quantity. Tons.	Value. £
1907	898	14,826
1908	932	14,966
1909	1,667	22,603

And the demand will no doubt grow more rapidly in the future. The market in Australia will probably be four or five times that in New Zealand. Being classed as a dangerous material by the shipping companies, the freight from Europe is very heavy, and this will give a natural protection which, with the cheap water-power available, should make the industry very remunerative in the Dominion. Such industries have resulted in other lands in building up whole cities, as at Niagara (U.S.A.), Rheinfelden (Switzerland), Nottoden and Odda (Norway). Probably the Odda works, established by an English company—the Albion United Carbide-factory—at Sondre Fiord, in Norway, is one of the best examples of the growth of such a city. The spot has no attractions whatever as a manufacturing centre—in fact, it is inaccessible, distant from the markets, hemmed in by mountains, the surface is sterile, and a couple of years ago the valley was practically uninhabited. It has now enormous carbide-factories and nitrate-factories, around which a large town, almost a city, has already grown up, owing entirely to the existence of some 80,000-horse power in the immediate neighbourhood. Of this, 23,000-horse power has been utilized and is now used, producing 32,000 tons of carbide and 12,500 tons of nitrate fertilizer per annum.

Probably of still greater importance to New Zealand is the possibility of electric smelting of iron and steel, as we are fortunate in having iron-deposits and the necessary limestone flux within easy distance of extensive water-power. The electric iron-smelting furnace at Tumfos, Christiania, is now producing iron at £3 per ton to compare with the best Swedish charcoal iron, which costs £5 per ton, and their plant is being largely increased. At Trolhatten and Donnarfvet, steel is being smelted at a cost of under £5 per ton, to compare in grade with steel previously costing £10 per ton, and the British Consul at Stockholm reports that “the economic problem of dealing with iron-ore by the electric furnace to supersede the blast furnace is definitely solved.” In Savoy 10,000 tons of high-class special steels are now produced by means of electric furnace per annum, worth £360,000, and the business is rapidly growing.

These developments indicate possibilities far beyond anything dealt with in this report, but which must be kept carefully in view in the immediate development of our water-powers.

In considering the whole question, it should be noted that each average horse-power per annum of steam-power consumes about 10 tons of coal. This, if sold for shipping or other purposes outside the Dominion, would bring in a revenue of from £3 to £4 per annum, which is at present lost, and, while the same power is available from our water-powers, is wasted as far as any permanent increase in the wealth of the Dominion is concerned.

Professor Stillwell, President of the American Institute of Electrical Engineers, in discussing hydro-electric plants, states that “true conservation demands the most prompt possible utilization of our water-powers consistent with a due regard for the rights of the people as a whole in this property, which belongs to them, and should be safeguarded in their interests.” In the same discussion Mr. Deane points out that “every undeveloped water-power represents a constant source of unnecessary fuel-consumption. The mild language used in stating the importance of the speedy development of our water-power as a means of conserving our national resources is entirely inadequate. Nitrogen is the most important element in maintaining the fertility of the soil, and we largely depend on the nitrogen in our coal for our present supply from the gasworks. The nitrogen of the coal burned in steam-boilers is entirely wasted; and, in addition, the spare water-power may be used for the manufacture of nitrogenous fertilizers.”

SOURCES OF POWER.

In considering the possible immediate developments within the Dominion, the water-powers divide themselves into three classes, which will require entirely different treatment. They are,—

- (1.) The large powers, for the supply of the four main industrial centres, Wellington, Auckland, Christchurch, and Dunedin.
- (2.) The smaller powers, required for the smaller industrial centres, Napier, Gisborne, and the Hawke's Bay District; Palmerston North and the Manawatu district; Greymouth, Hokitika, and the Westland District; Invercargill and the Southland District; Nelson and district.
- (3.) The very large powers in remote localities which can be developed very cheaply, but owing to their isolation are only likely at present to be useful for special industries to be established in the vicinity.

Of the first class the market available has been thoroughly investigated above, and justified the following development within five years :—

Power to be Delivered.

Locality.	Maximum.		Average.	
	Kilowatts.	Horse-power.	Kilowatts.	Horse-power.
Wellington	9,150	12,200	3,416	4,600
Auckland	6,920	9,200	2,630	3,500
Christchurch	8,300	11,100	2,592	3,460
Dunedin	6,500	8,700	1,823	2,440

A new power-supply for Dunedin is not urgent, as the demand is already being well catered for by the Waipori Power Plant, against which it would be quite impossible to compete successfully within the city, in view of the very cheap and serviceable public supply it now offers. But this plant may be taken as an example of the excellent results that are possible in the other cities by the introduction of water-power. The public supply was commenced only three years and a half ago, but the business is already on a thoroughly sound footing, and this year will show a profit over all charges, including depreciation reserve. As originally installed the power-house has a plant-capacity of only 2,000 kilowatts, but the demand has been so great that for the past year of operation this has been running, and running successfully, with heavy overloads. From 8 a.m. to 5 p.m. it has carried a mean daily overload of 17 per cent., with 25 per cent. for an hour at a time, and "kicks" up to 50 per cent. Throughout the night the average load has been 800 kilowatts. As a result of this steady all-night load, the load-factor of the daily output based on the maximum load for one hour was 64 per cent., and based on the total rated plant-capacity as high as 79.6 per cent. The load-factor calculated on the total power-station output for the year was, last year, as high as 49 per cent., and on the actual power sold to consumers 39 per cent. of the rated capacity. These are very striking figures, and indicate that the load-factors of 28 and 34.5 per cent., on which the estimates of this report are based, are well on the safe side, and even better results may be anticipated in actual operation. The length of transmission-line from Waipori to Dunedin is thirty miles over rough country, and the line-pressure 35,000 volts. The electric problems thus involved are more serious than would be encountered in the Wellington-Hutt system. The financial results for the past complete years of operation were as follows:—

Second year of operation ending 31st March, 1909,—

Total capital outlay, including low-tension L.T. reticulation, street-lighting, &c.	£	£
Revenue	..	216,665
Expenditure, working-costs	9,294	19,775
Interest charges, &c., 4½ per cent.	9,627	
	—	18,921
Balance	..	£854

Third year of operation, ending 31st March, 1910,—

Total capital outlay, including low-tension L.T. reticulation, street-lighting, &c.	£	£
Revenue	..	259,619
Expenditure, working-costs	11,323	28,112
Interest charges, &c., 4.85 per cent.	12,547	
	—	23,870
Balance	..	£4,242

No depreciation reserve fund has yet been set aside, but as there was a debit of £4,380 from the first year's operation it is sound finance to pay this off before putting aside any reserve funds. This has now been done, and the profit and loss account already shows a credit balance of £716. The plant has been increased during the current year to a capacity of 4,000 kilowatts, double the former capacity; and even if one of the four generating units be now kept as a reserve this will result in a 50-per-cent. increase in the output and revenue, with only a small increase—probably 10 per cent.—in the working and capital charges. The market is growing so rapidly that customers are not only waiting to be connected, but premiums are offered for the right to obtain a supply. As a result, it will be possible in the fourth year of operation to pay all costs, put aside a substantial depreciation reserve, and still carry forward a substantial net profit which may be used either for the relief of rates or the farther reduction of charges, which are already exceedingly low, an average for all purposes of less than 1d. per unit. The capital outlay, when the cost of the plant recently added is included, will be well under £290,000 for 4,000 kilowatts (5,330-horse power). This includes a complete reticulation of low-tension distributing-mains in the city, house-service connections, and meters, street-lighting, and tramway-converter machinery. These items will account for more than one-half of the total outlay, and the balance thus works out at £36 per kilowatt or £27 per horse-power to cover the headworks, power plant, transmission-line, sub-stations, and electrical equipment.

Christchurch, on the other hand, is at present very inadequately supplied with power for general purposes, and there is no prospect of the demand being met from any source other than water-power.

This is therefore the first scheme that should be taken up. Lake Coleridge is by far the most suitable source. The only possible alternative is the Clarence River. The power-station here would be ten miles farther from Christchurch, and seventy miles farther from Ashburton and Timaru. It would be practically useless for the towns of South Canterbury, whereas the Lake Coleridge scheme could supply all the power-requirements from Timaru to Rangiora. After investigating the whole question very carefully, the late Mr. Hay recommended that if two power schemes could be developed for the supply of Canterbury they should be the Opihi and Clarence Rivers, but, if only one, it should be Lake Coleridge. Lake Coleridge has the advantages of proximity to the market, the largest storage, and consequent possibility of regulating the flow, the shortest tunnel-length, and "the most favourable condition for future partial development and subsequent completion in successive stages as the demand for power justifies."

The lake constitutes an ideal storage reservoir. It is 11 miles long, and has an area of 14 square miles 382 acres at its present level. By driving a tunnel through the hill to the Rakaia River, a distance of 68 chains, with a 4-chain approach canal at the lake end and 40 chains of pipe-line at the lower end, a head of 470 ft. is available. These headworks would cost £60,000, and by lowering the intake of the tunnel to 20 ft. below the existing lake-level, to regulate the flow, it would yield an average power of 5,500-horse power. By diverting the Acheron into the lake the power available could be increased to 7,600-horse power at an additional cost of £16,000; and by diverting a portion of the Harper River it could be further increased to 14,000-horse power at an additional cost of £34,000: making a total of £110,000 for headworks. The above horse-powers are for continuous working at 100 per cent. load-factor. At 50 per cent. load-factor the maximum power available in each case is double the above figures; and at the 28 per cent. power-factor estimated for the Christchurch demand the maximum power available is nearly four times the above figures. The estimates show that the maximum demand in Christchurch in five years' time will be 11,100-horse power (8,300 kilowatts); and the average, 3,460-horse power (2,592 kilowatts). Allowing for all losses, this power will require an average flow of only 108 cubic feet per second throughout the year, and considerably more than this is available by regulating the lake-outflow without diverting either of the rivers. Allowing for transmission and transformation losses, I would recommend that a plant consisting of four generators, each of 2,500 kilowatts (3,400-horse power), be installed at once, and that headworks, foundations, and switchboard-panels be provided for two additional units of the same size. Of these four units, three would carry the maximum load if required, with a reasonable overload on each, up till the early part of the third year of operation, so that one unit could be dismantled for overhaul or repair without interfering with the operation of the station. During the third or fourth year of operation the question of adding a fifth unit to meet the increasing demand and providing a spare unit at full load will probably have to be considered.

The water motors would be of the Pelton-wheel type, mounted on horizontal shafts coupled direct to the generators. These should operate at 2,500 volts, three-phase, with a frequency of 50 cycles per second. Two direct-current exciters would also be required, of 200 kilowatts each, which would also supply the lights in the station and staff-houses, and operate the travelling-crane and other station motors. These exciters would run at 120 volts direct current, and would be connected in parallel with a small storage-battery in order to maintain absolute certainty of supply and steadiness of voltage. The exciters would be driven by two smaller Pelton wheels of 300-horse power each.

The current from the main generators and exciters would be controlled by a switchboard built in a special switchboard-gallery, the switches themselves being entirely enclosed in brick or concrete cells, and operated by insulated handles from the operating-board. The switchboard would be provided with the necessary panels for the final equipment of six 2,500-kilowatt generators and four outgoing feeders. It would be divided into two entirely separate portions by a coupling switch, and two independent sets of feeders would be run to Christchurch, one from each of these independent switchboards. With these provisions no single fault whatever in the plant or gear, even if in the most vulnerable parts, could interfere with the continuity of supply. From the switchboard the mains would be carried to the step-up transformers, which would raise the pressure from 2,500 to 45,000 volts for the transmission and thence to the outgoing-cable towers, suitable lightning-arresters being interposed to protect the plant from damage from this cause. From the power-house the distance in a direct line to Christchurch is fifty-eight miles; but, following the roads by the most convenient routes to give the cheapest right of way, accessibility for construction and repair, and to tap the available distributing centres on the route, the distance is about seventy miles. Provision is made for two entirely separate transmission-circuits on separate pole-lines, again in order to provide that no accident, however serious, could possibly interfere with the continuity of the supply. The transmission-line would be carried on 36 ft. poles spaced $2\frac{1}{2}$ chains apart in level country, and up to 5 chains in hilly country, according to the nature of the surface. As every insulator is a point of risk, the longer the spans within the limits permitted by the sag the less the danger of break-down. In modern practice the spans are made as long as the nature of the ground and the height of the poles will permit, on level ground from 150 ft. to 180 ft. with wooden poles, and in hilly country up to a quarter or half a mile between ridges, and with special poles. The insulators would consist of triple built-up earthenware, cemented together, and arranged in an equilateral triangle about 60 in. apart. Each pole, with cross-arm and insulators, erected complete would cost about £5, the necessary shingle for concrete being available practically on the spot. This provides for a type of construction that will be ample for twenty years' service. By that time the development of ferro-concrete construction will probably enable a much more permanent type of pole to be adopted. In the meanwhile, the accrued depreciation reserve will more than cover the cost of reconstruction.

For the transmission-line, considering the necessity of providing for future extensions, the total weight of copper required would be 143 tons for each circuit of three wires from the power-house to the substation in Christchurch. This size of wire would involve transmission losses ranging from 3 per cent. at 1,200 kilowatts up to 13 per cent. with a load of 5,000 kilowatts (6,600-horse power) on each of the two circuits—that is, at a delivered power of 13,200-horse power. The transformation losses in

raising the pressure at the power-house and stepping down again at the substation would be 4 per cent. additional at full load, making a total loss of 17 per cent. at a total load of 13,200-horse power; at a total load of 10,000-horse power the total loss would be 15 per cent.; and at 6,000-horse power 13 per cent. In working out fuller details a lighter line may prove sufficient, but the above is a safe estimate. A telephone circuit would be required following each transmission-line, with small exchange-boards in the power-house and substations.

The maintenance of the transmission will involve patrolling its whole length at frequent intervals; and for this purpose two linesmen's cottages would be required along each route, dividing it into suitable lengths for regular patrol service. Telephone instruments in each house connected with the telephone circuit would enable the linemen to be concentrated rapidly in the case of an emergency.

The two transmission-lines should terminate in independent substations, one towards the northern and the other on the southern side of the city, in order to give a good lay-out of the distributing-mains. These two substations would be cross-connected by a cable, again providing for continuity of service in case it is necessary to cut out either of the transmission-lines at any time. The main transmission-lines should not be brought farther into the city than is necessary to obtain good centres for distribution, and on this account the southern substation would be situated in Addington, near the Railway Workshops, and the northern one near the Exhibition Grounds. These substations would be provided with lightning-arresters, step-down transformers reducing the pressure from 40,000 volts to 6,600 for distribution in bulk, and switchboards controlling the various circuits. From the Addington substation distributors would be run to the Railway Workshops, the tramway power-house, the Sydenham, Cashmere Hills, and Heathcote pumping-stations, the factories and mills in Woolston, Addington, Islington, and Hornby, the Halswell and Redcliffs quarries, and the Lyttelton Harbour. From the Exhibition substation distributors would be run to the City Council Electric-power Station, the Drainage Board pumping-station, the Belfast, Kaiapoi, and Rangiora mills and factories. Provision would be made in the distributors from the substations to supply each suburb or section of the city not already supplied by the City Council mains, and each town, village, group of houses, mill, or factory within fifteen miles of the substations that offers sufficient inducement.

In addition to the two main substations, a number of transformer and distributing huts would be required for supplying current to smaller centres in which there is no authority to take the power in bulk, and in which the Government might have to undertake the retail distribution. The exact positions of these would be fixed as the demand arose, but I have allowed for twenty-five, with an average capacity of 100 kilowatts. The following would be the approximate length of main distributors :—

	Miles.
Christchurch to Rangiora, <i>via</i> Belfast and Kaiapoi	20
Addington to Lyttelton	8
Branches from main lines to Halswell, Islington, Hornby, and Lincoln ..	15
Branches from substations to various distributing centres	25
Total	68

In addition, low-tension 220-volt distributors would be necessary for retail distribution in smaller centres, requiring about forty miles circuit with meters and services.

I attach complete estimates for these works, amounting to £291,500, exclusive of the purchase of any land or way-leaves that may be necessary, the construction of main roads, interest during construction, and preliminary departmental expenses. For four years hence—that is, for the first two years of operation—the load would be considerably less than the maximum of 13,300-horse power provided above, and one of the generating units might be omitted in the meanwhile, reducing the power-station capacity to 10,000-horse power and reducing the outlay by £17,000. Similarly, one of the two transmission-lines would have ample capacity for the first few years of operation, and the £34,000 on the above outlay might thus be held over in the meanwhile. If it were decided at first to supply current only from the main distributors or the transformer-huts, leaving the local bodies or groups of consumers to make their own arrangements for distribution, a reduction of £25,000 would be effected in the capital outlay. The costs of the full development of 10,000 kilowatts or 13,300-horse power thus work out as follows :—

	Total.	Per Kilowatt.	Per Horse-power.
	£	£	£
Headworks	60,000	6	4.5
Power-house	110,600	11.1	8.3
Transmission-line	44,300	4.4	3.4
Substations	18,800	1.9	1.4
High-tension distribution	29,200	2.9	2.2
Low-tension distribution	28,600	2.9	2.1
Total	£291,500	£29.2	£21.9

Compared with the costs of other power plants of similar output, the cost of headworks is low, owing to the exceptionally favourable circumstances of Lake Coleridge for partial development. The other items show a fair margin above the cost of similar works in the older countries, which would more than cover the necessary allowance for higher freight and wages.

LAKE COLERIDGE — CHRISTCHURCH SCHEME.

Estimated Capital Outlay.

Headworks, consisting of canal, tunnel, and pipe-lines to give an average of 5,500-horse power and a maximum of 20,000-horse power on a 28-per-cent. load-factor ..	£	60,000
Power-house equipment,—		
Buildings and foundations for six 2,500-kilowatts generating units—total,	£	
20,000-horse power	14,800	
4 Pelton wheels and governors, complete—total, 13,300-horse power ..	40,000	
4 generators, complete—total, 10,000 kilowatts	25,000	
2 exciters and Pelton wheels, complete—400 kilowatts	4,000	
Battery and accessories	500	
Switchboard, 11 panels and connections complete, to provide for ultimate capacity of 15,000 kilowatts (20,000-horse power)	2,500	
Travelling-cranes—1 of 25 tons and 1 of 2 tons	1,000	
Step-up transformers—8, of 1,600 kilowatts each—12,800 kilowatts ..	12,000	
Lightning-arresters	300	
Workshop and tools	1,000	
Railage and cartage	3,100	
Erection and contingencies	3,400	
Staff-houses (eight)	3,000	
		110,600
Transmission-line,—		
Pole-line and insulators, erected complete	22,000	
Copper, two circuits, each 143 tons, at £60 per ton	17,200	
Telephone circuits and instruments	1,500	
Erection of transmission-line, tools, plant, and accessories	2,600	
Four linesmen's cottages	1,000	
		44,300
Substations (Addington and Exhibition Substations),—		
Buildings	3,000	
Lightning-arresters	300	
Step-down transformers—8, of 1,600 kilowatts each	12,000	
Switchboards and accessories	3,500	
		18,800
Transformer and distributing-huts (25, each 100 kilowatts),—		
Buildings	2,000	
Transformers	3,200	
Switchboards and meters	1,500	
		6,700
Distributing-mains, 6,600 volt,—		
3,000 poles, cross-arms, insulators, &c.	12,000	
Cable and erection	10,500	
		22,500
Distributing-mains (low tension),—		
1,600 poles, cross-arms, insulators, &c.	6,400	
Cable and erection	18,000	
Meters and services	4,200	
		28,600
Total capital outlay		£291,500

Operating Costs.

The working-costs of the full plant when in steady running-order, after, say, two years of service, would be as follows:—

Generation,—		
Power-house,—	£	£
Maintenance of headworks	800	
Power-house wages and stores	2,800	
Maintenance and repairs	1,200	
		4,800
Transmission and distribution,—		
Wages and stores	4,600	
Maintenance and repairs	2,400	
		7,000
Management,—		
Salaries and wages	3,200	
Office-rent and charges	600	
Insurance	300	
General expenses	1,000	
		5,100
Total working-costs		£16,900

LAKE COLERIDGE—CHRISTCHURCH SCHEME—continued.

Annual Capital Charges.

Interest on £291,500 at 4 per cent.	..	..	..	..	..	11,660
Sinking fund, 1 per cent.	..	..	..	..	..	2,915
Depreciation reserve,—						
Headworks, £60,000, at 2 per cent.	..	..	..	..	1,200	
Power-house, £110,600, at 4 per cent.	..	..	..	..	4,424	
Transmission-line, £44,300, at 3 per cent.	..	..	..	..	1,329	
Substations, £18,800, at 4 per cent.	..	..	..	..	752	
Distributing system, £57,800, at 5 per cent.	..	..	..	..	2,890	
Allow for writing off interest during construction, and preliminary expenses..					2,000	
						12,595
Total capital charges	..	..	..	..	..	£27,170
Total annual costs	..	..	..	..	..	£44,070

Allowing for the full-load losses in transmission and transformation (17 per cent.), this leaves a maximum of 8,300 kilowatts or 11,000-horse power available for sale in Christchurch—that is,—

72,600,000 units on a 100-per-cent. load-factor.	
36,300,000 " 50 " "	
20,000,000 " 28 " "	

The latter is the load-factor that the detailed estimates give for the actual Christchurch load. On this basis the above costs work out as follows:—

	Per Unit for 19,000,000 Units.	Per Kilowatt: Maximum delivered, 8,300 Kilowatts.	Per Horse-power: Maximum delivered, 1,100 Horse-power.
		£ s. d.	£ s. d.
Working-costs	0.203	2 1 0	1 11 0
Capital charges	0.326	3 6 0	2 10 0
Total	0.529	5 7 0	4 1 0

The revenue on the basis calculated in the above detailed estimates for this output (which is slightly less than that estimated as being required in five years' time) would be,—

20,000,000 units at 1.08d. £90,000.

This leaves an ample margin of profit which would enable the system to prove self-supporting when the output reaches a little over one-half of that estimated as available in three years after supply commences. In the meanwhile the charges on which the estimates are based, which yield an average revenue of 1.08d. per unit, or £8 6s. per horse-power, maximum output, are very low, but may be reduced still farther if considered advisable as soon as the output reaches 12,000,000 units per annum; and if the output shows a better load-factor than 28 per cent., which is quite probable, the reduction in charges might be made earlier.

When any such reduction is made it is certain that an enormous expansion in the business will result, far beyond any possible estimates of business actually in sight.

WELLINGTON DISTRICT.

In order of commercial importance and accessibility to a remunerative market, the next proposal of those available is the Hutt River scheme, for the supply of the Wellington, Hutt, and Petone districts.

The business in sight within five years is as follows:—

Maximum load	9,150 kilowatts, or 12,200-horse power.
Average load	3,416 kilowatts, or 4,600-horse power.
Load-factor	34.5 per cent.
Total output per annum	27,635,000 units.
Annual revenue available in five years' time	£121,980.

In his report of the 22nd October, 1906, the late Mr. Hay says,—

"The information obtained regarding this river shows that a very useful power-scheme can be got. The works required are a high concrete drain, a conduit about 4 miles 30 chains long, about 700 ft. of pipes, and a tail-race 35 chains long, for the most part in drive. The power-station would be situated near the junction of the Mungaroa Stream with the Hutt River, about four miles from the Upper Hutt Railway-station. The volume of flow observed during the period for which the river has been closely observed varied from about 100 cub. ft. per second to 5,000 cub. ft. per second in flood. The mean flow during this period was equal to giving 8,000-horse power on the turbine shafts at the power-station. The conduit would be designed to carry 700 cub. ft. of water per second. Deducting height lost by fall in race, friction in pipes, and fall necessary in tail-race, about 285 ft. of effective head should be obtainable.

"The maximum power to which the scheme would work would be 17,000-horse power on the turbine-shafts. The corresponding continuous power would be 8,500-horse power. The power-station would be very favourably located, being rather less than four miles from the Upper Hutt Railway-station, sixteen miles from the Lower Hutt, seventeen from Petone, and twenty-four miles from the Wellington Railway-station. If not immediately, a large amount of power would ultimately be used in the Hutt Valley for lighting, tramways, suburban railways, and in numerous industries. A very safe route for a transmission-line could be got, and the risk of breakdown would be very small for a properly constructed line. A plant and works to yield 8,500-horse power on turbine-shafts for continuous working would cost £250,000 for dam, tail-race, conduit, and buildings. For an installation to work up to say, 17,000-horse power on the turbine shafts, the cost would be about £286,000 for dam, conduit, tail-race, buildings, and minor engineering works.

"The Hutt scheme derives its importance from its very favourable situation. The cost of head-works per horse-power is high, but the working-costs will be lower than if an equal amount of money were expended on obtaining an equal amount of power from a long-distance transmission system, and I have no hesitation in recommending its adoption in preference to any such scheme, on the grounds of probable lesser cost for power supplied, and the certainty of much less risk of interruption of service by failure in the transmission-line."

Compared with more ambitious schemes which have been proposed for the supply of the whole of the North Island, such as the Huka Falls and Lake Waikaremoana, the Hutt scheme is much more practical and economical. The former would involve transmission distances of 200 to 250 miles, through rough inaccessible country. Although quite possible, these enormous distances would necessitate the development of 40,000- to 50,000-horse power at once, in order to make the scheme pay interest and working-expenses, involving an outlay of £1,500,000 to £2,000,000, and, in view of the comparatively limited demand at present in sight, a development of only 13,000-horse power is justified for the Wellington district. The cost of transmitting this quantity over such distances would be much more than the cost of supply from the Hutt River. The other local schemes that have been suggested—viz., the Tauherenikau, Waione, Otaki, &c.—are all much smaller than the Hutt River scheme, more remote from the market, and the transmission would involve a line over the mountains in addition to the valley route of the Hutt scheme, involving much greater costs of maintenance and risks of interruption. The land necessary for the reservoir in the Hutt Valley (280 acres) has already been purchased. The head-works for a final development of 17,000-horse power, including dam, conduit, tail-race, buildings, and minor engineering-works, are estimated by the late Mr. Hay at £286,000. In view of the demand immediately in sight—a maximum of 9,150 kilowatts (12,200-horse power), with an average load of 3,416 kilowatts (4,600-horse power)—the power available in the Hutt scheme would be ample for many years to come. The average flow necessary to supply this load, allowing for all losses, is only 236 cub. ft. per second. To deal with this demand I would recommend the installation of four generating-sets each of 2,500 kilowatts capacity, giving a total power-house capacity of 13,300-horse power. The details of the power-house plant would be very similar to those proposed for the Lake Coleridge scheme, with the exception that the head of water on the Pelton wheels would be only 285 ft., as compared with 470 ft. at Lake Coleridge; and the voltage of transmission, owing to the shorter distance, need not be higher than 35,000 volts, as compared with 45,000 or higher proposed for Lake Coleridge. As in the case of Lake Coleridge power-station there would be ample spare plant until the third year of operation when the question of adding a fifth unit would require consideration if it is found necessary to have a spare unit in reserve under all conditions of load. It is quite possible that if one machine were out of action the overload capacity of the other three would supply all the reserve power necessary.

The transmission-line would be in duplicate, following different routes as far as possible, in order to insure continuity of supply. The two main circuits would terminate in substations one at Petone and the other at Thorndon. The circuit to the former, sixteen miles in length, would have a normal capacity of 5,000 kilowatts, and to the latter of 6,000 kilowatts. In addition, a high-tension connecting-line of 5,000 kilowatts capacity would be run between the two stations, so that the service to both substations could be carried on without interruption if it were necessary to cut out either transmission-line for repairs. Each line would have ample overload capacity. The weight of copper in the 5,000-kilowatt line would be 40 tons, and the full-load loss in transmission and transformation under 12 per cent. The weight of copper in the 6,000-kilowatt line would be 56 tons, and the full-load losses, including transformation, under 10 per cent.

At the substations the pressure would be reduced to 2,200 volts, three-phase, for distribution. Owing to the closely concentrated nature of the load, this would be quite high enough for the primary distribution, the majority of the power being disposed of within a mile of the substations, and the whole of it within five miles.

From the Petone substation high-tension distributors would be run to the various factories in the neighbourhood, to transformer-huts for distribution for electric lighting and power purposes, and to the present pumping-stations and the proposed tramway-station. From the Thorndon substation mains would be run to the municipal tramway and electric-light station, harbour power-station, pumping-stations, the various factories and mills taking power in bulk, and to transformer-huts for any areas not already included in the city-supply distributing system. The total length of such distributing-mains would be much less than in the Christchurch neighbourhood, but a considerable portion in the city would have to run underground, involving considerably higher outlay. I estimate the length of the distributing-mains from the Petone substation at ten miles of overhead work, and from the Thorndon substation at twenty-seven miles of overhead circuits and four miles of underground circuits. As the secondary or low-tension distribution is already well provided for in the Wellington district, I have not included it in the estimates.

The total capital cost of this system, complete, for 10,000 kilowatts or 13,300-horse power, would thus be £443,960—that is, £44·4 per kilowatt, or £33·4 per horse-power, made up as follows :—

	Total.	Per Kilowatt, for 10,000 Kilowatts.	Per Horse-power, for 13,300- horse power.
	£	£	£
Headworks	286,000	28·6	21·5
Power-house plant	94,500	9·5	7·2
Transmission-line	17,160	1·7	1·3
Substations	18,800	1·9	1·4
Distribution	27,500	2·7	2·0
	443,960	44·4	33·4

Compared with the cost of similar works elsewhere, these figures show normal capital costs, allowing for the extra cost of freight and labour in New Zealand, except under the item of Headworks, £286,000. This is high on account of the large dam involved; but without an opportunity of going into details of Mr. Hay's estimates I am unable to check it. It works out for the proposed development at £28·6 per kilowatt, or £21·5 per horse-power—about four times as high as for the Lake Coleridge scheme, and three times the general average for such plants. But it must be remembered that it provides for an ultimate extension of the power plant to 17,000-horse power, when it would work out at only £16·8 per horse-power. Mr. Hay estimated a possible reduction of £36,000 in this item if the plant were designed for a continuous output of 8,500-horse power, and probably a considerable amount of this saving could be effected in providing for the estimated requirements of 13,300-horse power maximum, with an average of only 4,600-horse power. This can only be determined by a detailed survey. It would also be possible to reduce the outlay for the first two years of operation by omitting one of the main generating units, thus reducing the capital cost by £17,000, and one of the transmission-lines with its transformers, reducing the outlay by an additional £17,000.

HUTT RIVER — WELLINGTON POWER SCHEME.

Estimated Capital Cost.

Headworks, including dam, conduit, tail-race, buildings, and minor engineering works for a capacity of 17,000-horse power (Mr. Hay's estimate)	£	£
Power-house equipment (buildings and foundations included above).—		286,000
4 Pelton wheels and governors, complete, for 13,300-horse power	40,000	
4 generators, complete, for 10,000 kilowatts	25,000	
2 exciters and Pelton wheels, complete, 400 kilowatts	4,000	
Battery and accessories	500	
Switchboard and connections, complete, to provide for an ultimate capacity of 15,000 kilowatts	2,500	
Travelling-cranes—one of 25 tons and one of 2 tons	1,000	
Step-up transformers—12,800 kilowatts	12,000	
Lightning-arresters	300	
Workshop and tools	1,000	
Railage and cartage	2,600	
Erection and contingencies	3,400	
Staff-houses (six)	2,200	
		94,500
Transmission-line,—		
Pole-line and insulators, erected complete	8,200	
Copper, two circuits, of 40 and 56 tons weight	5,760	
Telephone circuits and instruments	600	
Erection of transmission-lines, tools, plant, and accessories	2,100	
Two linesmen's cottages	500	
		17,160
Substations (Petone and Thorndon).—		
Buildings	3,000	
Lightning-arresters	300	
Step-down transformers, 12,800 kilowatts	12,000	
Switchboards and accessories	3,500	
		18,800
Transformer and distributing-huts (25 each of 100 kilowatts).—		
Buildings	2,000	
Transformers	3,200	
Switchboards and meters	1,500	
		6,700

HUTT RIVER—WELLINGTON POWER SCHEME—*continued.**Estimated Capital Cost—continued.*

Distributing-mains (2,200 volts),—						
1,400 poles, cross-arms and insulators	..	..	..	..	..	7,000
Cable and erection	..	..	..	..	..	6,600
Four miles underground cable	..	..	..	..	..	7,200
						<u>20,800</u>
Total capital outlay	..	..	..	..	..	<u>£443,960</u>

Annual Operating Costs.

Generation,—						
Maintenance of headworks	..	..	..	..	..	1,500
Power-house wages and stores	..	..	..	..	..	2,800
Plant maintenance and repairs	..	..	..	..	..	1,200
						<u>5,500</u>
Transmission and distribution,—						
Wages and stores	..	..	..	..	..	2,500
Maintenance and repairs	..	..	..	..	..	1,200
						<u>3,700</u>
Management,—						
Salaries and wages	..	..	..	..	..	3,200
Office rent and charges	..	..	..	..	..	600
Insurance	..	..	..	..	..	300
General expenses	..	..	..	..	..	1,000
						<u>5,100</u>
Total working costs	..	..	..	..	..	<u>£14,300</u>

Annual Capital Charges.

Interest, £443,960, at 4 per cent.	..	..	..	..	..	17,758
Sinking fund, £443,960, at 1 per cent.	..	..	..	..	..	4,439
						<u>22,197</u>
Depreciation reserve,—						
Headworks, £286,000, at 2 per cent.	..	..	..	..	..	5,720
Power-house plant, £94,500, at 4 per cent.	..	..	..	..	..	3,780
Transmission-line £17,160, at 3 per cent.	..	..	..	..	..	515
Substations, £18,800, at 4 per cent.	..	..	..	..	..	752
Distribution, £27,500, at 5 per cent.	..	..	..	..	..	1,375
Allow for writing off interest during construction and preliminary expenses	..	..	..	..	..	2,000
						<u>14,142</u>
Total capital charges	..	..	..	..	..	<u>36,339</u>
Total annual costs	..	..	..	..	..	<u>£50,639</u>

Allowing for full-load losses in transmission and transformation (11 per cent.), this leaves a maximum of 8,900 kilowatts, or 11,800-horse power available for sale in Wellington, that is to say,—

78,000,000 units on a 100-per-cent. load-factor.

39,000,000 " 50 " " "

26,800,000 " 34·5 " " "

The latter is the load-factor that the detailed estimates give for the actual Wellington load. On this basis the above costs work out as follows :—

	Per Unit, for 26,800,000 Units.	Per Kilowatt (Maximum delivered, 8,900 Kilowatts).	Per Horse-power (Maximum delivered, 11,800-horse power).
		£ s. d.	£ s. d.
Working-costs	0·128	1 12 0	1 4 0
Capital charges	0·325	4 2 0	3 2 0
Total	0·453	5 14 0	4 6 0

These figures are slightly less than the estimated requirements in five years' time—viz., a maximum demand of 9,150 kilowatts, or 12,200-horse power, and an output of 27,635,000 units per annum, yielding a total revenue of £121,980, or an average of 1·06d. per unit. On the same basis, the actual plant provided above will yield the following revenue :—

26,800,000 units at 1·06d. £118,300

Compared with the estimated total annual cost of £50,639, this leaves an ample margin of profit, which would enable the system to prove self-supporting when the output reaches about half of that estimated in five years' time. In the meanwhile the basis charges on which the estimates are calculated might be still farther reduced as soon as the output reaches a million units per month. In fact, it will probably be advisable, in order to encourage a large output from the start, to reduce the charges at once to some such scale as the following :—

To City, Hutt and Petone Borough Tramways and Kelburne Tramway,	£
6,100,000 units, at 0·66d.	16,940
„ City, Hutt and Petone Boroughs, for pumping, 3,960,000 units, at 0·5d. . .	8,250
„ Harbour Board, 1,180,000 units, at 0·8d.	3,930
„ Railway Workshops, 330,000 units, at 0·8d.	1,100
„ City, Hutt and Petone Borough Councils, for retail distribution for power, lighting, heating, cooking, and street-lighting,—	
From 6 p.m. to 10 p.m., 3,000,000 units, at 1·25d.	15,620
From 10 p.m. to 8 a.m., 1,000,000 units, at 0·5d.	2,080
From 8 a.m. to 6 p.m. 4,000,000 units, at 1d.	16,660
„ private consumers, for power, 4,000,000 units, at 1d.	16,660
„ private consumers, for lighting, 1,000,000 units, at 2d.	8,330
Allowed for loss in distribution, lighting substations, &c., 2,230,000 units . .	
	£89,570

This would still show a substantial profit in the third year of operation (five years from the commencement of construction) as compared with the total annual costs of £50,639. Whether such a reduction in charges should be made from the start, or only after the plant has shown a profit on the higher-basis charges taken in the preliminary estimates, is a matter of policy which would be dictated by the immediate prospects of the output available during the first few months of operation. In any case, further reductions could be offered in the fourth year of operations.

This scheme is capable of considerable extension beyond the power proposed above. Mr. Hay estimated the power of the river at 8,500-horse power for continuous working—that is, 17,000-horse power on a 50-per-cent. load-factor, or 25,500 on a 33-per-cent. load-factor. In addition to this, the Akatarawa Stream is capable of yielding a further 1,000 average horse-power in the same power-station building, so that this site should serve the requirements for many years to come. The development of the latter scheme will be particularly advantageous, as it will give a power-supply entirely independent of the main river itself, and might thus enable the load to be carried on over short periods during examination or repairs to the main-supply tunnel from the Hutt River.

The question of working the Rimutaka Incline electrically from this power-station is also worthy of consideration.

The capital costs of these two systems, Lake Coleridge and the Hutt River, may be compared in detail with similar figures for the outlay on seven of the American power systems, with capacities of 10,000 to 30,000 kilowatts, and working on heads of 30 ft. to 120 ft., as quoted by Mr. O. S. Lyford in the Proceedings of the American Institution of Electrical Engineers for February last, as follows :—

Per Kilowatt at Power-stations—									
	A.	B.	C.	D.	E.	F.	G.	Lake Cole- ridge.	Hutt River.
	£	£	£	£	£	£	£	£	£
Land and rights	2·9	2·7	1·8	2·9	4·6	2·7	3·1	..	..
Headworks, buildings, &c.	7·2	9·0	10·2	10·2	10·6	12·7	11·7	7·5	28·6
Hydraulic equipment	2·9	2·8	2·7	1·9	1·6	1·6	1·6	4·0	4·0
Electric equipment	4·3	4·7	4·0	2·9	3·0	2·8	2·6	5·6	5·5
Transmission-line	3·5	1·3	3·8	1·9	4·3	3·6	5·9	4·4	1·7
Substations	1·2	1·3	2·0	1·6	1·4	1·7	1·7	1·9	1·9
Distributing system	2·1	1·4	0·9	0·9	3·2	3·0	2·5	5·8	2·7
Interest during construction	1·3	0·6	1·1	1·0	1·7	1·3	1·3	..	..
Engineering expenses	2·0	0·9	2·5	2·2	2·6	3·0	2·8	..	..
Total per kilowatt	27·4	24·7	29·0	24·5	33·0	32·4	33·2	29·2	44·4

From these figures it is evident that ample allowances have been made in the local estimates. It would, of course, be possible to make the estimates much higher by specifying heavier types of construction than are required to insure safety and reliability for the sake of giving greater permanence. But, in view of the necessity of keeping the capital cost as low as possible until the returns are showing a clear profit, and in view of the ample depreciation reserves provided, it is undesirable to load the first installation with any more permanent type of construction than I have provided for in the foregoing estimates.

In conclusion, the foregoing estimates show that it will pay well to develop the Lake Coleridge and Hutt River schemes. As a fuller investigation of the question, I would recommend that similar estimates be taken out for the Kaituna-Auckland scheme, though it is obvious that, owing to the long-distance transmission, the financial results will not be as good as in either of the other two cases.

I would recommend also that thorough investigations be made of the probable market in each of the following centres, as has been done in this report for the four main centres, in order to determine accurately the financial prospects of smaller electric-power developments in each :—

Napier and Gisborne district (Waikaremoana scheme).

Palmerston North and the Manawatu district (Makuri scheme).

Invercargill and the Southland district (Lake Hauroto scheme).

Greymouth and the Westland district (Teremakau scheme).

Whangarei and Dargaville district (Wairoa Falls scheme).

Nelson district.

Owing to circumstances of which you are aware, the preparation of this preliminary report has been very hurried, and it has been impossible to verify a number of the details, some of which may be liable to correction ; but such corrections cannot affect the general conclusions. All calculations are correct to three significant figures. The limited time has not permitted an examination of the water-powers *in situ*, and I have been compelled therefore to rely entirely on the published data with regard to these.

I have, &c.,

LAWRENCE BIRKS, B.Sc., A.M.I.C.E., A.M.I.E.E.

The Hon. the Minister of Public Works, Wellington.

APPENDIX H.

HYDRO-ELECTRIC POWER GENERATION, REPORT ON, BY THE ENGINEER-IN-CHIEF.

Mr. R. W. HOLMES, M.Inst.C.E., to the Hon. the MINISTER OF PUBLIC WORKS.

SIR,—

Public Works Office, Wellington, 29th October, 1910.

In connection with this matter I have the honour to report that the information at present in hand regarding several of the available schemes is as follows :—

LAKE COLERIDGE (CHRISTCHURCH), HUTT VALLEY (WELLINGTON), AND KAITUNA (AUCKLAND).

Information consists of exploration and trial surveys, which have been undertaken in order to prove the practicability of the schemes, particularly as regards the hydraulic side of the works, and in the two latter to ascertain the quantity of water available.

Before any of the permanent works can be put in hand it will be necessary to complete these surveys, which will only take a short time, and also to commence at once, in connection with the Lake Coleridge scheme, continuous observation of the flow of water in the several sources of supply.

Preliminary construction-work can at once be commenced in each of the schemes.

WAIKAREMOANA : WHANGAREI AND DARGAVILLE.

A little information has been obtained regarding the physical characteristics of this scheme, but not sufficient to formulate a definite scheme. It is, however, a practicable scheme for the development of a small quantity of power, which should be ample to supply the immediate neighbourhood, and, in view of the existence of an important industry which must have a considerable supply of power for continuous work, the installation of this scheme should prove a financial success.

TAUPO : AUCKLAND.

A little trial-survey work and exploration work only has been carried out in connection with this scheme. Before anything is done towards carrying out the works of construction for supplying Auckland with power it will be necessary to exhaustively investigate the Taupo scheme, as there is very little difference in the relative advantages of Taupo and Kaituna.

WAIKAREMOANA AND TE REINGA : HAWKE'S BAY.

Up to the present only exploration work has been carried out in connection with these schemes.

KAITUNA : AUCKLAND.

In this project the water will be derived from Lake Rotoiti, to which is connected Lake Rotorua. Owing to the necessity of leaving the level of Lake Rotorua unaffected, it will not be possible to utilize the whole of the water which is derived from the watershed; but by working upon the level of Lake Rotoiti alone to the extent of a variation of a maximum of a little over 1 ft., sufficient water can be obtained to provide 37,000-horse power for continuous working on the turbine shaft at the generating-station. This would enable a maximum quantity or peak load of nearly 78,000-horse power, or an average of 26,000-horse power continuous working to be delivered in Auckland. Investigation has been made on the basis of the delivery in Auckland of a peak load of 10,000-horse power, but by constructing the works with a small increase in expenditure, peak load can be increased to 20,000-horse power.

Although the works required are of a comparatively simple character, the nature of the country and the peculiar region in which they are situated will render them more costly than they would be if situated, say, in the southern part of the Island or in the South Island. The country through which the head-race or conduit would be constructed consists wholly of volcanic rock, composed of tufa, pumice, and rhyolite. The first two give trouble through being easily eroded by water, the first through being subject to slipping, the second through being easily eroded by the wind, and the whole through being extremely pervious to water. These characteristics will necessitate special construction in order to render the conduits watertight, not only to preserve the quantity of water, but on account of the very great damage which would ensue through erosion of the light material by any water which might escape. The waters flowing out of the many volcanic springs throughout the watershed finding their way into the lake will no doubt render the water slightly acid, and therefore cause it to increase the rate of corrosion of any iron used. This is a very important matter, particularly in connection with the pressure-pipe and the turbines.

The scheme consists of the conveyance of the water for a distance of about five miles in a suitable conduit to a point on a spur overlooking the valley of the Kaituna River, at a height of 550 ft. above water-level in the river below, and the conveyance thence of the water through a standard-steel pressure-pipe to the turbines in the power-generating station, which would be situated on the right bank of the river. The head-works, owing to the extremely favourable physical characteristics of the lake-shores, would be of a very simple and inexpensive description.

The conduit must of necessity consist of a tunnel for nearly a mile and a half after leaving the lake ; thence for about a mile and a half it may consist of an open race or a covered pipe ; thence for one mile, as the conduit would be under pressure, it must consist of a pipe ; thence, owing to the difficulty of dealing with the spillway, it will be impracticable probably to form an open race ; this is, however, a point that requires further investigation. Owing to the light character of the volcanic soils, considerable difficulty may be experienced in keeping dust-blown pumice from entering the open race, and also in preventing pumice from entering the race during heavy rainstorms. Should pumice-dust enter the race it will cause very heavy wear-and-tear upon the turbines owing to its cutting-action at the very high velocity at which the water passes through the machines. It therefore appears that it will be better to form a covered conduit the whole distance, and, as far as the information at present in hand shows, it will cost very little more to do so than to endeavour to construct an open race for a part of the distance.

The steel pressure-pipe from the end of the conduit to the power-station will be of the usual standard description, and not of abnormal length, being limited to about 1,300 yards.

All materials for the manufacture of concrete, of which a large quantity will be required, can be obtained in the district, but their cost will be increased above the average owing to their being scattered and consequently necessitating the construction of special tramways or other means for conveyance. As in the case of nearly all the power schemes, it will be necessary to expend a fair sum upon the improvement of existing roads and the construction of others, in order to obtain access to the works.

It is probable that the Auckland tramway system and the electric-lighting of the city will in the immediate future consume at least 10,000-horse power on their peak loads, so that it appears that it would be wiser to commence this scheme on the basis of a supply of at least 20,000-horse power for the maximum demand, particularly as the capital cost and consequently the cost of supply of current decreases very rapidly as the quantity supplied increases.

Considerable further survey work is required in connection with this scheme, including careful investigation into the route which will be best for the transmission line to follow. This work should be carried out during the current year in order to enable a reliable estimate of the cost to be furnished at an early date.

HUTT : WELLINGTON.

The generation of power from the Hutt River depends entirely upon the formation of an artificial lake or reservoir, by the construction of a high dam in the valley of the Hutt River below the confluence of the Pakuratahi River. Without this dam neither sufficient fall nor water can be obtained, as the low summer flow, together with the available fall, would only be sufficient to generate a few hundred horse-power. Fortunately, one of the finest sites in the Dominion for the construction of a dam exists exactly where required ; and, although the dam would be 170 ft. in height, the length of the bottom would only be some 60 ft. or 70 ft., and the width of the top not more than 400 ft., and by the adoption of the arched principle of dam-construction, as has been adopted in New South Wales and America, the cost of the dam can be reduced very materially, and likewise its safety increased when subjected to earthquake shocks, as the pressure of the water will tend to close, instead of open, any cracks which might be formed.

The question of the silting-up of the reservoir by detritus from the hills has been investigated ; and, judging by the quantity of land which has made at the mouth of the Hutt River since the settlement of the district commenced, it will take many hundreds of years for the reservoir to be detrimentally affected. Silting can be very much decreased by the preservation of existing forests and the reafforestation of the denuded areas ; so no alarm should be experienced on this account.

Some records have been obtained from time to time of the flow of the water, and from these has been deduced that the quantity which will be available during three consecutive dry seasons is sufficient to generate a continuous load of 5,000-horse power delivered in Wellington, which, with the variation in the quantity required throughout the twenty-four hours, will allow a maximum demand of from 10,000 to 15,000 horse power, or perhaps 20,000-horse power for short periods. This has been deduced in a conservative manner, as our records are not yet sufficiently complete to enable a very close and accurate determination to be made at the present time.

With the known fact that the average rainfall in any place can only be obtained by observations taken over a cycle of nineteen years, it is obvious that very considerable allowances have to be made when the observations only extend over three years, which is the case in the present instance.

Fortunately, in this scheme the information to hand is sufficient to enable a very close estimate of the cost of the works to be made, as it has been possible to calculate the quantities in most instances, and from this information the following estimate has been derived :—

	£
Purchase of land for reservoir	18,000
Purchase of land in watershed to provide for reafforestation	10,000
Dam	125,500
Tramway from nearest railway-station to dam-site	12,000
Deviation of main road where affected by reservoir	10,000
Head-race	17,000
Pressure-pipe line	21,000
Power-station and equipment	133,500
Transmission-line	36,000
Telephone-lines	1,000
Contingencies	38,000
Total	£422,000

The following is an estimate of the annual charges in connection with generation :—

	£
Interest at 4 per cent.	16,880
Sinking-fund, 1 per cent.	4,220
Maintenance	4,000
Depreciation	6,280
Running-costs	6,620
	£38,000

In order not to complicate the report by the introduction of obscure technical terms, the estimate has been prepared on the assumption that the maximum demand will be 12,500-horse power; then, if a quantity of current amounting to 5,000-horse power for the whole of the twenty-four hours of each day of 365 per annum is sold, the cost per horse-power hour will be 0·208d., or 0·280d. per unit; if only 4,000-horse power is sold, the cost will be 0·260d. per horse-power hour, or 0·349d. per unit; if only 3,000-horse power can be sold, the cost will be 0·347d. per horse-power hour, or 0·465d. per unit.

It is estimated that the Wellington City Corporation would be able to take, by the time the works are completed, at least one-third of the total quantity of power available. It is also estimated that the balance would be easily disposed of to industries along the route of the transmission-line, and also to industries at present being carried on in Wellington, to which current could be supplied at a very much cheaper rate than the City Council can supply with their present plant, or are in possession of a separate plant. It therefore appears that from a financial point of view the Hutt power scheme will be one of the most favourable in the Dominion.

The height of dam required may seem excessive, and of too great a magnitude for practicable carrying-out; but a dam in an exactly similar situation is being constructed in America, of a height of 246 ft. exclusive of depth of foundations, to dam up the Shoshone River in Wyoming. The construction of the dam was commenced in 1908, and in about two years it had been nearly completed, so that the construction of the dam required in the Hutt cannot be considered in any way beyond the region of easy practicability.

LAKE COLERIDGE : CHRISTCHURCH.

The Lake Coleridge power scheme is, next to the Te Reinga scheme, in Hawke's Bay, probably the easiest to deal with, and but for the necessity of diverting water from the Acheron and Harper Rivers into the lake, would be simplicity itself.

The works required consist of a tunnel from the lake through a ridge some 70 chains in length to the head of the usual steel pressure-pipe leading to the power-station. At the lake end of the tunnel are required the usual head-works and regulating-sluices, and at the other end of the tunnel would be required the usual spillway or surge-pipe, according to whether the tunnel is subjected to water-pressure or not.

The power-station would be situated on the left bank of the Rakaia River, and would be of simple construction.

In order to generate sufficient current to deliver a maximum demand load of 10,000 to 15,000 horse power in Christchurch, it will be necessary to divert a portion of the flow of the Acheron and Harper Rivers into the lake, otherwise only a little over 2,000-horse power can be obtained. The works required to effect this will be low weirs of simple and inexpensive construction across each of the rivers, and short lengths of race. It will not be advisable to divert the whole of the flow of these rivers into the lake, as by so doing the shingle and silt would also be diverted, which can be avoided by allowing high floods and the shingle to pass over the weirs.

The level of the draw-off from the lake would be situated at a suitable depth below the present surface of the water in order that the lake may be used as a storage reservoir to deal with fluctuating demands for water and with the fluctuating rainfall, in such a way that a maximum demand of about 30,000-horse power may be provided without having recourse to the construction of a dam across the outlet.

The information in hand has enabled the cost to be very closely estimated, and in doing so the dimensions of the outlet have been calculated to provide for the delivery of a maximum demand of between 25,000 and 30,000 horse power in Christchurch, so that at little extra capital cost the scheme may be extended from time to time as may be found necessary.

The following is an estimate of the cost on the above basis :—

	£
Headworks and tunnel	65,000
Diversion, Acheron River	7,000
Diversion, Harper River	39,000
Pressure-pipe line	36,000
Power-station and equipment	120,000
Buildings	10,000
Transmission-line	84,000
Substation	25,000
Contingencies	35,000
Total	£421,000

The distance from the power-station to Christchurch along the route of the transmission-line is approximately seventy miles, which is more than double the length of the Waipori-Dunedin transmission-line, at present the longest in the Dominion. The greater length of the transmission-line and the necessity for bringing in water from the Acheron and Harper Rivers place this scheme in a rather less favourable position financially than that of the Hutt, although the latter is severely handicapped by the high dam required.

The following are the estimated annual costs which must be incurred in connection with the working of the scheme :—

	£
Interest at 4 per cent.	16,840
Sinking fund, 1 per cent.	4,210
Maintenance	6,000
Running-costs	7,450
Depreciation	10,000
Total	£44,500

This scheme is not in such a favourable position as regards the financial results as the Hutt, owing to the absence of so large an immediate demand, as the Christchurch tramways do not require anything like the quantity of current which the Auckland or Wellington tramways require, and at the present time the electric lighting of Christchurch is in quite an embryonic stage.

There is, however, one favourable position, in that the City Council of Christchurch has not yet constructed a large generating-station for electric lighting, so that the current would be disposed of to better advantage owing to the absence of permanent charges on existing plant having to be met.

A small quantity of current would be taken by the Railway Department for the electrification of the line between Christchurch and Lyttelton. The quantity would, if reduced to a single continuous consumption, only amount to a few hundred horse-power, as, owing to the flat grades, the quantity of power required is comparatively small.

On the assumption that there will be a maximum demand of between 10,000 and 15,000 horse power, it is estimated that if a quantity of power amounting to a continuous demand of 5,000-horse power is sold, it could be produced at 0.244d. per horse-power hour, or 0.327d. per electrical unit ; and if a quantity of 4,000-horse power only is sold, it will cost 0.305d. per horse-power hour, or 0.408d. per electrical unit ; and if a quantity of 3,000-horse power only is sold, it will cost 0.406d. per horse-power hour, or 0.545d. per electrical unit, which rates are much lower than power can be produced at by any other means at the present time.

EXISTING POWER-GENERATING PLANTS.

All owners of power-generating plants will have to take into consideration the cost of abandoning their present plants if deciding to take power from the Government, and they will also have to take into consideration the cost of installing electric motors, so that in many cases, particularly where Diesel oil-engines and producer-gas plants are in use, there will be a very small margin to work upon. A typical instance will be the Auckland, Wellington, and Christchurch tramway power-stations, which, if current is taken from the Government, would be thrown out of use, and would remain only as stand-by plants for use should the Government supply fail.

The owners in these cases would have to pay interest on the cost of the stations, rent, rates and taxes, depreciation (which is always heavy in plant that is not in constant use), and they would also have to pay for cost of permanent staff to periodically raise steam and work the plant for a short time, to keep it in order. A considerable part of this cost would, on the maturity of present loans, cease, when the water-power would be in a very much more favourable position.

After the lapse of a few years, when the stability of the Government scheme has been assured, the local authorities would then probably have sufficient confidence to do away with their generating-stations, when a considerable sum would be saved, as the machinery could be sold, although it would not produce very much, and the buildings and sites could be sold or leased to be utilized for other purposes. There would, however, still be sinking fund to meet, and the difference between cost and the amount realized by sale of plant, &c., provided for.

Taking the figures from the last balance-sheet of the Wellington City Corporation, it will be seen that it cost for power 1.267d. per unit to generate current. Of this, about 0.65d. per unit is made up of permanent charges, or what it would be necessary to expend if the power-station remained idle. The City Council, therefore, can only afford to pay about 0.6d. I believe, however, that a closer investigation will show that the Council cannot afford to pay quite as much ; and the same conditions exist at all the other power-stations at present in work.

In the Wellington case the margin between what it will cost the Government to generate power and deliver it in Wellington at is very nearly the limit which the Corporation can afford to pay. It is, however, sufficient to warrant the City Council purchasing power from the Government.

The estimated costs per unit for delivering power are based upon the schemes being in full work, which would, however, take some time after the commencement of generation before the full state of working can be arrived at, as it would take considerable time to induce customers to purchase and make the necessary connections. The several schemes, like most other businesses, will have to be run for some time at a loss, which would have to be recouped in after-years, allowance for which would have to be made in the rates charged.

Owners of existing engines of whatever description, in making calculations as to whether it would pay them to take power from the Government, must take into consideration interest, sinking fund, depreciation, rents, rates, taxes, maintenance, running-costs (including labour, fuel, and stores), and insurance; and they would also have to observe the actual quantity of power generated, which in most factories and works only amounts to a small fraction of the full capacity of the engines—that is to say, if a 20-horse-power engine is in use it will probably be found by means of a continuous recording dynamometer that the amount of power generated during eight hours' work would only amount to from 15 to 30 per cent.—that is, from 3 to 6 horse power. An extremely fallacious conclusion will be arrived at if, as is often done, the maximum power of the engine is simply multiplied by the number of hours to arrive at the power-costs.

It would perhaps be as well at this stage to point out that for intermittent use electric current is very economical, as only the exact current used is charged for; there are no stand-by losses on the part of the consumer as in the case of steam, gas, or oil engines.

EXISTING TRANSMISSION-LINES.

In order to show that the transmission of power is practicable, attention is drawn to the following existing transmission-lines:—

Locality.	Length in Miles.
De Saba to Sausalito, San Francisco	232
Coalgate to Oakland	142
Electro Power-house to San Francisco	147
Guanajuato, Mexico	101
Spokane	110
Los Angeles	110
Pearce Company	40
Mexican Light and Power Company	110
Winnipeg General Power Company	60
Canadian Niagara Company	93
Electric Development Company, Ontario	93
Bangalore, India	92
Provo, Utah	32
Logan, Utah	150
Lyons, France	112
Guanajuato	104
Coalgate to Stockton	218
Missouri Power Company	65

FINANCIAL POSITION.

The best results will probably be obtained by the Government maintaining the position of the wholesale supplier, and only disposing of power to large consumers such as the City Councils, Tramway and Drainage Boards, and Railway Department, and to large industrial concerns along or within easy reach of the transmission-lines, and which would be beyond the economical point of supply from local authorities' substations.

In estimating the probable demand for power the only reliable guides are the existing power-generating stations, and these show that the small powers at present contemplated can be at once or in the near future easily disposed of.

Unless the local authorities controlling existing businesses will guarantee to take all their power from the Government directly the schemes are in working-order, it is strongly recommended that nothing should be done towards their construction. The co-operation of local authorities is essential to the financial success of any of the undertakings.

Although the Government will be able to supply power at low rates, it will take a long time to overcome the reluctance of consumers to scrap existing generating plants; it will be only by practical demonstration of the economy to be made by the purchase of cheap power that the perfectly natural reluctance will be overcome; but this is a duty which cannot easily be undertaken by the Government.

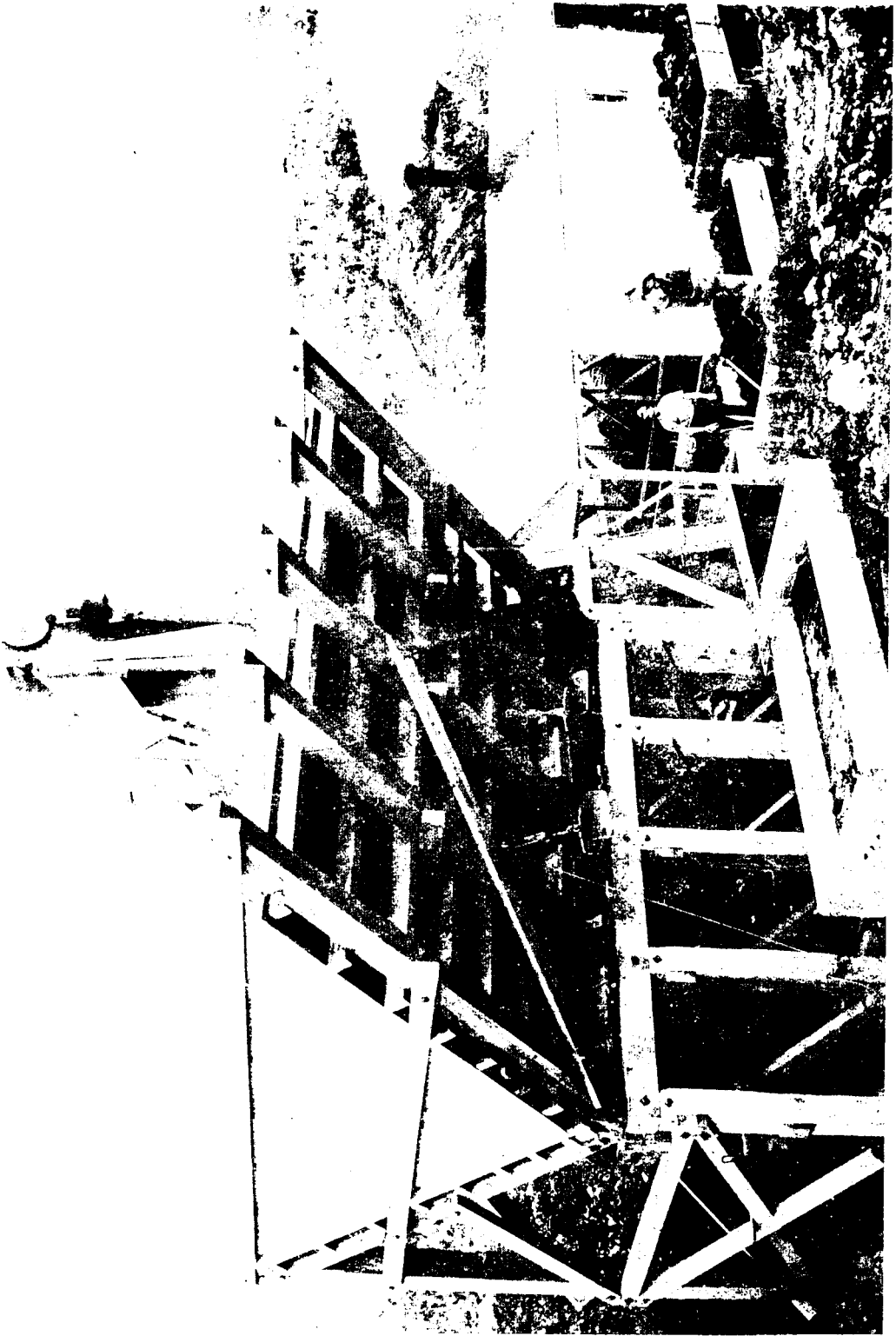
The manufacture of nitrates and carbide could be more successfully carried out by private institutions by means of power supplied from one of the Government generating installations. The best situations for carrying on these industries are, however, remote from existing centres of population; special power-generation works would, therefore, be required. It is highly improbable that the schemes under contemplation would supply power for such industries, as the raw materials are situated too far from seaports.

I have, &c.,

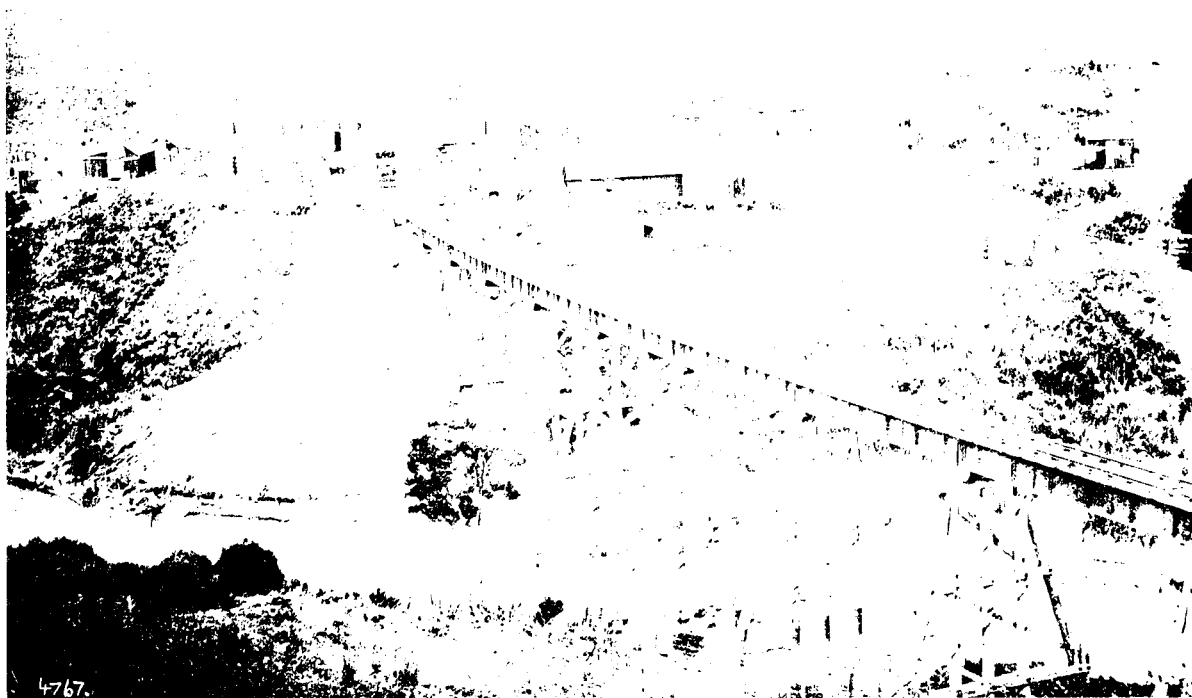
R. W. HOLMES, M.Inst.C.E.,

The Hon. the Minister of Public Works, Wellington.

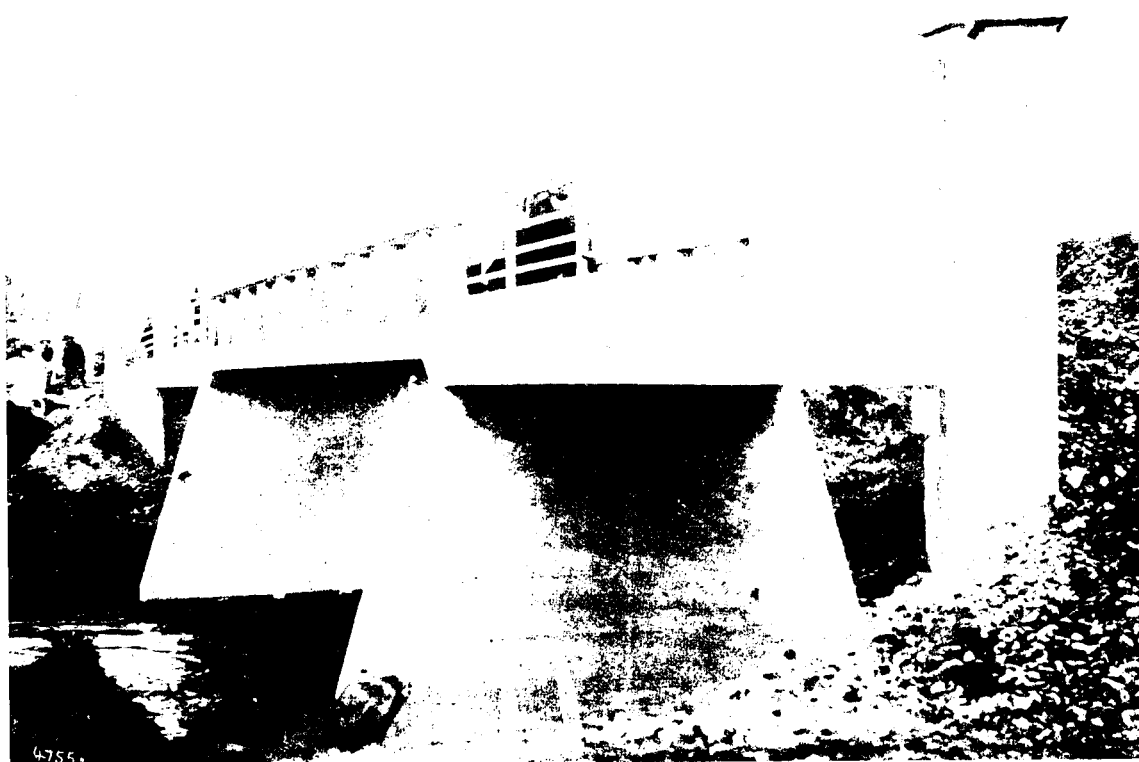
Engineer-in-Chief.



DELTA CEMENTWORKS RAILWAY. BALAST-GRINDING PLANT AT KOPPEL.



NORTH AUCKLAND RAILWAY. TE HANA BRIDGE AND STATION.
 (Twenty-five miles from Auckland.)



FERRO-CONCRETE BRIDGE OVER KAIMARAMA RIVER, COLOMandel, Ceylon.
 One 90 ft. span, two 30 ft. span.



4763.

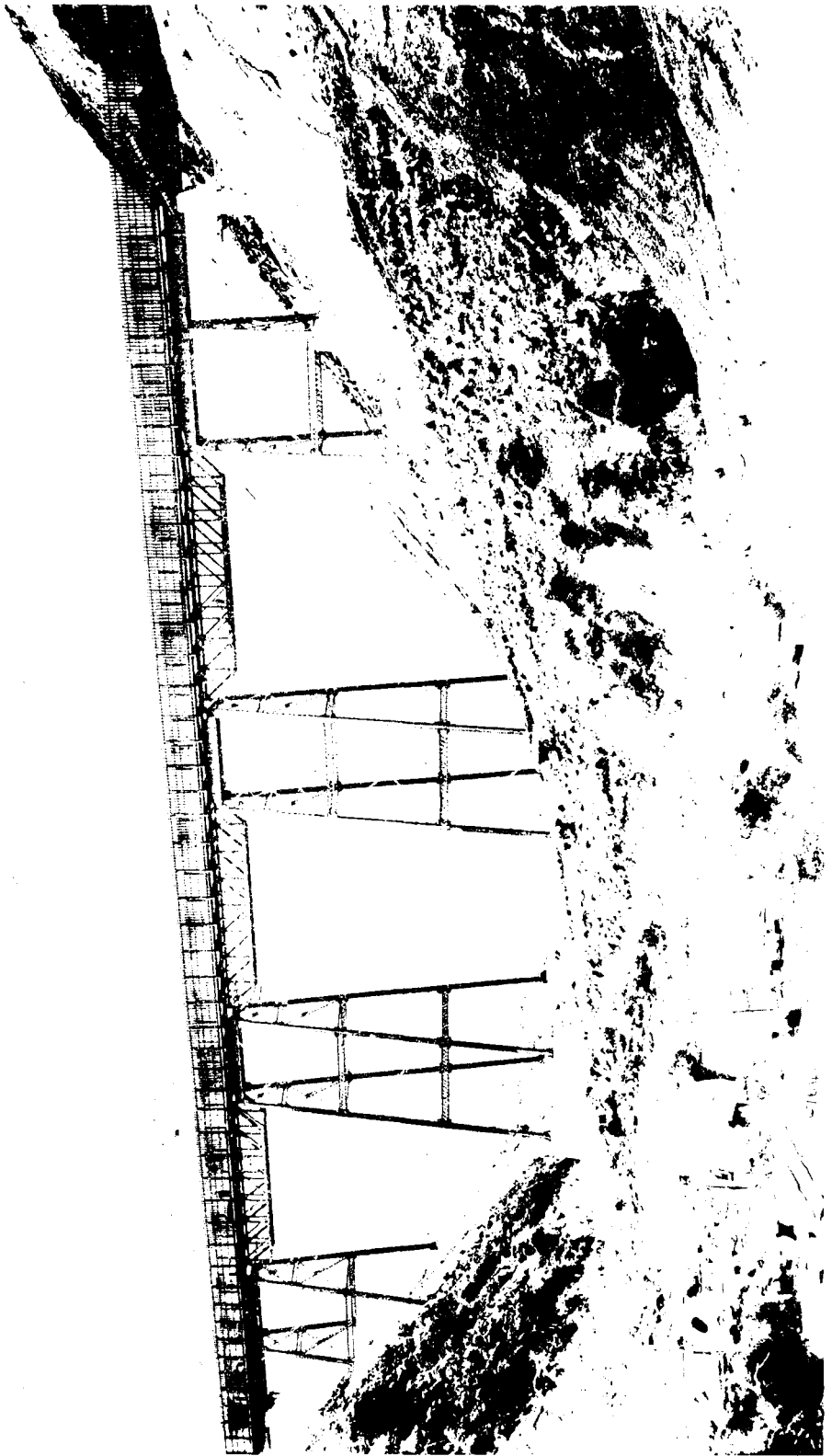
MIDLAND RAILWAY. STEAM SHOVEL AT WORK LOADING BALLAST WAGONS, NEAR CANNON STATION.
Shovel is in act of filling.



MIDLAND RAILWAY. STEAM LOCOMOTIVE AT WORK LOADING BALLAST-WAGON, NEAR CANNINGTON.
Shovel is filled and machine is turning.



MOBILE RAILROAD STATION, NEW YORK, N.Y. (Left) - View of the station building, showing the large, dark, rectangular structure, possibly a tunnel or a large container, surrounded by earth and debris. (Right) - View of the station building, showing the large, dark, rectangular structure, possibly a tunnel or a large container, surrounded by earth and debris.



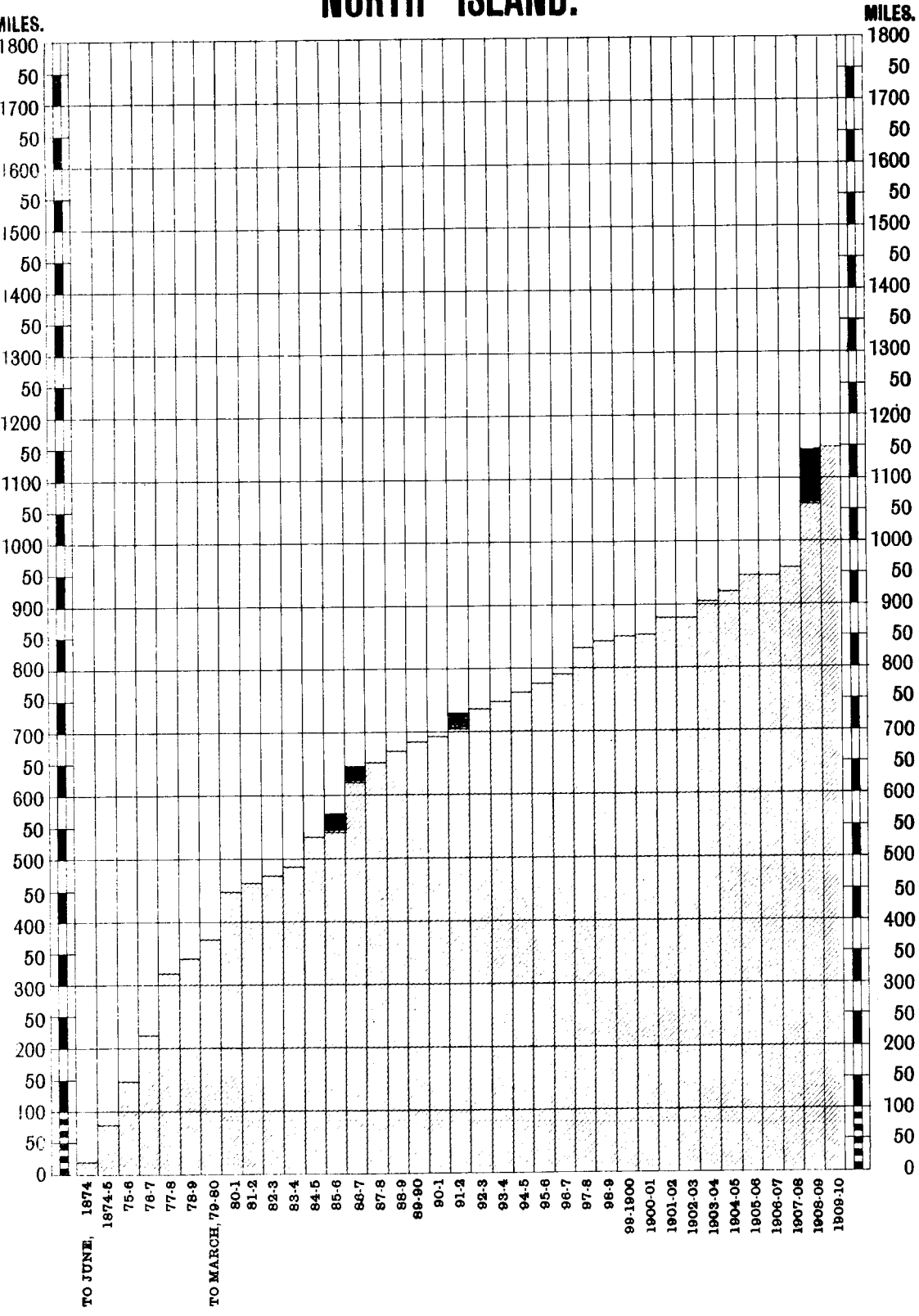
WINDY RIVER, SHOWING CRACK VIEW



PICCOLA WAPARA RAILWAY, SOUTH ISLAND, COAST GUARD ROAD AND RAILWAY BRIDGE, UNDER CONSTRUCTION OVER THE WAPARA RIVER.
Lengths, 224 ft., 117 ft., 106 ft., and 40 ft. Six 12 ft. square piles and 16 x 12 ft. spigot composite timbers.

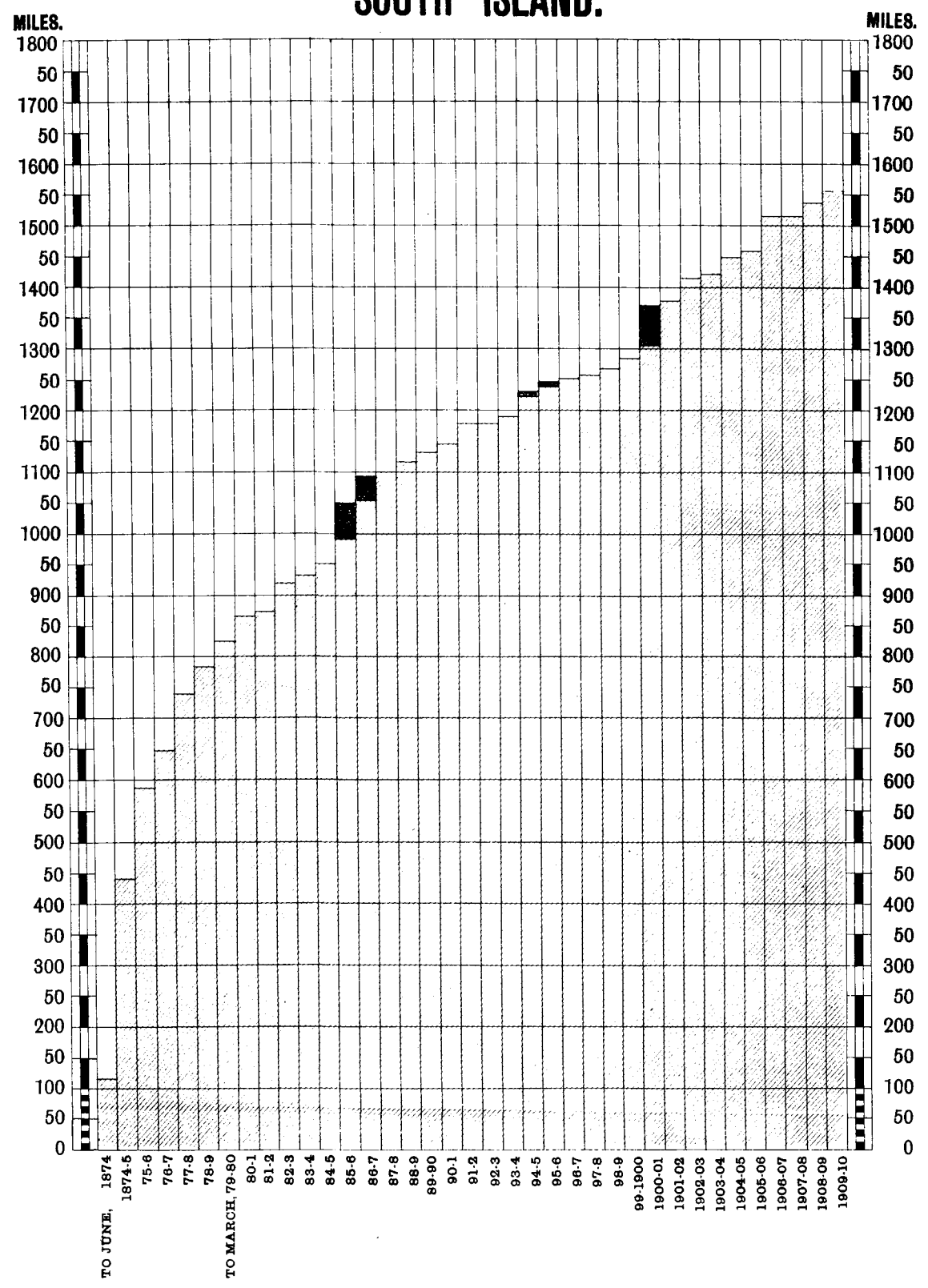
Number of Miles open
of
Government Lines.

NORTH ISLAND.

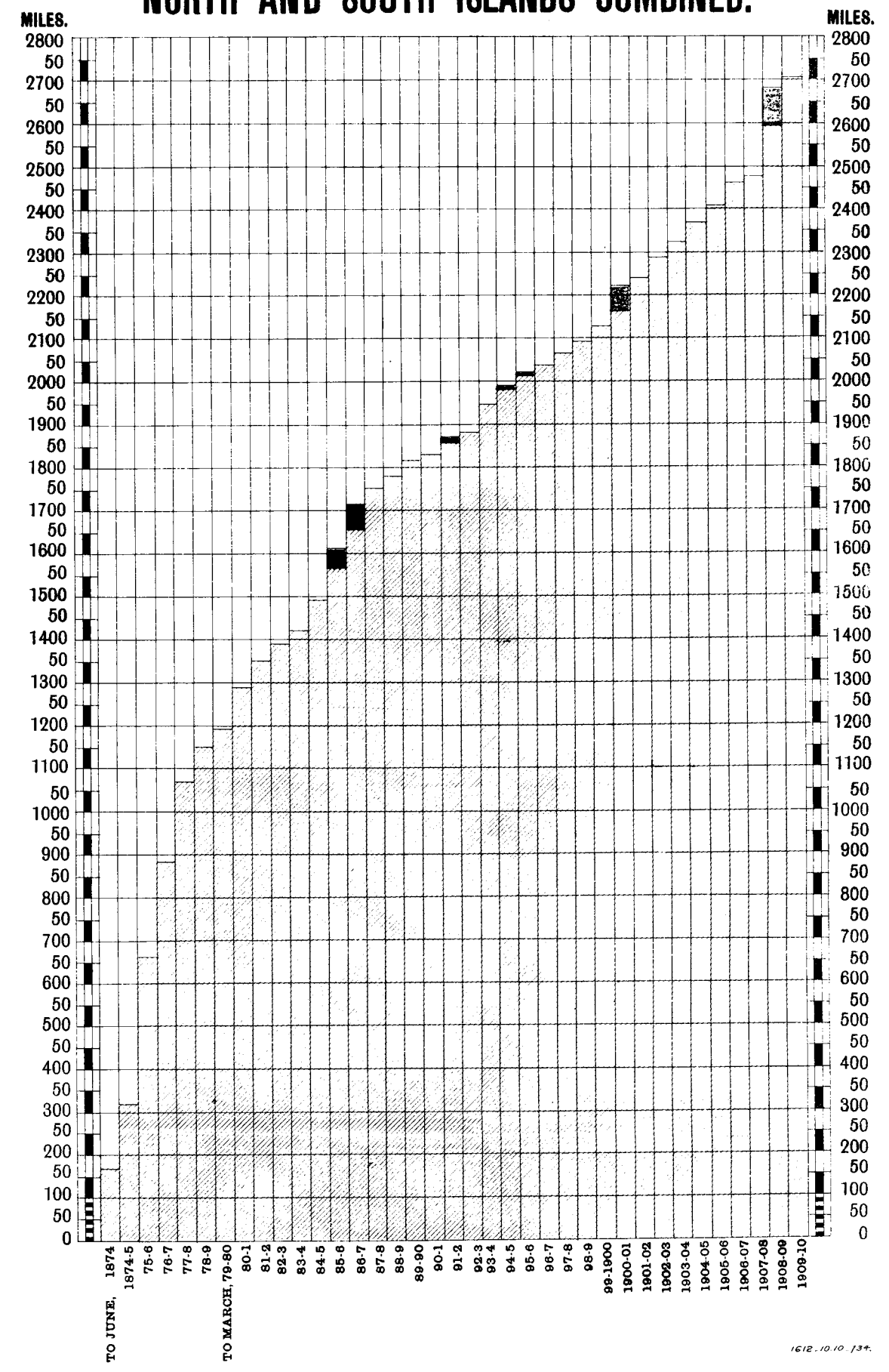


Number of Miles open
of
Government Lines.

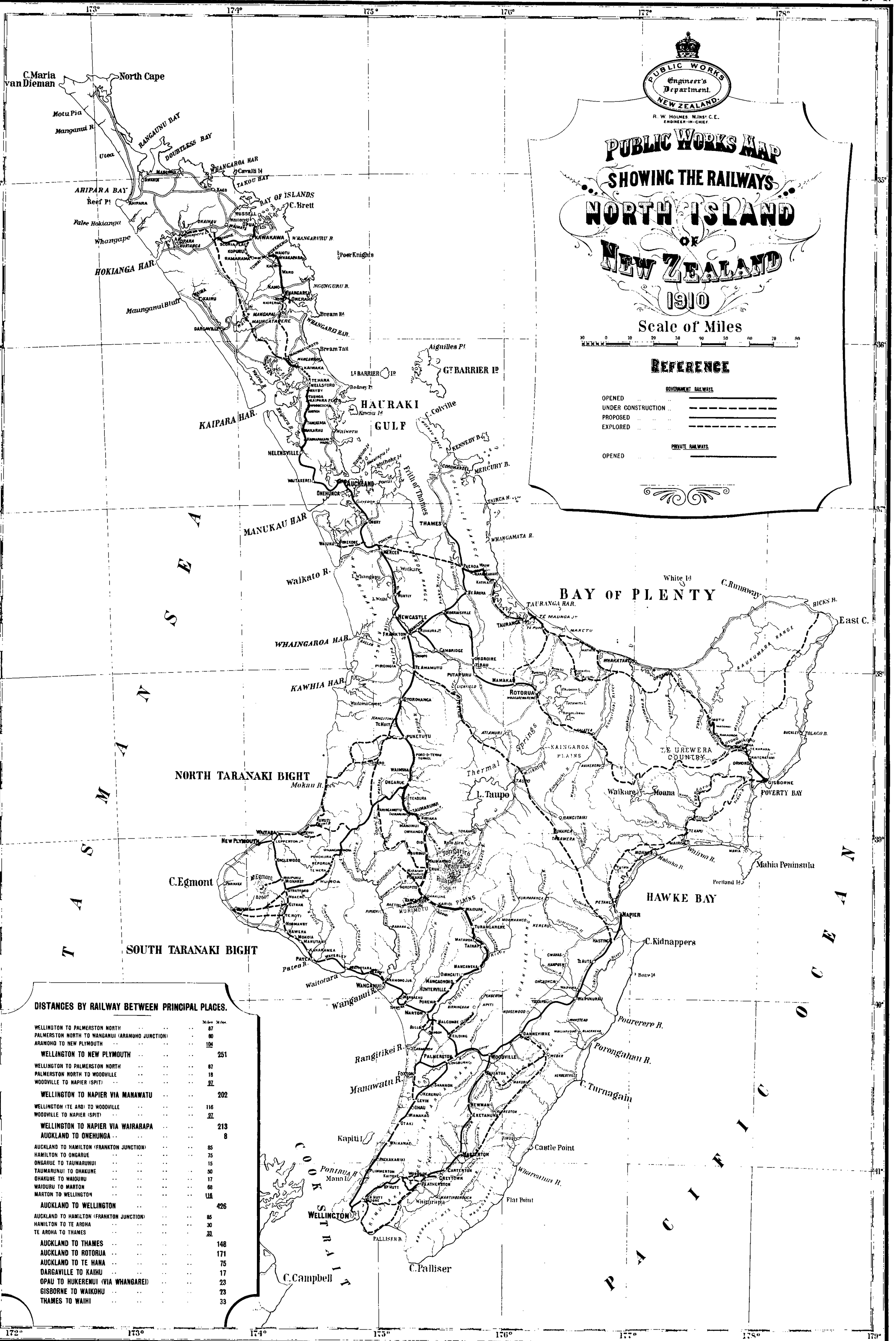
SOUTH ISLAND.

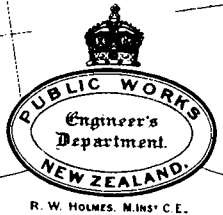


Number of Miles open
of
Government Lines.
NORTH AND SOUTH ISLANDS COMBINED.



PRIVATE RAILWAYS ACQUIRED BY THE GOVERNMENT SHOWN



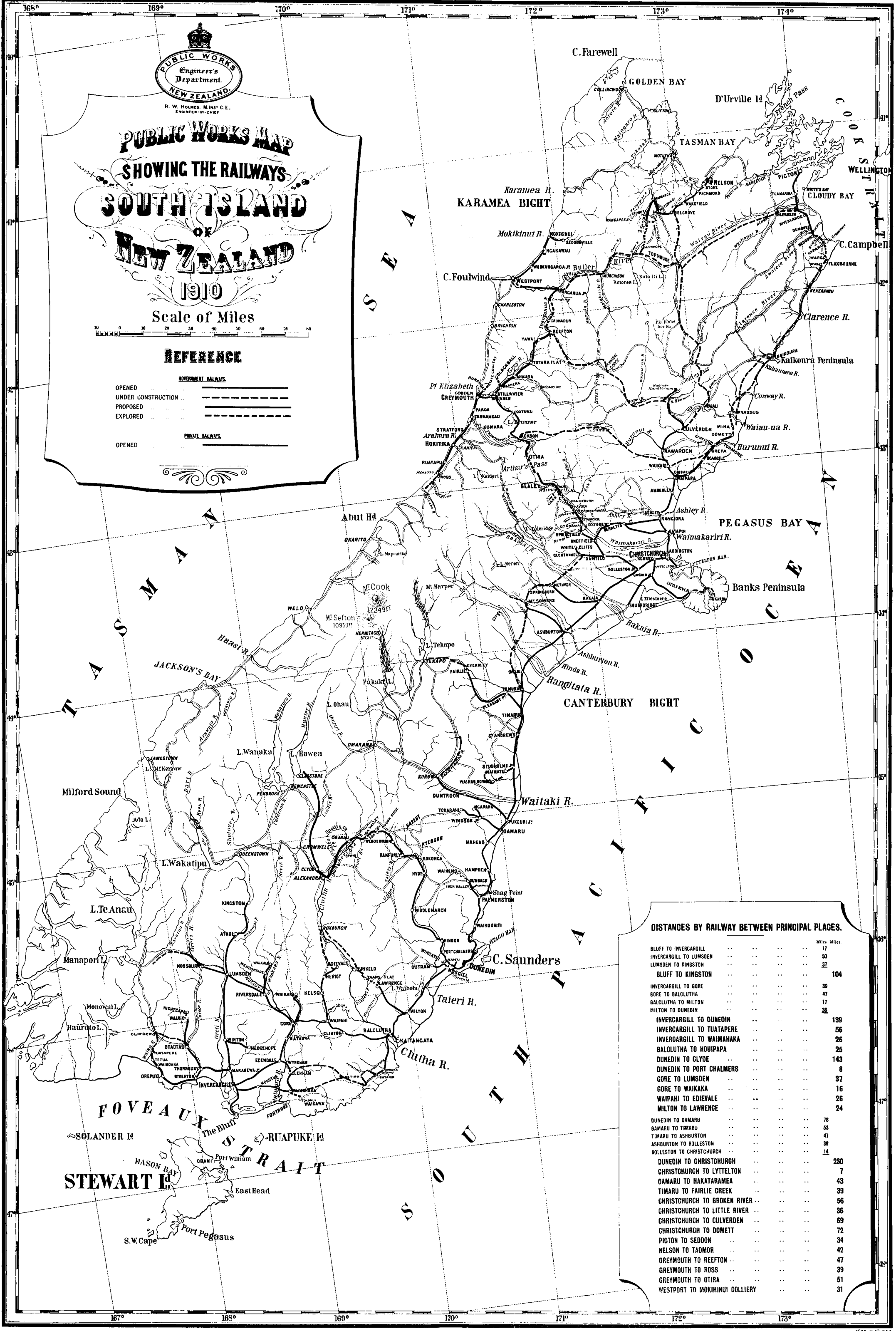


PUBLIC WORKS MAP SHOWING THE RAILWAYS SOUTH ISLAND OF NEW ZEALAND 1910

Scale of Miles
0 10 20 30 40 50 60 70 80

REFERENCE

GOVERNMENT RAILWAYS	
OPENED	—————
UNDER CONSTRUCTION	- - - - -
PROPOSED	.....
EXPLORED	.....
PRIVATE RAILWAYS	
OPENED	—————



DISTANCES BY RAILWAY BETWEEN PRINCIPAL PLACES.

	Miles	Miles
BLUFF TO INVERCARGILL	17	
INVERCARGILL TO LUMSDEN	50	
LUMSDEN TO KINGSTON	37	
BLUFF TO KINGSTON	104	
INVERCARGILL TO GORE	39	
GORE TO BALCLUTHA	47	
BALCLUTHA TO MILTON	17	
MILTON TO DUNEDIN	36	
INVERCARGILL TO DUNEDIN	139	
INVERCARGILL TO TUATAPERE	56	
INVERCARGILL TO WAIMAHAKA	26	
BALCLUTHA TO HOUIPAPA	25	
DUNEDIN TO CLYDE	143	
DUNEDIN TO PORT CHALMERS	8	
GORE TO LUMSDEN	37	
GORE TO WAIKAKA	16	
WAIKAKA TO EDIEVALE	26	
MILTON TO LAWRENCE	24	
DUNEDIN TO OAMARU	78	
OAMARU TO TIMARU	53	
TIMARU TO ASHBURTON	47	
ASHBURTON TO ROLLESTON	38	
ROLLESTON TO CHRISTCHURCH	14	
DUNEDIN TO CHRISTCHURCH	230	
CHRISTCHURCH TO LYTTELTON	7	
OAMARU TO HAKATARAMEA	43	
TIMARU TO FAIRLIE CREEK	39	
CHRISTCHURCH TO BROKEN RIVER	56	
CHRISTCHURCH TO LITTLE RIVER	36	
CHRISTCHURCH TO CULVERDEN	69	
CHRISTCHURCH TO DOMETT	72	
PICTON TO SEDDON	34	
NELSON TO TADMOR	42	
GREYMOUTH TO REEFTON	47	
GREYMOUTH TO ROSS	39	
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