

1904.  
NEW ZEALAND.

# PUBLIC WORKS STATEMENT

BY THE HON. W. HALL-JONES, MINISTER FOR PUBLIC WORKS,  
28TH OCTOBER, 1904.

MR. SPEAKER,—

It is my pleasing duty to place before honourable members my ninth consecutive Public Works Statement, and to report that satisfactory progress has been made with the various works in hand. The progress may not have been so rapid as some would wish, but it must be gauged by the sums available for the several works.

Honourable members must bear in mind that every mile of railway constructed and every chain of road completed is so-much done towards establishing the means of communication necessary for the development of the country in which we live. Each year marks so-much of this work accomplished. Our pioneer settlers who go to the back blocks and by their energy and perseverance bring hitherto waste lands into cultivation must, so far as means permit, be assisted in their efforts by the formation of roads and the extension of railways, so that the products of the soil may be conveyed to the colonial markets or the nearest ports of shipment for export. Our colony has so many natural advantages that to neglect so important a public policy would be to place a great restriction upon the expansion of trade. The marked increase in the exports during recent years could not have been reached but for the improved means of internal communication. As the years go by this great work is being gradually accomplished, and I look forward to the time when, by the completion of the main lines of railway and of our road systems, together with the increased population induced by the settlement of the people upon the land, we shall reap to the full extent the benefits derived from the work which has been and is being carried out.

In my last Statement honourable members were informed of the completion of 64 miles 60 chains of railway. Since that date the following sections have been finished:—

	M.	ch.
Pororo-tarao-Taumarunui (1st December, 1903) ... ..	27	36
Owaka-Catlin's (1st August, 1904) ... ..	3	38
Ida Valley-Ophir (1st September, 1904) ... ..	13	30
Mangaweka-Taihape (12th September, 1904) ... ..	13	18
Kawakawa-Kopuru (ready) ... ..	8	0
Paeroa-Karangahake (ready) ... ..	4	30
Taumarunui-Piriaka (ready) ... ..	6	48
Otarama-Staircase (ready) ... ..	5	3
Total ... ..	81	43

And the following sections will probably be ready before the next Public Works Statement is delivered :—

Ahuroa—Mahurangi ... ..	2	40
Karangahake—Waikino ... ..	3	40
Kaiteratahi—Karaka ... ..	5	4
Toko—Oruru ... ..	4	72
Motupiko—Tadmor ... ..	10	29
Reefton—Boatman's ... ..	1	66
Greymouth—Coal Creek (now running coal traffic) ... ..	5	1
Scargill—Hurunui ... ..	9	0
Heriot—Eddie ... ..	6	20
Total ... ..	48	32

## TOTAL EXPENDITURE.

The expenditure during last financial year was in excess of the previous year, but was not equal to that during 1901–2. The following table shows, as regards each class of work, (a) the total expenditure from 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, 1904; (c) the gross total expenditure to the 31st March, 1904; 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, 1904.	C Total to 31st March, 1904.	D Year ended 31st March, 1904.
Railways—	£	£	£	£
New construction ... ..	11,975,098	*3,429,864	*15,404,962	*494,742
Additions to open lines ... ..	2,092,002	2,593,459	4,685,461	333,961
Roads ... ..	3,575,804	3,034,286	6,610,090	361,842
Public buildings ... ..	1,776,003	1,292,893	3,068,896	216,192
Immigration ... ..	2,144,386	3,608	2,147,994	Cr. 7
Purchase of Native lands ... ..	1,191,137	813,228	2,004,365	5,352
Lighthouses, harbour-works, and harbour defences	880,095	122,121	1,002,216	10,863
Tourist and health resorts ... ..	...	37,852	37,852	15,643
Telegraph-extension ... ..	600,849	452,843	1,053,692	47,227
Development of goldfields ... ..	561,101	181,069	742,170	16,278
Defence-works (general) ... ..	429,720	342,843	772,563	38,724
Departmental ... ..	349,789	157,337	507,126	16,089
Payment to Midland Railway bondholders	...	150,000	150,000	150,000
Minor works and services ... ..	300,689	15,289	315,978	2,685
Cost and discount, raising loans, &c. ... ..	1,021,472	216,832	1,238,304	87,249
Totals ... ..	26,898,145	12,843,524	39,741,669	1,796,840

\*Includes Paeroa—Waibi Railway Account, £26,462.

## WAYS AND MEANS.

At the 31st March, 1903, the available balance of ways and means for public-works purposes was £338,565; and further funds were received as under :—

Balance of £1,000,000 loan raised under the Act of 1902 ... ..	£	740,000
Amount raised under the Act of 1903 ... ..	583,950	
Debentures issued under Midland Railway Petitions Settlements Acts ... ..	150,000	
Transferred from revenue ... ..	350,000	
Miscellaneous receipts ... ..	1,665	
Making a gross total of ... ..	£2,164,180	

The expenditure of the year (including the £150,000 paid to the Midland Railway debenture-holders) amounted to £1,770,378, leaving a credit balance at the end of the year of £393,802.

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

Balance of 1903 loan ... ..	£	416,050
New loan of 1904 ... ..		750,000
The Consolidated Fund should be able to assist with ... ..		650,000

This will give a total available ways and means of £2,209,852. The estimated expenditure for public works for the current year (excluding separate accounts having their own ways and means) amounts to £1,403,100, thus leaving a balance of £806,752 to be carried forward to next year.

#### RAILWAYS UNDER CONSTRUCTION.

No new railway-works were started last year, but those already in hand were further proceeded with.

The following is a brief statement of what has been done on each of the lines since the 31st March, 1903, and of what is proposed for the current year :—

##### KAWAKAWA—GRAHAMTOWN.

The section at the northern end of this line, which was approaching completion when my last statement was delivered, has since been finished, and is now available for the carriage of goods. It is not proposed to open it for regular passenger traffic at present. At the southern end the bridge over the Whangarei River has just been completed, and the earthwork approaches are now being filled in. The formation-works between the bridge and Grahamtown are proceeding satisfactorily, and the construction of some small timber bridges is about to be commenced. Extensive soundings and borings at the wharf-site have been made, and the plans of the proposed structure are now being prepared. The survey of the connecting-link between the present terminus of the northern section and Hukerenui has been completed. The total expenditure on this railway last year amounted to £10,914, and for the current year a vote of £10,000 is proposed.

##### HELENSVILLE NORTHWARDS.

The work on this line has again been considerably retarded by slips. The formation is complete, the rails laid, and the line ballasted up to the Ahuroa Tunnel at 55 miles 30 chains. This tunnel has been pierced, and is now being lined, and will be finished by about Christmas. Beyond the tunnel the earth-works are in hand as far as Mahurangi, and will be ready to receive the rails as soon as they can be transported through the tunnel. Tenders for the Mahurangi Station buildings are also about to be invited. When the line is completed to this point it will be of considerable use to the northern settlements. I hope that it will be available for traffic by about the end of the current financial year. The authorisation of a further section of this line, twenty miles in length—viz., to the southern boundary of the Maungatapere Parish—is provided for in the Railways Authorisation Bill now before Parliament. The expenditure last year amounted to £11,788. For the current year a vote of £10,000 is asked for.

##### PAEROA—WAIHI.

The section to Karangahake has been open for goods traffic since the beginning of the year, and considerable freight has been carried over it. Progress with rail-laying is blocked immediately beyond Karangahake by the long tunnel which occurs directly after crossing the Ohinemuri River just outside the Karangahake Station yard. Work in this tunnel is being carried on day and night, and satisfactory progress is being made with it. The heading is now right through, and the tunnel will probably be completely finished, including lining throughout, before the end of the year. Contracts have been let to Messrs. J. and A. Anderson, of Christchurch, for the steel superstructure of the bridges over the second and third crossings of the Ohinemuri River, the concrete piers and abutments having been constructed by the Department's own workmen. The latter are finished, and the former work is making good progress, some of the steelwork having been delivered, and being now in course of erection.

Tenders for the Waikino Station buildings are about to be invited, and the line to that point, three miles and a half from Karangahake, will probably be available for traffic by about May next. The amount spent on this line last year was £26,463. During the current year about £40,000 will be required. The expenditure on this line is now charged to a separate account established under the special legislation of last session.

#### GISBORNE—ROTORUA.

The bridge over the Waipaoa River was finished last month, and the rails laid over it, and it is now in daily use for ballast traffic. The short tunnel between Kaiteratahi and Karaka is excavated, and is now being lined, and will shortly be finished. The rest of the formation-works to Karaka are practically completed, and tenders for the Waipaoa and Karaka Station buildings will shortly be invited. Rail-laying has been resumed, and it is hoped to have the section ready for traffic by about the end of the financial year.

The survey of the projected extension to Motu has been put in hand, and the party kept in the field as long as the weather would admit of satisfactory work being done. Field-work has now been resumed, and should make good progress during the coming summer. The formal authorisation of this section of the line is provided for in the Railways Authorisation Bill of the present year.

The expenditure last year amounted to £14,330, and for the current year an appropriation of £10,000 is proposed.

#### STRATFORD—ONGARUE.

The formation-works on the Oruru Section have been completed, rail-laying and ballasting are now in hand, and tenders for the erection of the station buildings are about to be invited. I hope the line will be available for goods traffic soon after the end of this month, and for passenger traffic by about the end of November. Beyond Oruru the somewhat extensive survey to determine the best route for the line to follow has been completed, and there is now, I think, sufficient information in the possession of the Department to enable a decision to be arrived at when the time comes for taking in hand another section of the line. The expenditure last year was £8,713, and a vote for £7,000—sufficient to complete the line to Oruru—is proposed on the estimates now submitted.

#### MOUNT EGMONT BRANCH.

Owing to the large amount of work which Parliament had in hand last session there was not time to pass the Railways Authorisation Bill which was submitted, and consequently the construction of this railway could not be proceeded with. It is again proposed in the similar Bill this year. If authorised by Parliament, construction can be taken in hand as soon as the necessary surveys of the portion now proposed to be constructed have been completed. Rock deposits exist at about 3 miles 50 chains from Waipuku, but exhaustive prospecting has shown that they are not of an extensive character. The survey of the line was accordingly continued to a rock face on the Manganui River, about 3,400 ft. above sea-level, which had already been proved by tunnelling by the Railway Department. To reach this point, however, nearly two miles of wire-rope tram on a gradient of 1 in 10 would be required, beyond the possible limits of an ordinary railway. Careful search was then made with a view to discovering an extensive rock deposit at a lower level, with the result that such has been found in the Waingongoro River 550 ft. below the Manganui face. It is possible to carry an ordinary railway all the way to this point, but a gradient of 1 in 22 will be necessary at the upper end of the line. The distance is also somewhat less than to the Manganui face. The permanent survey has therefore been made to the Waingongoro deposit, a distance of 9 miles 24 chains from Waipuku. For the first six miles the line will be of very easy construction indeed, but the upper portion will cost more, though still not of an unusually expensive character. It will not be necessary to make the whole railway at once, as a section of about five miles will open up sufficient rock to last for some time.

Only £850 was actually charged against last year's vote, but the full £5,000 will be required during the current year, and a vote for that sum is included in the estimates accordingly.

#### NORTH ISLAND MAIN TRUNK.

Satisfactory progress is being made at both the Auckland and Wellington ends of this railway. At the Auckland end regular daily passenger traffic is now carried on as far as Taumarunui—a distance of 175 miles from Auckland—and the line is available for goods and material traffic to the Kakahi Bridge, nearly ten miles further. The Waitea Bridge is finished, and material trains are being run over it. The Kakahi Bridge is also approaching completion, and as soon as it is available the rails will be laid across it and on to about 188 miles, where they will be stopped for a time by the heavy work in hand there. The formation-works extend to and beyond Owhango, and the construction of the service road, which is being formed to facilitate the works on the railway, is in hand to Oio. It is proposed during the current year to continue the construction of this service road. The works at the Auckland and Wellington ends of the line are making such progress that the time is not far distant when they will be in touch with each other. The service road will have to be carried through sooner or later, and as soon as it is completed a light coach can be run from the rail-head at the Auckland end to Raetihi, in the Wellington Province, connecting there with the existing coach service between Pipiriki, Waiouru, and Taihape. At present passengers from the neighbourhood of Taumarunui, Piriaka, and Kakahi (which is well on towards half-way between Auckland and Wellington) desiring to travel to Wellington have either to proceed from Taumarunui by canoe down the Wanganui River, or else travel by rail to Auckland, in a direction opposite to that in which they desire to go, for a distance of 185 miles, before really proceeding in a southerly direction at all. The completion of the service road, while also greatly facilitating the construction of the railway, would at once open a new and highly interesting tourist route, and would greatly facilitate travelling between the extreme southern portion of the Auckland Province and Wellington.

At the Wellington end of the railway the section between Mangaweka and Taihape has now been completed and handed over to the Railway Department for passenger traffic. For the convenience of settlers goods had been carried over the line by the Public Works Department for some short time previously. Beyond Taihape the formation is complete as far as the tunnel at 46 miles 20 chains. A heading has been driven through this tunnel, and the rails will now be laid up to it for the transport of the materials for lining. By the time this tunnel has been lined it is expected that the formation to the Mataroa Tunnel, at 49 miles 40 chains, will be ready for the laying of the permanent-way, which would then be extended to that point in order to provide for the carriage of the lining materials for the tunnel. From Mataroa to Turangarere the formation-work is in hand, and a start has been made on the Waiouru Section. Instructions have also recently been issued to make a commencement with some rather heavy cuttings a short distance beyond Waiouru. The works at the southern end of the line will be gradually getting into easier country shortly, and more rapid progress can then be made.

The expenditure on the line last year amounted to £174,480, being £62,318 in excess of that for the previous year. For the current year a vote of £150,000 is asked for.

#### BLenheim—WAI PARA.

The formation-works on the section between Scargill and near the Hurunui River have practically been completed, and rail-laying has been begun. The large bridge over the Hurunui has also been finished. Some little work has been done in the Hurunui Gorge, but some treacherous ground having been met with, a slight deviation of the line will be necessary. Surveys of this have lately been made, and the new location determined upon, so that as the men finish their work on the section south of the bridge they can be moved forward to the work in the gorge and on to the Cheviot. The line as far as

Hurunui Station will probably be available for goods traffic by about the end of the financial year.

The expenditure on the railway last year totalled to £27,815. For the current year a vote of £25,000 is proposed.

#### MIDLAND.

At the Nelson end the formation of the line to the Motueka River has been finished, and the rails laid; the combined road and railway bridge over that river has been built, and is now in use; the formation-works in the direction of Tadmor are nearing completion; and rail-laying on the Tadmor Section has been begun. Goods traffic is also being carried over the section between Motupiko and Maniaroa. Tenders for the erection of the station buildings at Tadmor are about to be invited. Provision is made for a further section of this line, ten and a half miles in length, in the Railways Authorisation Bill which is now before the Legislature.

At the Reefton end considerable bush-clearing has been done, and some progress made with the earthworks. The bridge over the Inangahua at Reefton has been finished, and the combined road and railway bridge over the same river at the Landing is well in hand. The cylinders are in position, and nearly all the material required for the rest of the bridge is on the site. A contract has also been let for the bridge over the Waitahu River, and the materials for its construction are now being delivered, and pile-driving has been begun. Rail-laying will shortly be started, and arrangements made for the removal of the station buildings at Reefton to the new station-site, which will be much nearer the centre of the town than the present station, and will be on the same side of the river as the town.

Mr. V. G. Bogue's final report on the location of the Arthur's Pass Section of the railway has come to hand, and honourable members will be gratified to know that the opinions of the Government's engineering staff have been fully confirmed. The surveys hitherto made have only been of a preliminary character, so as to enable the engineers to definitely determine which line it would be best to adopt. A decision having been arrived at on this point, the work of making a detailed final survey of the adopted line has now been taken in hand. The works involved are of a nature to require very careful and exact surveys to be made, and these have been intrusted to Mr. J. H. Dobson, who has already done so much survey-work on the line both for the Midland Railway Company and the Government, and is consequently more familiar with the ground than any other officer on the Government staff. For a tunnel of such length as the one proposed at Arthur's Pass it will be necessary to obtain up-to-date boring machinery; and inquiries as to the best class of appliances to be adopted, and also as to the best means of ventilating the tunnel when constructed, are now being made.

At the Canterbury end of the line satisfactory progress has been made with the very heavy construction-works in hand there. The foundations for the Staircase Viaduct are now in hand by the Department's own workmen, and the contractors for the steel pier and superstructure have the manufacture of the material well in hand, a portion of it being nearly ready for shipment.

A plan of this viaduct appears as an appendix to this Statement. The section now being carried out is the heaviest on the line between Canterbury and Westland, except the long tunnel at Arthur's Pass. Between the present workings and the Summit tunnel there is about twenty-five miles of quite easy country.

The expenditure on the Midland Railway during the year amounted to £53,547. For the current year a vote of £60,000 is proposed.

#### NGAHERE—BLACKBALL.

The large road and railway bridge over the Grey River has been finished, as well as the road approaches thereto, but formation-work on the railway itself has only just been started. The survey which was in progress when my last Statement was made, to ascertain the practicability and probable cost of carrying

the line up to the adit of the Blackball Mine, has been finished. It is found that, with a maximum gradient of 1 in 40, the line can be carried up to a point on the left bank of Ford's Creek, and close to the mine-adit, at an estimated cost of about £30,000, in addition to the sum already expended on the bridge and approaches, and if the vote appearing on the estimates now submitted is duly passed by Parliament the work will be gone on with.

The expenditure last year amounted to £19,538, and the vote proposed for the current year is £10,000.

#### COAL CREEK.

This railway, extending from the Government railway-station at Greymouth to the newly opened State Coal-mine, a distance of about five miles, has been completed with the exception of a few small works at the terminus, and a considerable coal traffic is now being carried over it. Last year's expenditure amounted to £23,112. The amount does not appear as a disbursement out of the Public Works Fund, as it is made a charge against the State Coal-mines Account, which is a separate account. To cover the works carried out since the 31st March last, and to complete the line, a vote of £10,000 is provided on the Consolidated Fund estimates.

#### GREYMOUTH-HOKITIKA-ROSS.

The combined road and railway bridge over the Hokitika River is practically finished, and will shortly be available for traffic. The formation on the first five miles of the line is nearly ready, and platelaying will soon be begun.

Owing to the payments which had to be made on the Hokitika Bridge contract, the expenditure last year amounted to £25,063, but a smaller sum will suffice for the current year, and a vote of £15,000 is accordingly asked for.

#### OTAGO CENTRAL.

The section between Ida Valley and Ophir has been completed and opened for traffic. Goods traffic as far as Lauder has been run since quite early in the year, and similar traffic has been carried to Ophir since July last. The line was opened for passenger traffic to Ophir on the 1st September.

The earthworks on the Chatto Creek Section are well in hand, and a contract has been entered into for the bridge over the second crossing of the Manuherikia River. The next section of this line to be opened will be the section to Chatto Creek, a distance of eight miles and a half. This will bring the railway within ten miles and a half of Alexandra.

Last year's expenditure amounted to £47,997. For the current year a vote of £50,000 is provided.

#### HERIOT EXTENSION.

The formation-works on this extension have now been completed, and the bridges nearly so. A contract has been let for the station buildings at Edie, and considerable progress made with the work. A part of the rail-laying has been done, and the rest is now in hand, and every effort will be made to have the line available for traffic as early as possible. Disbursements last year were £6,057, being a few pounds in excess of the vote provided. For the current year an appropriation of £8,000 is asked for.

#### CATLIN'S-SEAWARD BUSH.

The work at the Catlin's end, which was in progress last year, has now been finished, and regular goods and passenger traffic has been run since the 1st August. A survey party has also been at work on the next section for several months, and the position of the line determined for some eleven miles. It is proposed to carry the survey right through to a junction with the Seaward Bush line at Waimahaka. The Railways Authorisation Bill now before Parliament provides for the formal authorisation of a further section of four miles at the Catlin's end of the line.

The expenditure on this railway last year amounted to £6,811, and for the present year a vote of £8,000 is asked for.

#### RIVERSDALE—SWITZERS.

The combined road and railway bridge over the Mataura River has been finished, and was opened for road traffic in April last. Formation-works on this railway, with the exception of the embankments leading on to the bridge at each end, were completed several years ago for a distance of seven miles. An extension of about 55 chains would bring the line to a point where a station could be conveniently located alongside the main road to Switzers. To complete the line to this point, including rails, sleepers, station buildings, &c., would cost about £17,000. When opportunity offers this work should be taken in hand.

The expenditure on the work during last financial year amounted to £2,639, and a vote of £2,000 is asked for this year to meet expenditure already incurred.

#### OREPUKI—WAIAMU.

As mentioned in my last year's Statement, the section to Waihoaka was handed over to the Railway Department for regular traffic in October, 1903. The expenditure out of last year's vote amounted to £3,956.

#### TOTAL APPROPRIATIONS FOR RAILWAY-CONSTRUCTION.

Including the amounts for the Paeroa—Waihi and the Coal Creek lines, which are both chargeable to special separate accounts, and the votes for old land-claims (£1,000), surveys of new lines (£3,000), and permanent-way materials (£60,000), the total proposed appropriations for railway-construction purposes amount to £484,000.

#### ROADS AND BRIDGES.

The ordinary work of the Department of Roads for the year was comprised under four votes (three under the Public Works Fund and one under the Government Loans to Local Bodies Account) containing together 2,051 items, each of which represented a separate work. The total amount voted for expenditure under these four votes was £400,704, out of which the actual net expenditure (inclusive of a sum of £398 charged to Unauthorised) was £322,694. In addition to this, the sum of £19,099 was expended by the Department on road-works, &c., out of the Land for Settlements Account. The actual net expenditure, therefore, out of all votes and accounts for road-works under the control of the Roads Department was £341,793.

The total authorisations outstanding at the 31st March, 1903, out of all votes and accounts was £337,689. During the year 1903—4 there was authorised the sum of £261,163, making a total issue of £598,852, of which a gross sum of £345,777 was expended and £94,493 cancelled, leaving £158,582 of authorities outstanding at the 1st April, 1904, which is £179,107 less than at the beginning of the year.

The total length of roads dealt with by the Department of Roads during the past year amounted, in all, to 5,458 miles—viz., 426 miles dray-roads and 201 miles bridle-roads constructed; 577 miles dray-roads and 239 miles bridle-roads improved; 2,696 miles dray-roads and 1,319 miles bridle-roads maintained. There were also, including those subsidised by Government, 118 bridges of over 30 ft. span built, totalling 10,428 ft., and 490 miles of engineering survey completed. These figures include 82 miles of roads constructed, improved, or maintained, and twelve bridges, totalling 495 ft., and 81 miles of engineering survey, on estates purchased under the Land for Settlements Act, the cost of which is charged to the Land for Settlements Account. They also include 78 miles of roads improved or maintained out of moneys under the control of the Minister of Mines.

In addition to the above, the Department manages the work of legalising, closing, and deviating roads for Government and local bodies, and taking land therefor under the Public Works and other Acts, and settling disputes between



local bodies as to the apportionment of the cost of constructing or maintaining bridges or roads. Under this division 242 Proclamations, Orders in Council, and other documents were issued during the year in connection with roads, bridges, and some other minor public works which also fall within the province of the Department. This class of work is largely on the increase.

Most of the new roads and bridle-roads have been made to give access to lands recently taken up, although a considerable amount has been spent in the older districts on bridges and other improvements to roads. As long as it is the policy of the Government to settle people on land to which no roads have been made it should be a cardinal point of such policy to construct at least unmetalled dray-roads to the lands so disposed of, and the expenditure required for that purpose should take precedence of road expenditure in localities which already are roaded up to that degree. In connection with this I may mention that during the year under review 1,959 holdings, mostly in unroaded districts, have been disposed of, exclusive of those on estates acquired for closer settlement under the Land for Settlements Act.

I find that some local bodies have probably misunderstood the policy in handing over constructed roads to them for maintenance; and I wish to take this opportunity of emphasizing the advisability of such a policy, both in the interests of the settlers and the local bodies themselves.

Under the system in vogue until recently there were many miles of road which had been formed by the Government and were still maintained by them. The result was that a considerable portion of the moneys appropriated by Parliament was expended in repairs to existing roads, and consequently the Government have been hampered in their efforts to develop new country. I think it will appeal to honourable members as a more business-like policy that when a road is formed it should be handed over for maintenance to the local body in whose district it is situated, thus leaving the Government free to utilise to the fullest advantage the sums available for opening up new roads, converting bridle-tracks into dray-roads, and otherwise improving the means of communication. I feel convinced that by so doing we shall obtain the best results possible with the means at our disposal, thus minimising the difficulties with which our back-block settlers have to contend, and giving the fullest scope to the development of the natural advantages and the productiveness which our colony undoubtedly possesses.

The appropriations proposed for the current year are as under:—

Roads, Departmental ... ..	£	18,605
Roads generally ... ..	246,439	
Maintenance of main roads ... ..	28,458	
Tourist roads ... ..	16,498	
Government Loans to Local Bodies Account ... ..	35,000	
Land for Settlements Account ... ..	6,910	
Total ... ..	<u>£351,910</u>	

#### ROADS ON GOLDFIELDS (MINES DEPARTMENT).

The vote last year under this head amounted to £31,200. The expenditure, however, considerably exceeded this sum, having amounted to £45,594, with contingent liabilities at the end of the year of £23,375.

The sum proposed to be authorised for the current year is £68,621, on account of which a vote of £35,000 is asked for.

#### DEVELOPMENT OF GOLDFIELDS AND MINING.

As already announced in the Financial Statement, the returns from gold-mining continue to increase, and the anticipated amount of over £2,000,000 as the value of gold which would be exported during the late year was realised, the amount having been £2,037,831, being an increase on the previous year of £86,398.

The quantity of gold entered for export during 1903 was 533,314 oz., valued at £2,037,831, and of silver 911,914 oz., valued at £91,497; as compared with 508,045 oz. of gold, valued at £1,951,433, and of silver 674,196 oz., valued at £71,975, for 1902; being an increase of 25,269 oz. of gold, valued at £86,398, and 237,718 oz. of silver, valued at £19,522.

The amount expended last financial year on works for the development of the goldfields was £16,278, while the liabilities at the close of the year amounted to £2,039. It is proposed to take a vote of £14,000 for the current year.

#### TOURIST AND HEALTH RESORTS.

The expenditure under this heading during the year amounted to £15,643, a large portion of which was spent in and around Rotorua. Other items included the purchase of Glade House (Lake Te Anau), and improvements at Hanmer and Queenstown.

This year important improvements at Hanmer, Te Aroha, Waikaremoana, and Rotorua have to be provided for, as well as for the enlargement of Pukaki House, and Glade House, Te Anau. Provision is also made for the oil-launches purchased to meet the increased traffic on Lakes Tarawera and Rotomahana.

The gross authorisation asked for amounts to £26,648, on account of which a vote of £25,000 is proposed.

#### TELEGRAPH-EXTENSION.

The expenditure on telegraph-extension during the year amounted to £47,227.

The more important telegraph and telephone lines constructed were Ngaruawahia-Waingaro, Gladstone-Te Wharau, Martinborough-Pahaoa, Taihape-Ruanui, Pelorus, Kurow-Omarama, Clinton-Balclutha, Mokihinui-Karamea, and Wellington-New Plymouth.

There were 1,472 new subscribers to the telephone exchanges, the expenditure on which absorbed the greater proportion of the vote.

The amount allocated for this year is £60,000, including £43,877 liabilities. This leaves only £16,123 for new work not already authorised.

#### PUBLIC BUILDINGS.

The total expenditure on public buildings last year amounted to £268,533—namely, £29,526 on school buildings and £22,815 on other buildings, both out of the Consolidated Fund, and £216,192 out of the Public Works Fund. For the current year votes totalling £25,075 under the Consolidated Fund (in addition to the vote for school buildings, which has now been placed under Class XIII., Minister of Education) and £177,000 under the Public Works Fund are proposed; and in all probability a further sum will be asked for on the supplementary estimates.

#### GENERAL.

Under this head the expenditure amounted to £11,566, the principal items being the new Departmental Buildings at Napier and the offices and laboratory for the Mines Department at Wellington. For the current year a vote of £9,000 is asked for, which provides for the completion of the offices and laboratory for the Mines Department, Wellington, offices for the Defence Department at the Alexandra Depot, Wellington, the completion of the first portion of the new Departmental Buildings, Napier, and for making a commencement with the proposed similar buildings at Auckland, &c.

#### JUDICIAL.

*Courthouses.*—A new Courthouse was erected at Levin and a new Magistrate's Court at Wellington. Besides these, additions or somewhat extensive renovations were made at Rawene, Ormondville, Manaiia, Wellington (Supreme Court), and Westport.

For the current year votes are proposed for the following: New Court-houses at Hamilton, Tauranga, and Campbelltown; the completion of the new buildings at Wellington and Dunedin; and additions or improvements at Shortland, Hastings, Woodville, Stratford, Westport, Hokitika, and Timaru.

*Gaols.*—The expenditure under this head was in excess of that for the previous year, but was still not large. The principal work in hand was the additions to the Wellington Gaol, which are now complete and occupied. Other works of less magnitude were undertaken at Auckland, Gisborne, Dunedin, and elsewhere.

In the current year's vote provision is made for continuing the work at Auckland, further additions at Wellington, and for minor works at Napier, New Plymouth, Wanganui, Hokitika, Timaru, Dunedin, and Invercargill.

*Police-stations.*—A large number of buildings were dealt with under this head, but no individual work involved any large expenditure.

This year votes are proposed for new stations at Newton, Waiuku, Raglan, and Gore; and increased accommodation or improvements at Auckland, Cambridge, Taumarunui, Hastings, Palmerston North, Greymouth, Amberley, Rangiora, Sumner, New Brighton, Belfast, Temuka, Timaru, Pleasant Point, Dunedin, and Invercargill, besides minor works at numerous other places.

#### POST AND TELEGRAPH.

The expenditure on post and telegraph buildings and sites was considerably less than during the previous year. The principal item was the purchase of a valuable property in Christchurch to provide for a much needed enlargement of the Chief Post-office in that city.

The appropriation proposed for the current year provides for new offices at Parnell, Grey Lynn, Whakarewarewa, Whakatane, Tauranga, Waipiro Bay, Tokomaru Bay, New Plymouth, Pungarehu, Taihape, Bull's, Palmerston North, Otaki, Hutt, Nelson, Millerton, Brunnerton, Greymouth, St. Albans, Mornington, Waikaka, Winton, Otautau, and Stewart Island; also additional accommodation or improvements at Mangonui, Auckland, Te Awamutu, Napier, Dannevirke, Waitotara, Shannon, Pahiatua, Wellington, Picton, Westport, Reefton, Christchurch, Akaroa, Timaru, Pembroke, Queenstown, Gore, Invercargill, and Bluff.

#### CUSTOMHOUSES.

The expenditure under this head was almost wholly in connection with the new Customhouse at Wellington. This building is now getting on towards completion, but the contractor is much behindhand with his work, which ought to have been completed in April last. The vote proposed for the current year provides for the completion of this building and the necessary fittings and furniture.

#### LUNATIC ASYLUMS.

The expenditure on buildings of the above class totalled to £15,812, being principally in connection with the institutions at Porirua and Sunnyside. For the current year a larger expenditure is anticipated, provision being made in the estimates for the completion of the auxiliary buildings at Porirua and Sunnyside, and for additions at Auckland and Seacliff, &c.

#### SCHOOLS.

The amount voted for school buildings last year totalled to £124,025—namely, £29,725 under the Consolidated Fund, and £94,300 under the Public Works Fund. The expenditure amounted to £116,615—namely, £29,526 under the Consolidated Fund, and £87,089 under the Public Works Fund. The great bulk of the money was expended through the agency of the Education Boards, practically the only school-building works controlled by the Government being the buildings for Native and industrial schools, and the School for Deaf-mutes.

Native schools were erected or are now in course of erection at Puniho, Te Kaha, Waitahanui, Oruanui, Te Rawhiti, Mangarongo, and Waimarama; also

new residences at Te Teko, Kenana, and Kaiapoi, and additions made to the residences at Pamoana and Whakarewarewa, and to the schools at Hauaroa, Oromahoe, Ruatoke, and Waioweka; and the school buildings at Tapuaeharuru have been moved to a more suitable and central site.

For the current year a total appropriation of £103,615 is asked for—namely, £33,615 under the Consolidated Fund, and £70,000 under the Public Works Fund.

#### OTHER BUILDINGS.

An expenditure of £4,291 took place in connection with our general hospitals, the largest items being grants towards the erection of new buildings at Northern Wairoa and Waihi. Over £6,000 was also expended in connection with the Sanatorium for Consumptives at Cambridge, and about £2,500 on buildings for the Agricultural Department, the principal one being the new Veterinary Laboratory and offices at Wallaceville. For the current year provision is made as under:—

*Agricultural.*—Bone-sterilising works at Auckland and the Bluff; completion of new laboratory, Wallaceville; land for viticultural nursery, Te Mata, &c.

*General Hospitals.*—Grants for new buildings or additions at Whangarei, Coromandel, Masterton, Picton, Blenheim, Westport, Greymouth, Hokitika, &c.

*Public Health.*—Infectious Diseases Hospital, Auckland; further improvements Cambridge Sanatorium; and some minor works.

#### LIGHTHOUSES, HARBOUR-WORKS, AND HARBOUR DEFENCES.

The Kahurangi Lighthouse was completed, considerable work done at Cape Campbell, and minor works at Cape Maria and Jack's Point, the total expenditure having amounted to £6,206. For the current year votes are provided for carrying on the work at Cape Campbell, and for finishing works at Kahurangi and Jack's Point.

The expenditure on harbour-works was very small, having amounted to £1,772 only. For the current year provision is made for improving the channels, Waipu, Onehunga, and Karamea; new wharves at Mercury Bay, Mokau, and Bruce Bay; some harbour improvements at Collingwood; and further protective works at St. Clair.

The expenditure under the head of harbour defences has now been brought within very narrow limits—last year's disbursements totalling to only £2,885. For the current year a vote of £4,000 is proposed.

#### UTILISATION OF WATER-POWER.

In my last Statement I alluded to the arrival in the colony of Mr. L. M. Hancock, M.A.I.E.E., and stated that he was then engaged in examining some of the most likely sources of power with the view of preparing a report thereon. Mr. Hancock spent eighty-two days in the colony, and was fully occupied in acquiring information during the whole of that time, and consequently had to defer the writing of his report until after his return to America. The report was received in due course, but as it seemed to require amendment in some respects Mr. Hancock was communicated with on the subject before submitting it to Parliament, so that any alterations found necessary therein might be duly made before publication. I expected to receive a reply by the mail which reached here on the 27th September; but, as no communication came to hand, it is probable Mr. Hancock was away from San Francisco when my letter arrived there, and we shall therefore have to await the arrival of his explanations. If Mr. Hancock's reply to my letter is not received before the close of the session a copy of his report will be submitted to Parliament without awaiting his revisions.

Mr. Hancock's report does not perhaps go into details to the extent that some honourable members might desire, but it clearly shows that there are

vast possibilities ahead of us in the matter of the utilisation of our enormous water-powers, which are evidently amongst the colony's greatest natural resources.

As a more detailed report seemed to be desirable, so that the country might be apprised of the enormous energy only awaiting the application of intelligence and capital to turn it into a great source of national wealth, much further information has been collected since Mr. Hancock's departure, and a further and more detailed report on the subject has been prepared by Mr. P. S. Hay, M.A., M.Inst.C.E., the Superintending Engineer of the Public Works Department.

Mr. Hay accompanied Mr. Hancock during the whole of his tour through the colony, and constantly conferred with him on the subject of our water-powers, and has, in addition, given the subject much personal study. His report, which has now been placed in the hands of honourable members, contains a mass of information of great value, and will convince the most sceptical of the great future that is before this colony as the manufacturing centre of the Pacific. The power shown to be available is so enormous, and can be developed at such a low cost per horse-power, that manufactures and industries at present unthought-of in New Zealand must before long be established, and their products shipped hence to all parts of Australia and the Pacific Coasts, as well as to more distant lands.

So many great and potential schemes lie ready to our hand that we are embarrassed by their number and variety. It therefore becomes a matter of difficulty to determine where to begin in the matter of their utilisation.

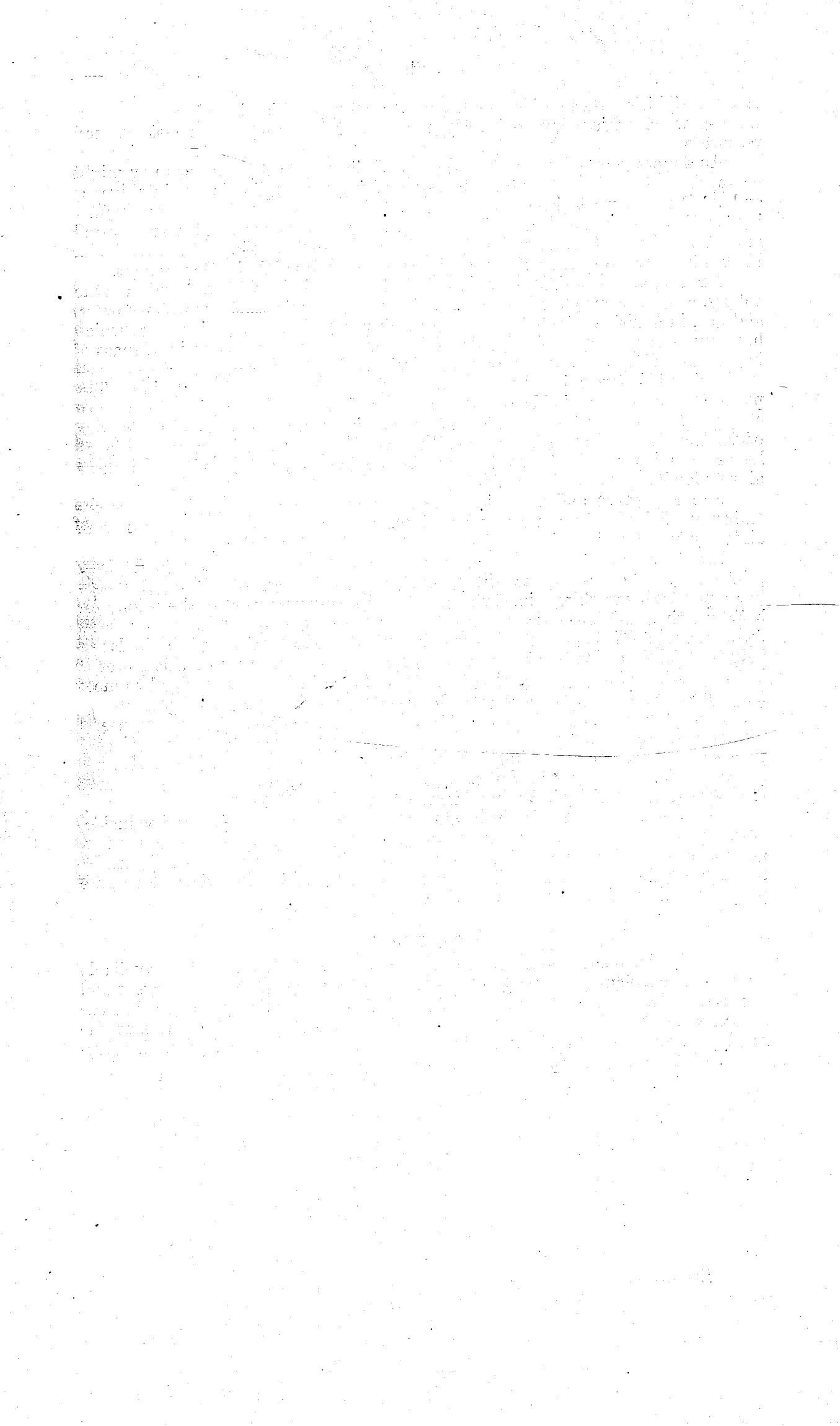
Mr. Hay shows that the schemes on which he has reported (and many others may, of course, be possible) would develop energy equal to 3,700,000-horse power, about thirty times the amount of power now used in the colony for both tractive and industrial purposes, and considerably in excess of the total fixed steam-power used in the United Kingdom up to 1888, the date of the latest industrial statistics available at the moment. The great bulk of this power is in the South Island, but there is sufficient available in the North Island to meet all present requirements and to provide for considerable future development.

The expenditure involved in converting all this waste energy into useful industrial power would, as might be expected, run into millions. It is estimated that the cost of schemes sufficient to displace all the steam, gas, and other plants at present in use in the colony, as well as to provide for the running of all the railways electrically, would amount to about £12,000,000.

The information so far obtained, however, though extensive and valuable, is by no means complete, and the reports presented, though able and interesting, are not by any means exhaustive. Much further inquiry yet remains to be made, and further attention will be devoted to the matter with the view of definite proposals being submitted to Parliament.

#### CONCLUSION.

Honourable members may rest assured that in allocating the moneys available every consideration has been given to what are considered the most urgent and necessary works. The funds at our disposal should be sufficient to enable the several works to be proceeded with at a fair rate, and I am satisfied that the result of the current year's work will tend materially to the further development and the continued prosperity of our colony.



## PUBLIC WORKS STATEMENT, 1904.

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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, 1904, and the LIABILITIES on that Date.

Number of Table containing Details.	Works.	Total Net Expenditure to 31st March, 1903.	Expenditure during 12 Months ended 31st March, 1904.	Total Expenditure to 31st March, 1904.	Liabilities on Authorities, Contracts, &c. 31st March, 1904.	Total Expenditure and Liabilities.	Works.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
3	Railways ...	19,261,719 4 1	1,828,703 7 2	20,090,422 11 3	117,354 12 5	20,207,777 3 8	Railways.
4*	Roads ...	16,248,248 1 0	1,361,841 17 0	6,610,089 18 0	80,787 4 7	6,690,877 2 7	Roads.
5 and 5A	Development of goldfields ...	67,589 1 9	16,278 5 4	692,169 15 3	2,938 14 7	694,208 9 10	Development of goldfields.
6	Telegraphs ...	1,006,405 9 11	47,220 19 7	1,053,625 9 6	43,877 0 0	1,097,503 9 6	Telegraphs.
7	Public buildings ...	2,852,704 11 9	216,191 13 3	3,068,896 5 0	36,338 8 3	3,105,234 13 3	Public buildings.
8	Lighthouses, harbour works, and harbour defences	991,353 2 3	10,863 2 2	1,002,216 4 5	506 6 5	1,002,722 10 10	Lighthouses, harbour works, and harbour defences.
...	Departmental ...	491,236 12 7	16,088 19 0	507,125 11 7	...	507,125 11 7	Departmental.
18 of 1878	Coal-exploration and mine-development	10,835 8 0	...	10,835 8 0	...	10,835 8 0	Coal-exploration and mine-development.
11 of 1877	Aiding works on Thames goldfields	50,000 0 0	...	50,000 0 0	...	50,000 0 0	Aiding works on Thames goldfields.
...	Immigration	2,148,000 5 11	Cr. 6 11 8	2,147,993 14 3	...	2,147,993 14 3	Immigration.
...	Purchase of Native lands	1,999,013 12 3	5,351 14 8	2,004,365 6 11	7,298 0 0	2,011,663 6 11	Purchase of Native lands.
...	Defence	733,839 8 4	38,723 16 3	772,563 4 7	4,240 0 0	776,803 4 7	Defence.
...	Charges and expenses of raising loans	1,151,055 7 3	87,248 17 0	1,238,304 4 3	...	1,238,304 4 3	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	65,268 2 3	666 0 3	65,934 2 6	355 15 8	66,289 18 2	Rates on Native lands.
...	Thermal springs	14,599 13 2	...	14,599 13 2	...	14,599 13 2	Thermal springs.
...	Tourist and health resorts	22,208 15 3	15,643 4 3	37,851 19 6	4,911 14 5	42,763 13 11	Tourist and health resorts.
...	Lands improvement	4,089 17 5	2,019 3 11	6,109 1 4	11 7 6	6,120 8 10	Lands improvement.
...	Payment to Midland Railway bondholders.	...	150,000 0 0	150,000 0 0	...	150,000 0 0	Payment to Midland Railway bondholders.
...	Totals	37,944,829 1 4	1,796,840 8 2	39,741,669 9 6	297,719 3 10	40,039,388 13 4	Totals.

\* Table 4 also contains details of expenditure under Government Loans to Local Bodies Account.  
 † Includes expenditure under Lands Improvement Account, £300,929 12s. 5d.  
 ‡ Includes £796 18s. 11d. charged to "Unauthorised."  
 § Includes expenditure under Native Lands Purchase Account, £491,980 is. 1d.  
 ¶ Includes expenditure under Paerosa-Waihi Railway Account, £26,462 15s. 2d.



TABLE No. 2.  
GENERAL SUMMARY.

Showing NET YEARLY EXPENDITURE out of PUBLIC WORKS FUND, 1882-83 to 1903-04.

Description of Services.	Total Net Expenditure to 31st March, 1882.	Expenditure.																						Total Net Expenditure to 31st March, 1904.
		1882-83.	1883-84.	1884-85.	1885-86.	1886-87.	1887-88.	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.	
Immigration .. .. .	£ 1,925,755	£ 3,999	£ 107,041	£ 57,148	£ 11,675	£ 12,454	£ 15,598	£ 8,791	£ 867	£ 1,823	£ 817	£ 242	£ 343	£ 101	£ Cr. 10	£ 301	£ 70	£ 105	£ 385	£ 214	£ 139	£ 143	£ Cr. 7	£ 2,147,994
Public Works Departmental .. .. .	171,108	12,871	13,465	30,157	29,632	25,835	25,090	21,458	12,294	10,264	7,796	7,790	8,406	8,680	14,300	14,892	9,689	10,090	12,572	12,933	17,771	13,949	16,089	507,126
Railways .. .. .	9,936,863	354,781	662,046	663,063	725,496	616,447	403,727	272,077	289,601	180,021	154,417	220,894	176,304	247,545	197,105	207,281	351,600	374,192	417,937	717,723	1,333,941	759,753	*828,703	20,090,423
Payment to Midland Railway Bondholders .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	150,000	150,000
Roads:—																								
Roads North of Auckland .. .. .	102,086	7,929	17,566	34,574	33,163	30,738	3,138	264	267	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Main Roads .. .. .	894,596	111,603	31,809	30,380	26,833	22,294	13,756	10,968	12,799	9,905	11,739	12,588	22,285	22,731	27,959	4,289	..	..	..	..	..	..	..	..
Miscellaneous Roads and Bridges .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Roads to open up Lands .. .. .	132,343	81,634	84,631	49,314	61,794	57,157	61,488	21,954	28,160	24,285	27,993	21,989	58,042	9,972	17,075	11,195	241,209	248,934	237,351	267,374	354,687	230,349	†316,248	..
Grants-in-Aid .. .. .	225,000	..	106,399	149,982	138,045	81,264	57,632	26,913	2,172	1,586	10,757	7,144	8,951	..	..	..	..	..	..	..	..	..	..	..
Village Settlements .. .. .	..	..	..	..	..	1,891	12,053	10,770	7,345	4,884	3,829	4,412	2,898	..	..	..	..	..	..	..	..	..	..	..
Local Bodies .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Roads on Goldfields .. .. .	..	9,439	26,602	15,631	31,622	32,625	25,058	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	..
Miscellaneous .. .. .	318,774	471	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Development of Thermal Springs and Natural Scenery .. .. .	..	..	..	..	6,832	12,900	20,410	1,898	248	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Roads to give access to North Island Trunk Railway .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lands Improvement Account .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>Total, Roads .. .. .</b>	<b>1,672,749</b>	<b>211,076</b>	<b>328,642</b>	<b>317,043</b>	<b>335,904</b>	<b>278,617</b>	<b>219,519</b>	<b>106,439</b>	<b>83,009</b>	<b>45,164</b>	<b>36,761</b>	<b>103,893</b>	<b>146,638</b>	<b>150,278</b>	<b>174,369</b>	<b>167,482</b>	<b>290,413</b>	<b>295,119</b>	<b>285,043</b>	<b>315,791</b>	<b>402,260</b>	<b>282,039</b>	<b>361,842</b>	<b>6,610,090</b>
Development of Goldfields .. .. .	510,779	6,824	16,596	8,029	9,032	7,665	1,016	55	284	821	2,257	3,811	5,272	5,865	9,345	10,508	33,117	17,355	21,815	15,907	15,326	24,213	16,278	742,170
Purchase of Native Lands .. .. .	867,368	29,844	24,480	70,572	34,545	88,836	25,643	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	..
Native Lands Purchase Account .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>Total, Land Purchases .. .. .</b>	<b>867,368</b>	<b>29,844</b>	<b>24,480</b>	<b>70,572</b>	<b>34,545</b>	<b>88,836</b>	<b>25,643</b>	<b>9,072</b>	<b>28,194</b>	<b>17,925</b>	<b>52,397</b>	<b>66,324</b>	<b>80,877</b>	<b>101,346</b>	<b>163,411</b>	<b>128,963</b>	<b>61,503</b>	<b>52,957</b>	<b>32,025</b>	<b>28,688</b>	<b>18,261</b>	<b>15,782</b>	<b>5,352</b>	<b>2,004,365</b>
Telegraph Extension .. .. .	420,032	18,654	19,532	25,799	36,010	18,952	22,984	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	47,227	1,053,692
Public Buildings:—																								
General (including Miscellaneous) .. .. .	154,733	..	34	..	..	947	12,742	14,588	7,256	2,880	454	1,588	621	2,523	3,724	8,173	14,797	8,764	3,957	5,594	12,513	9,031	10,964	..
Parliamentary .. .. .	..	5,331	8,416	183	..	8	24	..	..	..	..	..	209	6,822	9	466	20,636	9,883	3,039	4,424	1,503	602	..	..
Judicial .. .. .	150,160	16,743	22,652	12,227	11,106	15,875	8,273	8,228	11,246	9,892	8,901	2,779	5,262	11,437	27,341	14,806	12,727	11,109	19,682	29,630	28,738	33,224	25,978	..
Post and Telegraph .. .. .	90,032	9,939	22,616	8,955	4,880	2,772	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	..	..
Customs .. .. .	1,969	193	1,659	830	99	..	..	..	18	409	13	5	666	12	647	16	385	..	107	875	2,066	6,630	8,719	..
Survey .. .. .	..	20	34	..	..	461	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Quarantine Stations .. .. .	971	996	848	313	123	274	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hospitals for Mental Diseases .. .. .	111,351	31,652	58,047	24,992	4,007	13,694	23,107	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	..
Public Health .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
General Hospitals and Charitable Institutions .. .. .	16,663	64	256	3,792	3,299	4,421	4,156	673	Cr. 140	..	..	7,999	..	..	6,561	700	..	..	899	5,141	1,200	3,540	4,291	..
School-buildings .. .. .	460,227	88,134	49,814	66,069	62,884	51,607	40,000	779	..	..	7,500	..	15,000	15,000	20,000	22,143	23,864	43,403	49,256	33,681	38,606	57,790	87,089	..
Agricultural .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	160	837	1,127	819	1,328	520	447	971	535	883	2,504	..
<b>Total, Public Buildings .. .. .</b>	<b>986,106</b>	<b>153,072</b>	<b>164,376</b>	<b>117,361</b>	<b>86,859</b>	<b>89,598</b>	<b>90,529</b>	<b>34,592</b>	<b>35,473</b>	<b>22,820</b>	<b>34,791</b>	<b>31,101</b>	<b>44,032</b>	<b>54,190</b>	<b>76,529</b>	<b>70,579</b>	<b>73,585</b>	<b>107,267</b>	<b>115,426</b>	<b>121,364</b>	<b>145,600</b>	<b>197,454</b>	<b>216,192</b>	<b>3,068,896</b>
Lighthouses, Harbour Works, and Harbour Defences:—																								
Lighthouses .. .. .	90,236	4,724	6,730	7,383	300	3,272	2,866	2,504	1,551	..	..	6,642	2,612	..	234	6,067	2,180	3,727	3,333	1,017	2,060	6,082	6,206	..
Harbour Works .. .. .	154,000	100,676	29,591	17,050	6,508	6,004	500	Cr. 5,000	589	189	..	..	..	650	3,861	866	568	1,777	3,665	1,540	3,421	1,373	1,772	..
Harbour Defences .. .. .	35,418	..	7,213	9,601	127,167	139,429	73,459	50,089	7,293	2,477	7,347	4,563	3,976	2,495	3,314	4,667	2,547	10,158	5,328	3,960	6,678	6,126	2,885	..
<b>Total, Lighthouses, &amp;c. .. .. .</b>	<b>279,654</b>	<b>105,400</b>	<b>43,534</b>	<b>34,034</b>	<b>133,975</b>	<b>148,705</b>	<b>76,825</b>	<b>47,593</b>	<b>9,433</b>	<b>2,666</b>	<b>7,347</b>	<b>11,205</b>	<b>6,588</b>	<b>3,145</b>	<b>7,409</b>	<b>11,600</b>	<b>5,295</b>	<b>15,662</b>	<b>9,026</b>	<b>6,517</b>	<b>12,159</b>	<b>13,581</b>	<b>10,863</b>	<b>1,002,216</b>
Rates on Native Lands .. .. .	..	..	..	..	..	25,139	8,446	10,304	5,874	8,250	2,038	615	415	561	340	332	156	347	744	673	571	471	666	65,934
Contingent Defence .. .. .	392,219	..	..	..	25,000	12,500	..	..	..	..	..	..	..	..	5,000	10,554	10,360	13,867	42,810	37,650	146,875	37,004	38,724	772,563
Tourist and Health Resorts .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11,260	10,949	15,643	37,852
Lands Improvement † .. .. .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,741	2,349	2,019	6,109
Charges and Expenses of raising Loans .. .. .	765,018	517	29,877	13,521																				

TABLE No. 3.  
EXPENDITURE ON RAILWAYS to 31st March, 1904, and LIABILITIES on that Date.

LINES OF RAILWAY.	Total Expenditure by General Government to 31st March, 1903.		EXPENDITURE DURING YEAR 1903-4 (INCLUDING £2,816 11s. 5d. DISTRIBUTED FROM STOCK OF PERMANENT-WAY).							Total Expenditure by General Government to 31st March, 1904.		Liabilities.	Total Expenditure by General Government, and Liabilities, 31st March, 1904.		Valuation of Works constructed by Provinces and Midland Railway Company. §	Total Expenditure and Liabilities, 31st March, 1904.	LINES OF RAILWAY.		
	£	s. d.	New Works.			Works on Open Lines.	Land-claims and other Old Liabilities.	Surveys.	Rolling-stock.	£	s. d.		£	s. d.				£	s. d.
			Construction.	Permanent-way.	Total New Works.														
Kaihu Valley .. .. .	55,044	17 1	..	..	..	..	..	..	..	..	..	..	55,044	17 1	..	55,044	17 1	Kaihu Valley.	
Kawakawa .. .. .	112,109	10 7	5,598	18 0	2,048	0 0	7,641	18 0	..	..	..	..	119,751	8 7	..	119,751	8 7	Kawakawa.	
Whangarei to Kamo Extension .. .. .	151,983	12 4	5,315	0 3	..	..	5,315	0 3	78	18 0	..	..	157,377	10 7	2,572	7 3	159,996	13 10	Whangarei to Kamo Extension.
Helensville Northwards .. .. .	142,971	12 4	11,787	12 9	2,388	0 0	14,125	12 9	..	..	..	..	157,097	5 1	77	15 9	157,175	0 10	Helensville Northwards.
Kaipara to Waikato .. .. .	1,201,302	15 10	..	..	..	..	..	..	11,823	14 3	..	..	1,213,126	10 1	..	1,213,126	10 1	Kaipara to Waikato.	
Cambridge Branch .. .. .	51,110	9 9	..	..	..	..	..	..	..	..	..	..	51,110	9 9	..	51,110	9 9	Cambridge Branch.	
Waikato to Thames—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Waikato to Thames—	
Hamilton to Te Aroha .. .. .	189,835	0 5	..	..	..	..	..	..	189,835	0 5	..	..	189,835	0 5	..	189,835	0 5	Hamilton to Te Aroha.	
Te Aroha to Thames .. .. .	184,779	11 5	..	..	..	..	..	..	184,973	13 11	..	..	184,973	13 11	..	184,973	13 11	Te Aroha to Thames.	
Paeroa to Waihi .. .. .	51,536	19 0	26,462	15 2	..	..	26,462	15 2	..	..	..	..	77,999	14 2	4,296	15 11	83,107	17 2	Paeroa to Waihi.
Thames Valley to Rotorua—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Thames Valley to Rotorua—	
Morrinsville to Lichfield .. .. .	161,552	5 2	..	..	..	..	..	..	161,552	5 2	..	..	161,552	5 2	..	161,552	5 2	Morrinsville to Lichfield.	
Putaruru to Rotorua .. .. .	192,813	4 4	..	..	..	..	..	..	193,265	1 9	..	..	193,265	1 9	..	193,265	1 9	Putaruru to Rotorua.	
Marton to Te Awamutu—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Marton to Te Awamutu—	
North End .. .. .	552,600	1 6	84,993	9 2	10,905	0 0	95,898	9 2	..	..	..	..	648,532	17 4	5,142	0 2	653,674	17 6	North End.
South End .. .. .	575,344	8 10	89,561	11 3	10,911	0 0	100,472	11 3	..	..	..	..	675,817	0 1	4,520	4 3	680,337	4 4	South End.
Gisborne to Ormond Tramway .. .. .	4,975	1 7	..	..	..	..	..	..	4,975	1 7	..	..	4,975	1 7	..	4,975	1 7	Gisborne to Ormond Tramway.	
Gisborne to Karaka .. .. .	73,431	19 4	14,329	19 4	1,008	0 0	15,332	19 4	..	..	..	..	88,764	18 8	3,547	9 11	92,312	8 7	Gisborne to Karaka.
Wellington to Napier—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Wellington to Napier—	
Napier to Woodville and Palmerston North .. .. .	825,376	0 4	..	..	..	..	12,057	1 7	..	..	..	..	837,433	1 11	..	837,433	1 11	Napier to Woodville and Palmerston North.	
Wellington to Woodville, including Te Aro Extension .. .. .	1,233,615	19 7	..	..	..	..	19,600	18 4	63	12 11	..	..	1,253,280	10 10	..	1,253,280	10 10	Wellington to Woodville, including Te Aro Extension.	
Wellington to Foxton .. .. .	42,116	3 4	..	..	..	..	..	..	42,116	3 4	..	..	42,116	3 4	..	42,116	3 4	Wellington to Foxton.	
Foxton to Waitara .. .. .	1,404,439	4 8	..	..	..	..	7,444	6 7	..	..	..	..	1,411,883	11 3	..	1,411,883	11 3	Foxton to Waitara.	
Mount Egmont Branch .. .. .	..	..	850	4 5	..	..	850	4 5	..	..	..	..	850	4 5	..	850	4 5	Mount Egmont Branch.	
Stratford-Kawakawa .. .. .	32,889	1 6	8,712	12 1	24	0 0	8,736	12 1	..	..	..	..	41,625	13 7	1	1 8	41,626	15 3	Stratford-Kawakawa.
Nelson to Roundell .. .. .	165,522	10 0	..	..	..	..	151	16 0	Cr. 3	15 0	..	..	165,670	11 0	..	165,670	11 0	Nelson to Roundell.	
Midland Railway—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Midland Railway—	
Nelson End .. .. .	27,786	9 7	11,956	7 11	6,770	0 0	18,726	7 11	..	..	..	..	46,539	0 6	1,197	5 2	47,676	5 8	Nelson End.
Stillwater-Inangahua .. .. .	3,706	1 6	10,964	16 1	155	0 0	11,119	16 1	..	..	..	..	14,854	11 0	8,795	10 10	23,650	1 10	Stillwater-Inangahua.
Brunnerton-Otira .. .. .	100,668	0 8	351	0 0	..	..	351	0 0	..	..	..	..	101,055	6 3	..	101,055	6 3	Brunnerton-Otira.	
Springfield End .. .. .	155,273	17 0	30,275	5 9	5,704	0 0	35,979	5 9	..	..	..	..	191,253	2 9	207,985	9 8	235,324	1 1	Springfield End.
Greymouth to Brunnerton .. .. .	166,471	11 11	..	..	..	..	..	..	166,471	11 11	..	..	166,471	11 11	..	166,471	11 11	Greymouth to Brunnerton.	
Greymouth to Hokitika and Ross .. .. .	200,013	18 5	25,062	15 1	..	..	25,062	15 1	1,766	15 3	..	..	226,843	8 9	7,760	10 1	234,603	18 10	Greymouth to Hokitika and Ross.
Westport to Ngakawau .. .. .	187,512	15 7	..	..	..	..	..	..	187,512	15 7	..	..	188,008	17 3	..	188,008	17 3	Westport to Ngakawau.	
Ngahere-Blackball .. .. .	1,089	15 8	19,537	16 2	..	..	19,537	16 2	..	..	..	..	20,627	11 0	3,405	8 11	24,035	15 3	Ngahere-Blackball.
Picton to Waipara—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Picton to Waipara—	
Picton to Cheviot .. .. .	327,399	14 1	344	7 1	..	..	344	7 1	185	16 3	..	..	327,929	17 5	..	327,929	17 5	Picton to Cheviot.	
Waipara to Cheviot .. .. .	93,958	11 0	27,470	17 8	37	0 0	27,507	17 8	..	..	..	..	121,466	8 8	4,626	0 9	126,092	9 5	Waipara to Cheviot.
Hurunui to Waitaki—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Hurunui to Waitaki—	
Main Line .. .. .	1,540,523	19 9	..	..	..	..	20,940	10 8	..	..	..	..	1,561,464	10 5	..	1,561,464	10 5	Main Line.	
Oxford Branch .. .. .	51,467	7 11	..	..	..	..	..	..	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	..	44,276	12 10	Eyreton Branch.	
Lytelton Branch .. .. .	76,223	19 4	..	..	..	..	644	9 0	..	..	..	..	76,868	8 4	..	76,868	8 4	Lytelton Branch.	
Southbridge Branch .. .. .	87,848	8 3	..	..	..	..	141	10 2	..	..	..	..	87,989	18 5	..	87,989	18 5	Southbridge Branch.	
Springfield and Whitecliffs Branches .. .. .	93,836	11 7	..	..	..	..	960	2 1	..	..	..	..	94,796	13 8	..	94,796	13 8	Springfield and Whitecliffs Branches.	
Fairlie Creek Branch .. .. .	66,872	12 5	..	..	..	..	..	..	66,872	12 5	..	..	66,872	12 5	..	66,872	12 5	Fairlie Creek Branch.	
Waimate Branch .. .. .	47,953	11 8	..	..	..	..	..	..	47,953	11 8	..	..	47,953	11 8	..	47,953	11 8	Waimate Branch.	
Ashburton Forks Branch .. .. .	*74,214	6 2	..	..	..	..	..	..	74,214	6 2	..	..	74,214	6 2	..	74,214	6 2	Ashburton Forks Branch.	
Upper Ashburton Branch .. .. .	61,582	16 9	..	..	..	..	..	..	61,582	16 9	..	..	61,582	16 9	..	61,582	16 9	Upper Ashburton Branch.	
Little River Branch .. .. .	107,523	16 0	..	..	..	..	..	..	107,523	16 0	..	..	107,523	16 0	..	107,523	16 0	Little River Branch.	
Canterbury Interior Main Line—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Canterbury Interior Main Line—	
Oxford to Malvern .. .. .	53,649	0 4	..	..	..	..	..	..	53,649	0 4	..	..	53,649	0 4	..	53,649	0 4	Oxford to Malvern.	
Whitecliffs to Rakaia .. .. .	542	6 2	..	..	..	..	..	..	542	6 2	..	..	542	6 2	..	542	6 2	Whitecliffs to Rakaia.	
Temuka to Rangitata .. .. .	5,152	2 8	..	..	..	..	..	..	5,152	2 8	..	..	5,152	2 8	..	5,152	2 8	Temuka to Rangitata.	
Waitaki to Bluff—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Waitaki to Bluff—	
Main Line, including Port Chalmers Branch .. .. .	2,543,653	16 0	..	..	..	..	40,722	1 6	25	0 0	..	..	2,584,400	17 6	..	2,584,400	17 6	Main Line, including Port Chalmers Branch.	
Dunroon Branch .. .. .	96,332	0 7	..	..	..	..	199	16 4	..	..	..	..	96,531	16 11	..	96,531	16 11	Dunroon Branch.	
Ngapara Branch .. .. .	25,717	10 3	..	..	..	..	174	1 6	..	..	..	..	25,891	11 9	..	25,891	11 9	Ngapara Branch.	
Fernhill Railway Purchase .. .. .	1,397	8 10	..	..	..	..	..	..	1,400	8 10	..	..	1,400	8 10	..	1,400	8 10	Fernhill Railway Purchase.	
Brighton Road Branch .. .. .	6,473	14 9	..	..	..	..	..	..	6,473	14 9	..	..	6,473	14 9	..	6,473	14 9	Brighton Road Branch.	
Outram Branch .. .. .	11,951	7 6	..	..	..	..	..	..	11,951	7 6	..	..	11,951	7 6	..	11,951	7 6	Outram Branch.	
Lawrence Branch .. .. .	161,885	7 2	..	..	..	..	..	..	161,885	7 2	..	..	161,885	7 2	..	161,885	7 2	Lawrence Branch.	
Livingstone Branch .. .. .	82,623	6 8	..	..	..	..	161	12 2	..	..	..	..	82,784	18 10	..	82,784	18 10	Livingstone Branch.	
Waihero Branch .. .. .	33,190	18 8	..	..	..	..	..	..	33,190	18 8	..	..	33,190	18 8	..	33,190	18 8	Waihero Branch.	
Catlin's River Branch .. .. .																			

TABLE No. 4.

STATEMENT showing the NET EXPENDITURE on ROADS, BRIDGES, &c., out of the Public Works Fund, and Government Loans to Local Bodies, Lands Improvement, and Native Land Purchase Accounts to 31st March, 1904.

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure for Year ended 31st March, 1904.
		ROADS, ETC.			£ s. d.
104		AUCKLAND—			
	1	Ahipara—Herekino .. .. .	Mongonui ..	Bay of Islands ..	113 7 9
	4	Awanui—Hohoura .. .. .	" ..	" ..	100 0 0
	5	Awanui, <i>viâ</i> Taipa—Manganui .. .. .	" ..	" ..	468 17 3
	6	Awanui, <i>viâ</i> Waiparera—Kaikino .. .. .	" ..	" ..	100 0 0
	7	Awanui—West Coast .. .. .	" ..	" ..	400 0 0
	8	Broadwood—Herekino .. .. .	Hokianga ..	" ..	142 19 3
	10	Helena Bay (main road) .. .. .	Whangarei ..	" ..	100 0 0
	11	Herd's Point—Takahue .. .. .	Hokianga ..	" ..	96 1 6
	12	Herekino Settlement .. .. .	" ..	" ..	72 11 0
	13	Herekino—Whangape .. .. .	" ..	" ..	89 16 6
	14	Hohoura—Parengarenga .. .. .	Mangonui ..	" ..	100 0 0
	15	Horeke—Taheke .. .. .	Hokianga ..	" ..	149 10 3
	16	Hukerenui Survey District .. .. .	Bay of Islands ..	" ..	103 19 0
	17	Kaero—Matauri .. .. .	Whangaroa ..	" ..	70 0 0
	18	Kaero—Wairari .. .. .	" ..	" ..	86 4 0
	19	Kaikohe—Dargaville, <i>viâ</i> Maungakahia .. .. .	Bay of Islands, Hobson, and Hokianga ..	" ..	239 19 6
	20	Kaikohe—Kawakawa, <i>viâ</i> Ngapipito .. .. .	Bay of Islands ..	" ..	184 14 7
	21	Kaikohe—Rawene .. .. .	Hokianga and Bay of Islands ..	" ..	448 10 4
	22	Kaimamaku .. .. .	Whangarei ..	" ..	12 0 0
	23	Kaitaia—Ahipara .. .. .	Mangonui ..	" ..	200 0 0
	25	Kaipiro Bridge .. .. .	Bay of Islands ..	" ..	66 5 11
	27	Kawakawa—Opua .. .. .	" ..	" ..	100 0 0
	28	Kawakawa—Taumarere .. .. .	" ..	" ..	100 0 0
	29	Kohukohu—Motukaraka, <i>viâ</i> Rimu Valley .. .. .	Hokianga ..	" ..	221 3 4
	30	Kohukohu—Otane .. .. .	" ..	" ..	66 7 6
	31	Kohukohu—Rakautapu .. .. .	" ..	" ..	149 19 6
	37	Mangamuka—Oruru .. .. .	Hokianga and Mongonui ..	" ..	79 19 0
	38	Mangatotoe .. .. .	Mangonui ..	" ..	100 0 0
	39	Mangonui Beach Road to Junction .. .. .	" ..	" ..	200 0 0
	41	Matawherohia—Kaero .. .. .	Whangaroa ..	" ..	66 6 11
	42	Ohaeawai—Kaikohe .. .. .	Bay of Islands ..	" ..	100 0 0
	43	Ohaeawai—Okaihau .. .. .	" ..	" ..	150 0 0
	44	Ohaeawai—Waitangi .. .. .	" ..	" ..	150 0 0
	45	Okaihau—Horeke .. .. .	Hokianga and Bay of Islands ..	" ..	921 12 2
	46	Okaihau—Kaikohe .. .. .	Bay of Islands ..	" ..	95 9 6
	47	Okaihau—Kerikeri .. .. .	" ..	" ..	100 0 0
	48	Okaihau Settlement Roads .. .. .	" ..	" ..	50 0 0
	49	Okaihau—Waihou .. .. .	" ..	" ..	300 0 0
	50	Omanaia—Hokianga Heads .. .. .	Hokianga ..	" ..	93 18 0
	51	Omapere Survey District, Blocks IX. and X. .. .. .	" ..	" ..	20 17 0
	52	Omapere—Waimamaku .. .. .	" ..	" ..	73 8 0
	53	Opanaki—Hokianga .. .. .	Hokianga and Hobson ..	" ..	147 6 9
	55	Opuawhanga No. 1 .. .. .	Whangarei ..	" ..	125 10 4
	56	Opuawhanga—Whananaki .. .. .	" ..	" ..	150 0 0
	58	Oruru—Hikurangi .. .. .	Mangonui ..	" ..	74 15 6
	59	Oruru—Taipa .. .. .	" ..	" ..	250 0 0
	60	Otonga—Whananaki .. .. .	Whangarei ..	" ..	50 0 0
	61	Pakaru Settlement .. .. .	Bay of Islands ..	" ..	30 8 0
	62	Pakia—Kawerua, <i>viâ</i> Waimamaku .. .. .	Hokianga ..	" ..	13 0 0
	64	Peria—Block V., Maungataniwha .. .. .	Mangonui ..	" ..	49 8 6
	65	Peria—Victoria Valley .. .. .	" ..	" ..	204 0 3
	67	Punakitere Settlement .. .. .	Hokianga ..	" ..	138 14 6
	68	Pungaere Settlement—Kerikeri .. .. .	Bay of Islands ..	" ..	50 0 0
	69	Pupuke—Kaero .. .. .	Whangaroa ..	" ..	204 8 1
	71	Ramarama Valley .. .. .	Bay of Islands ..	" ..	19 0 0
	72	Rangatira Improved-farm Settlement .. .. .	Hokianga ..	" ..	21 0 0
	74	Ruapekapeka East Schoolhouse .. .. .	Bay of Islands ..	" ..	60 2 3
	76	Ruapekapeka—Kawakawa .. .. .	" ..	" ..	100 0 0
	77	Ruapekapeka—Waiotu Valley .. .. .	" ..	" ..	62 10 0
	78	Russell—Whangaruru .. .. .	" ..	" ..	77 18 0
	79	Takahue—Herekino .. .. .	Mangonui ..	" ..	253 7 0
	80	Takahue Village—Victoria Valley .. .. .	" ..	" ..	70 12 10
	82	Totara Foreshore roads .. .. .	Whangaroa ..	" ..	250 0 0
	83	Umawhero—Mangamuka .. .. .	Hokianga ..	" ..	103 12 10
	85	Waihou—Victoria Valley .. .. .	Hokianga, Mongonui, and Bay of Islands ..	" ..	222 19 3
	86	Waimamaku—Pakanae .. .. .	Hokianga ..	" ..	448 10 3
	87	Waimamaku—Punakitere .. .. .	" ..	" ..	344 6 3
	88	Waimamaku Settlement .. .. .	" ..	" ..	290 0 0
	90	Waiotu—Hukerenui (Galbraith's) .. .. .	Bay of Islands ..	" ..	100 0 0
	91	Wairere Bridge, and road towards Horeke .. .. .	Hokianga ..	" ..	316 10 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 for Year ended 31st March, 1904.
		ROADS, ETC.—continued.			
		AUCKLAND—continued.			
104	92	Wairere—Paparua .. .. .	Otamatea .. .. .	Kaipara .. .. .	£ 25 14 8
	93	Waitangi Bridge .. .. .	Bay of Islands .. .. .	Bay of Islands .. .. .	Cr. 128 13 0
	95	Wekaweka Settlement (Waimamaku) .. .. .	Hokianga .. .. .	" .. .. .	2 12 6
	96	West Coast—Waiharara .. .. .	Mangonui .. .. .	" .. .. .	50 0 0
	98	Whangape, Section 55, Block VII. .. .. .	Hokianga .. .. .	" .. .. .	36 5 0
	99	Whangaroa County roads .. .. .	Whangaroa .. .. .	" .. .. .	200 0 0
	100	Whangaroa Harbour—Kaeo .. .. .	" .. .. .	" .. .. .	25 0 0
	101	Bald Hill Deviation .. .. .	Whangarei .. .. .	Marsden .. .. .	50 0 0
	102	Bull's Road—Waikiekie .. .. .	" .. .. .	" .. .. .	85 9 0
	103	Caves—McLaughlin's .. .. .	" .. .. .	" .. .. .	100 0 0
	104	Cove Deviation .. .. .	" .. .. .	" .. .. .	100 0 0
	106	Great North Road—Ngunguru .. .. .	" .. .. .	" .. .. .	100 0 0
	107	Great North Road—Otonga Station .. .. .	" .. .. .	" .. .. .	50 0 0
	108	Horahora—Whareora .. .. .	" .. .. .	" .. .. .	100 0 0
	109	Hoteo Parish, Sections 90 and 74A (road between) .. .. .	Rodney .. .. .	" .. .. .	44 15 8
	111	Hoteo Valley—Whangaripo .. .. .	" .. .. .	" .. .. .	330 10 8
	113	Hunter's Road .. .. .	Whangarei .. .. .	" .. .. .	100 0 0
	114	Kaiwaka—Mangawai .. .. .	Otamatea .. .. .	" .. .. .	159 1 0
	115	Kaukapakapa—Warkworth .. .. .	Rodney and Waitemata .. .. .	Kaipara .. .. .	73 11 1
	116	Mahurangi Bridge (Warkworth) .. .. .	Rodney .. .. .	Marsden .. .. .	28 10 5
	117	Mangakahia Bridge—Dargaville .. .. .	Whangarei and Hobson .. .. .	" .. .. .	300 0 0
	118	Mangakahia Bridge—Mangakahia Church .. .. .	Whangarei .. .. .	" .. .. .	149 9 4
	119	Mangakahia River (snagging) .. .. .	" .. .. .	" .. .. .	23 4 0
	120	Mangapai—Waikiekie .. .. .	" .. .. .	" .. .. .	131 7 6
	122	Mangawai Gorge .. .. .	Otamatea .. .. .	" .. .. .	100 0 0
	124	Mareretu Central .. .. .	" .. .. .	" .. .. .	53 0 1
	125	Matakana Ranges—Te Arai .. .. .	Rodney .. .. .	" .. .. .	160 13 4
	126	Matakana—Tauwharanui .. .. .	" .. .. .	" .. .. .	235 7 0
	127	Matakana—Whangaripo .. .. .	" .. .. .	" .. .. .	118 12 9
	128	Matapouri—Ngunguru .. .. .	Whangarei .. .. .	" .. .. .	133 3 0
	129	Maungakaramea .. .. .	" .. .. .	" .. .. .	135 0 0
	130	Maungakaramea—Tangihua .. .. .	" .. .. .	" .. .. .	50 0 0
	132	Maungatapere—Tangiteroria .. .. .	" .. .. .	" .. .. .	55 8 0
	133	Maungaturoto .. .. .	Otamatea .. .. .	" .. .. .	99 7 8
	134	Maungaturoto—Mareretu .. .. .	" .. .. .	" .. .. .	100 0 0
	135	Maungaturoto Wharf and Road .. .. .	" .. .. .	" .. .. .	37 9 0
	136	Maungaturoto—Waikiekie .. .. .	" .. .. .	" .. .. .	101 15 7
	137	McPhee's Bay—Otonga East .. .. .	Whangarei .. .. .	" .. .. .	19 10 6
	138	Paparua—Waikiekie .. .. .	Otamatea .. .. .	" .. .. .	30 17 0
	139	Parua Bay Wharf and Road .. .. .	Whangarei .. .. .	" .. .. .	100 0 0
	140	Purua—Mangakahia, <i>via</i> Ruatangata .. .. .	" .. .. .	" .. .. .	100 0 0
	141	Ruatangata—Kamo .. .. .	" .. .. .	" .. .. .	51 0 0
	142	Tangihua .. .. .	Hobson & Whangarei .. .. .	" .. .. .	25 13 5
	143	Taranui .. .. .	Whangarei .. .. .	" .. .. .	100 0 0
	144	Te Arai—Mangawai .. .. .	Rodney .. .. .	" .. .. .	91 1 6
	147	Waipu—Mareretu .. .. .	Otamatea .. .. .	" .. .. .	101 11 9
	148	Waipu Riding .. .. .	Whangarei .. .. .	" .. .. .	200 0 0
	149	Waipu River improvements .. .. .	" .. .. .	" .. .. .	130 9 10
	150	Waipu Upper Wharf Extension .. .. .	" .. .. .	" .. .. .	50 0 0
	151	Waiwhiu Valley .. .. .	Rodney .. .. .	" .. .. .	56 18 7
	152	Warkworth—Aburoa Railway-station .. .. .	" .. .. .	" .. .. .	100 0 0
	153	Warkworth—Matakana .. .. .	" .. .. .	" .. .. .	100 0 0
	154	Whangaripo—Pakiri Valley .. .. .	" .. .. .	" .. .. .	74 11 0
	155	Whangaripo Range Road .. .. .	" .. .. .	" .. .. .	64 15 0
	156	Whangaripo Valley Road—Wayby .. .. .	" .. .. .	" .. .. .	20 10 10
	157	Whareora—Mount Tiger .. .. .	Whangarei .. .. .	" .. .. .	91 10 0
	159	Arapohue .. .. .	Hobson .. .. .	Kaipara .. .. .	250 0 0
	160	Arapohue—Kohekohe .. .. .	" .. .. .	" .. .. .	100 0 0
	161	Aratapu—Dargaville (£1 for £1) .. .. .	" .. .. .	" .. .. .	100 0 0
	163	Avoca Special Settlement .. .. .	" .. .. .	" .. .. .	179 19 6
	166	Burch's land (road through) .. .. .	Otamatea .. .. .	" .. .. .	28 0 0
	168	Dargaville—Kaihu (£200, £1 for £1) .. .. .	Hobson .. .. .	" .. .. .	100 0 0
	170	Dargaville—Tangeteroria .. .. .	" .. .. .	" .. .. .	220 0 0
	172	Green's Road (Tauhoa) .. .. .	Rodney .. .. .	" .. .. .	50 0 0
	173	Hardie's Road—Paparua .. .. .	Otamatea .. .. .	" .. .. .	175 17 4
	174	Helensville—Port Albert .. .. .	Rodney & Waitemata .. .. .	" .. .. .	222 5 8
	176	Jolly's Range Road .. .. .	Hobson .. .. .	" .. .. .	150 0 0
	178	Katui—Kai-iwi .. .. .	Hobson & Hokianga .. .. .	" .. .. .	100 0 0
	179	Katui—Orangi .. .. .	Hokianga .. .. .	" .. .. .	100 0 0
	180	Kirikopini—Mangakahia .. .. .	Hobson .. .. .	" .. .. .	27 5 10
	181	Kohekohe—Maungakaramea (£1 for £1) .. .. .	" .. .. .	" .. .. .	200 0 0
	185	Makarau Railway-station—Kaukapakapa .. .. .	Waitemata .. .. .	" .. .. .	38 2 6
	186	Makarau Railway-station—West Coast Road .. .. .	Rodney & Waitemata .. .. .	" .. .. .	62 14 10
	187	Mangatu—Katui .. .. .	Hokianga .. .. .	" .. .. .	63 13 5
	190	Maropui—Kairara .. .. .	Hobson .. .. .	" .. .. .	105 4 6
	191	Matakohe .. .. .	Otamatea .. .. .	" .. .. .	70 0 0
	192	Matakohe—Hukatere .. .. .	" .. .. .	" .. .. .	2 16 0
	193	Matakohe—Mangonui .. .. .	" .. .. .	" .. .. .	140 1 0
	194	Matakohe Post-office Road Bridge .. .. .	" .. .. .	" .. .. .	100 0 0
	195	Matakohe—Tokatoka .. .. .	" .. .. .	" .. .. .	200 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 for Year ended 31st March, 1904.
		ROADS, ETC.—continued.			
		AUCKLAND—continued.			£ s. d.
104	196	Matakohe Wharf .. .. .	Otamatea	Kaipara	197 0 0
	197	Matakohe Wharf-Post-office .. .. .	"	"	147 12 6
	198	Maungaru Settlement .. .. .	Hobson	"	46 1 7
	199	Mitaitai-Tokatoka .. .. .	"	"	100 0 0
	201	Opanaki-Mangonui Bluff .. .. .	"	"	150 0 0
	202	Pahi-Paparoa .. .. .	Otamatea	"	204 7 6
	203	Paparoa-Matakohe .. .. .	"	"	99 17 11
	204	Paparoa-Maungaturoto .. .. .	"	"	98 17 8
	206	Port Albert-Welsford Junction .. .. .	Rodney	"	100 0 0
	207	Port Albert Wharf (£1 for £1) .. .. .	"	"	Cr. 50 0 0
	208	Puhoi-Makarau .. .. .	"	"	54 0 6
	209	Raupo Settlement-Tokatoka Post-office Road .. .. .	Otamatea	"	203 9 4
	210	Raupo Wharf .. .. .	"	"	30 6 6
	211	Sill's Road (Okahu) .. .. .	Hobson	"	100 0 0
	212	Tangihua (Block III.) .. .. .	"	"	50 0 0
	217	Tauhoa, Blocks X. and XI. .. .. .	Rodney	"	84 16 0
	218	Te Kopuru-Tikinui .. .. .	Hobson	"	200 0 0
	221	Tokatoka-Mangapai .. .. .	Whangarei, Hobson, and Otamatea	"	20 11 7
	222	Tokatoka Swamp .. .. .	Otamatea	"	93 16 3
	226	Woodhill Creamery and Station Road .. .. .	Waitemata	"	50 0 0
	227	Woodhill Creamery, through back blocks .. .. .	"	"	40 0 0
	228	Denby's Gully (Northcote) (£1 for £1) .. .. .	"	Waitemata	150 0 0
	229	Harataunga-Blind Bay (Great Barrier Island) .. .. .	No county	"	48 4 0
	230	Henderson-West Coast .. .. .	Waitemata	"	100 0 0
	232	Puhoi District-Tahekeroa Railway-station .. .. .	Rodney & Waitemata	"	134 11 7
	233	Puhoi District-Tahekeroa Tunnel .. .. .	Rodney	"	75 0 0
	234	Puhoi-Komokoriki (£1 for £1) .. .. .	"	"	125 0 0
	235	Puhoi-Wainui .. .. .	"	"	100 0 0
	238	Waiwera-Wainui .. .. .	Waitemata & Rodney	"	216 17 11
	239	Warkworth-North Shore .. .. .	Ditto	"	241 14 7
	240	Cabbage Bay-Port Jackson Road .. .. .	Coromandel	Thames	100 0 0
	241	Coromandel-Thames .. .. .	Coromandel and Thames	"	784 18 7
	242	Harataunga Survey District Road to Sections 12 and 13, Block VIII. .. .. .	Coromandel	"	100 0 0
	244	Kairamarama Settlement roads .. .. .	"	"	100 0 0
	245	Waiau-Section 7, Coromandel .. .. .	"	"	100 0 0
	248	Panmure Wharf (repairs) .. .. .	Eden	Parnell	18 6 11
	250	Orakei Block-St. Heliers .. .. .	"	"	31 1 11
	252	Orakei Road-Bastion Battery (£1 for £1) .. .. .	"	"	50 0 0
	256	New Lynn-Huia .. .. .	Waitemata	Eden	52 0 0
	258	Whau Bridge-Asylum .. .. .	Eden	"	69 9 0
	259	Ararimu .. .. .	Manukau	Manukau	90 19 7
	260	Brookby Creamery Road .. .. .	"	"	81 4 0
	261	Clevedon-Orere .. .. .	"	"	4 9 5
	262	Ellerslie-Otahuhu .. .. .	Eden	"	100 0 0
	264	Great South Road-Whitford (£1 for £1) .. .. .	Manukau	"	Cr. 50 0 0
	265	Howick Beach-Cockle Bay (£1 for £1) .. .. .	"	"	24 2 2
	266	Howick Culvert (near wharf) .. .. .	"	"	51 19 10
	267	Hunua-Railway-station .. .. .	"	"	102 1 10
	269	Mataitai-Clevedon .. .. .	"	"	60 16 10
	270	Miranda Bridge .. .. .	"	"	241 2 3
	272	Otahuhu-Mercer (Great South Road) .. .. .	"	"	64 16 6
	273	Otahuhu-Papatoetoe (Great South Road) .. .. .	"	"	100 0 0
	274	Otahuhu-Railway-station .. .. .	"	"	197 13 0
	275	Otau .. .. .	"	"	112 19 9
	276	Otau Block-Ness Valley .. .. .	"	"	70 13 6
	277	Otau-Hunua .. .. .	"	"	61 18 8
	279	Tamaki Bridge (Panmure) .. .. .	Eden	"	37 13 10
	280	Turanga and Mungamungaroa Creek bridges .. .. .	Manukau	"	98 17 10
	283	Wairoa Bridge (Clevedon) .. .. .	"	"	50 0 0
	284	Wairoa River Road .. .. .	"	"	63 7 11
	286	Akaaka Swamp Road-Pukekohe Railway-station (£4 for £1) .. .. .	"	Franklin	73 1 6
	287	Awhitu Road Wharf .. .. .	"	"	41 13 4
	289	Bombay East-Pukekohe (£1 for £1) .. .. .	"	"	150 0 0
	290	Bregmen's Landing-Mercer .. .. .	Raglan	"	108 10 0
	291	Drury-Waikato, via Karaka .. .. .	Manukau	"	123 3 3
	294	Kelsey's-Port Waikato .. .. .	Raglan	"	100 0 5
	298	Maioro Swamp Road .. .. .	Manukau	"	50 0 0
	300	Mauku .. .. .	"	"	150 0 0
	301	Mauku-Pukekohe Railway-station (£1 for £2) .. .. .	"	"	239 1 2
	302	Mercer-Miranda (from Station to Section 124) .. .. .	"	"	47 15 0
	303	Mercer-Rangiriri .. .. .	Waikato and Manukau	"	5 17 8
	305	Opuatia No. 1 Block (access roads) .. .. .	Raglan	"	133 7 3
	306	Otorohaia Trig. Road .. .. .	"	"	85 11 1
	308	Pokeno-Paparata (Prendergast's) .. .. .	Manukau	"	75 0 0
	309	Pukekohe-Puni .. .. .	"	"	100 0 0
	312	Rangiriri-Cambridge .. .. .	Waikato	"	27 17 11
	313	Tuakau Bridge .. .. .	Raglan & Manukau	"	82 14 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 for Year ended 31st March, 1904.
<b>ROADS, ETC.—<i>continued.</i></b>					
<b>AUCKLAND—<i>continued.</i></b>					
104	314	Tuakau Bridge (approaches) .. ..	Raglan & Manukau	Franklin	£ 442 10 10
	315	Tuakau-Turner's Junction (£100, £1 for £1) ..	Raglan	"	154 11 9
	316	Turner's Junction—West Coast (through Block VI.) ..	"	"	247 16 4
	318	Waimai-Ngaruawahia <i>vid</i> Waingarō (£2,350, £1 for £1) .. ..	"	"	2,376 0 0
	319	Waipa (Sections 33 to 131) .. ..	"	"	38 13 0
	322	Waiuku—Awhitu .. ..	Manukau	"	107 1 3
	323	Waiuku—Mauku .. ..	"	"	39 12 1
	325	Cadman's Road (Block XVI.) .. ..	Ohinemuri	Ohinemuri	50 0 0
	326	Kaimanawa (Block VIII.), Waihou (Paeroa—Thames Road to river) .. ..	"	"	200 0 0
	327	Kauaeranga Valley .. ..	Thames	"	225 0 0
	328	Komata Swamp drains (£1 for £1) .. ..	Ohinemuri	"	46 10 0
	329	Matatoki .. ..	Thames	"	150 6 6
	330	Mill Road Block XVI., Waihou .. ..	Ohinemuri	"	100 0 0
	332	Netherton—Turua .. ..	Ohinemuri & Thames	"	173 18 9
	333	Paeroa—Waitoa .. ..	Ohinemuri	"	150 0 0
	335	Puke—Netherton .. ..	"	"	250 0 0
	336	Rangiora Road—Block XII., Waihou .. ..	"	"	50 0 0
	340	Works not specifically provided for .. ..	"	"	85 10 1
	341	Contingencies and engineering .. ..	"	"	373 2 2
		<b>Total—Auckland</b> .. ..			<b>£31,610 8 4</b>
<b>TE KUITI—</b>					
	343	Alexandra, Blocks X. and XI. (kauri to creamery) ..	Raglan	Waikato	121 18 7
	344	Aotea—Raglan .. ..	"	"	76 11 0
	345	Awaroa—Mahoe .. ..	Kawhia	"	225 5 0
	347	Caves Road .. ..	"	"	79 0 8
	351	Hamilton—Tuhikaramea .. ..	Waipa	"	100 0 0
	352	Hauturu .. ..	Kawhia	"	193 13 9
	353	Higginson's Road .. ..	Waipa	"	25 0 0
	355	Hutewai Branch Road .. ..	Kawhia	"	35 0 11
	356	Kaimango .. ..	"	"	39 13 3
	358	Karioi, Blocks VII. and IX. .. ..	Raglan and Kawhia	"	249 17 0
	359	Karioi Parish Block .. ..	Raglan	"	80 16 6
	361	Kauroa—Pakoka .. ..	Kawhia and Raglan	"	33 3 0
	362	Kawhia—Aotea .. ..	Kawhia	"	101 17 0
	363	Kihi .. ..	"	"	419 0 1
	364	Kihikihi—Otorohanga .. ..	"	"	99 15 7
	366	Mahoe .. ..	"	"	147 1 9
	367	Mahoenui—Kawhia South .. ..	"	Waikato and Egmont	3,071 5 3
	370	Mangapohue .. ..	"	Waikato	228 5 11
	373	Maungatautari Branch Road (through Sections 4 to 14, Blocks XIV. and II.) .. ..	West Taupo	"	150 0 0
	374	Okupata .. ..	Kawhia	"	249 19 1
	377	Pirongia—Kawhia .. ..	"	"	1,543 1 0
	378	Pirongia West .. ..	"	"	459 6 4
	379	Raglan—Ruapuke .. ..	Raglan	"	174 16 11
	381	Ruapuke—Aotea .. ..	"	"	85 18 2
	383	Shea's Road .. ..	Kawhia	"	71 0 8
	384	Tapuae .. ..	"	"	147 3 6
	385	Taumatotara .. ..	"	"	130 3 3
	386	Tawarau .. ..	"	"	297 0 11
	387	Te Kuiti—Otorohanga .. ..	"	Waikato and Egmont	247 10 9
	389	Tumutumu—Waitomo .. ..	"	Waikato	127 5 8
	390	Waimaori Hill (and Bridge) .. ..	Raglan	"	4 15 0
	391	Waingarō—Te Uku .. ..	"	"	79 6 9
	392	Waipa Bridge (Pirongia) (£1 for £1) .. ..	Waipa	"	50 0 0
	393	Waitetuna—Aotea .. ..	Kawhia and Raglan	"	174 9 10
	395	Waitetuna—Kauri .. ..	Raglan	"	20 0 0
	396	Waitetuna Valley Road .. ..	Kawhia	"	103 9 1
	397	Waitetuna—Whatawhata (£255, £1 for £1) .. ..	Raglan	"	4 16 0
	400	Wharaurua .. ..	Kawhia	"	149 17 11
	402	Whatawhata Swamp Road .. ..	Waipa	"	40 0 0
	405	Awakino—Torea .. ..	Kawhia	Egmont	2 0 0
	406	Mairoa .. ..	"	"	193 3 4
	407	Manganui .. ..	"	"	6 4 0
	408	Mangaotaki Bridge .. ..	"	"	40 16 6
	409	Mangaotaki—Mairoa .. ..	"	"	132 7 8
	410	Mangaotaki Valley .. ..	"	"	395 3 10
	412	Ngapaenga .. ..	"	"	185 9 2
	413	Ohura (north of Paeroa Stream) .. ..	Clifton	"	583 14 5
	415	Paemako—Ohura .. ..	Kawhia and Clifton	"	121 3 3
	416	Pungarehu .. ..	Kawhia	"	160 17 5
	417	Rohe—Potae tracks .. ..	Kawhia, Clifton, and West Taupo	Egmont, Waikato, and Bay of Plenty	79 7 5
	418	Te Kuiti—Porō-o-tarao .. ..	Kawhia and Clifton	Egmont	16 9 0
	419	Tunnel—Taumarunui .. ..	Clifton	"	207 1 0
	420	Turipoto .. ..	Kawhia	"	13 9 0
	421	Upper Awakino Valley .. ..	"	"	72 15 4
	423	Contingencies and engineering .. ..	"	"	104 9 7
		<b>Total—Te Kuiti</b> .. ..			<b>£11,951 17 0</b>

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

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure for Year ended 31st March, 1904.
		ROADS, ETC.—continued.			
		Rotorua—			£ s. d.
104	424	Arahiwi—Mamuku Railway-station .. ..	Rotorua and Piako	Bay of Plenty ..	100 3 6
	425	Bay of Plenty roads .. ..	Whakatane, Tauranga, and Opotiki	" ..	71 2 0
	427	Galatea—Te Teko .. ..	Whakatane ..	" ..	88 6 0
	428	Galatea—Waimana Valley, <i>via</i> Waiohau .. ..	" ..	" ..	198 5 0
	429	Hairini Bridge and approaches, Te Puke .. ..	Tauranga ..	" ..	400 0 0
	430	Kaikokupu—Taheke .. ..	Rotorua ..	" ..	280 8 4
	431	Kaimai .. ..	Tauranga and Piako	" ..	308 6 3
	432	Lichfield—Atiamuri .. ..	Piako, West Taupo, and East Taupo	" ..	62 5 0
	433	Maketu Survey District, Blocks II. and IV. (drains)	Tauranga ..	" ..	24 2 8
	434	Maketu—Te Ngae .. ..	Rotorua ..	" ..	238 10 7
	436	Mamaku Block .. ..	Rotorua and Piako	" ..	23 2 8
	437	Mamaku—Maraeroa—Oturoa Block .. ..	Ditto ..	" ..	194 7 6
	438	Mamaku Village .. ..	Rotorua ..	" ..	54 2 0
	439	Matata—Otamarakau .. ..	Whakatane ..	" ..	124 9 2
	440	Matata—Tamurenui Junction .. ..	" ..	" ..	100 0 0
	443	Omarumutu—Te Whaite .. ..	Opotiki ..	" ..	43 12 0
	444	Opotiki—Ormond .. ..	" ..	" ..	485 6 1
	445	Opotiki—Wairu Bay .. ..	" ..	" ..	75 0 0
	446	Oropi Settlement .. ..	Tauranga ..	" ..	115 9 4
	447	Otara River—Papamoa .. ..	Opotiki ..	" ..	197 12 2
	448	Otara and Waioeka Nos. 1 and 2 Bridges .. ..	" ..	" ..	125 0 0
	449	Otawa Nos. 1A and 1B .. ..	Tauranga ..	" ..	33 8 0
	450	Papamoa Settlements, Nos. 1 and 2 .. ..	" ..	" ..	100 3 6
	451	Pongakawa—Lake Rotoehu .. ..	Rotorua ..	" ..	105 11 6
	453	Rangiuru—Mangorewa Gorge .. ..	Rotorua & Tauranga	" ..	30 0 0
	455	Rotorua—Taupo, <i>via</i> Atiamuri .. ..	Rotorua and East Taupo	" ..	573 19 1
	456	Rotorua—Whakatane .. ..	Rotorua and Whakatane	" ..	579 7 10
	457	Ruahibi Bridge (Tauranga—Cambridge) .. ..	Tauranga ..	" ..	277 2 0
	460	Tarawera Bridge protection .. ..	Whakatane ..	" ..	30 5 0
	461	Taumata Block East .. ..	Rotorua ..	" ..	72 12 6
	462	Taumata Block West .. ..	" ..	" ..	10 17 4
	465	Terereatukahia Bridge .. ..	Tauranga ..	" ..	85 0 0
	466	Thompson's Track (Te Aroha—Tauranga Road)	Tauranga and Piako	" ..	200 0 0
	467	Tirau—Ngongataha .. ..	Rotorua ..	" ..	153 19 6
	468	Tirohanga Bridge (£1 for £1) .. ..	Opotiki ..	" ..	42 13 10
	469	Umurua Block .. ..	Rotorua and Piako	" ..	31 10 0
	470	Waiawa Block .. ..	Opotiki ..	" ..	98 15 0
	471	Waimana Block .. ..	Whakatane ..	" ..	155 7 6
	472	Waimana Gorge .. ..	" ..	" ..	239 16 4
	473	Wainui Bridge (Tauranga—Waihi Road)	Tauranga ..	" ..	100 0 0
	474	Waioeka River—Waiotahi Block .. ..	Opotiki ..	" ..	249 4 3
	475	Waioeka Valley .. ..	" ..	" ..	304 14 6
	476	Waiotahi Block .. ..	" ..	" ..	274 16 3
	477	Waiotahi Valley .. ..	" ..	" ..	23 8 0
	478	Waipapa Bridge (Tauranga—Waihi) .. ..	Tauranga ..	" ..	112 11 10
	479	Whakatane—Nukuhou .. ..	Opotiki and Whakatane	" ..	305 15 4
	481	Whakatane River protective-works .. ..	Whakatane ..	" ..	76 2 6
	484	Contingencies and engineering .. ..	" ..	" ..	73 2 4
		Total—Rotorua .. ..			£7,649 14 2
		HAWKE'S BAY—			
	486	Motu Village Road (Hallam's) .. ..	Opotiki ..	Bay of Plenty ..	65 8 6
	487	Arahihi .. ..	Cook ..	Waiapu ..	119 14 6
	488	Awanui—Tikitiki—Kawakawa .. ..	Waiapu ..	" ..	175 0 0
	489	Berry's Road (Hangaroa Survey District)	Cook ..	" ..	75 5 6
	490	Gisborne—Hick's Bay, <i>via</i> Tologa Bay .. ..	Cook and Waiapu ..	" ..	256 0 0
	491	Gisborne—Opotiki .. ..	Cook and Opotiki ..	Waiapu and Bay of Plenty	167 5 8
	492	Gisborne—Motu .. ..	Cook ..	Waiapu ..	190 6 1
	493	Gisborne—Rotorua (stock) .. ..	Cook and Whakatane	Waiapu and Bay of Plenty	76 3 6
	494	Gisborne—Waiapu (Waimamatine to Tuparoa)	Waiapu ..	Waiapu ..	400 0 0
	495	Gisborne—Waikaremoana .. ..	Cook and Wairoa ..	Waiapu and Hawke's Bay	495 16 3
	497	Gisborne—Wairoa, <i>via</i> Tiniroto .. ..	Ditto ..	Ditto ..	235 0 0
	499	Hangaroa—Tiniroto .. ..	Cook ..	Waiapu ..	200 0 0
	500	Karaka—Motu .. ..	" ..	" ..	69 18 11
	504	Mangatu .. ..	" ..	" ..	250 0 0
	506	Maerataha .. ..	" ..	" ..	406 10 10
	507	Mata Valley .. ..	Waiapu ..	" ..	200 0 0
	508	Motu District .. ..	Cook ..	" ..	139 8 8
	509	Muriwai—Mahia .. ..	Cook and Wairoa ..	Waiapu and Hawke's Bay	200 0 0
	510	Neill Road .. ..	Cook ..	Waiapu ..	501 19 7
	512	Nuhaka Springs—Wairoa—Mahia Road .. ..	Wairoa ..	Hawke's Bay ..	138 17 4

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

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure for Year ended 31st March, 1904.
		ROADS, ETC.— <i>continued.</i>			
		HAWKE'S BAY— <i>continued.</i>			
104	513	Oliver Road .. .. .	Cook .. .. .	Waiapu .. .. .	£ s. d. 239 17 6
	514	Parahaka-Cook County Boundary .. .. .	Waiapu .. .. .	" .. .. .	19 4 11
	515	Ruakituri Valley .. .. .	Cook .. .. .	" .. .. .	160 1 1
	517	Tapuwaeroa Valley .. .. .	Waiapu .. .. .	" .. .. .	300 0 0
	518	Tauwhareparae .. .. .	Cook .. .. .	" .. .. .	20 4 11
	519	Tauwhareparae-Arakihi .. .. .	" .. .. .	" .. .. .	100 0 0
	520	Tauwhareparae-Crown lands .. .. .	Waiapu .. .. .	" .. .. .	200 0 0
	522	Te Arai .. .. .	Cook .. .. .	" .. .. .	150 0 0
	523	Te Arai Bridge .. .. .	" .. .. .	" .. .. .	600 0 0
	525	Tologo-Arakihi .. .. .	" .. .. .	" .. .. .	37 18 6
	527	Waiapu Valley Road (Poroporo Stream) .. .. .	Waiapu .. .. .	" .. .. .	26 15 6
	528	Waihuka .. .. .	" .. .. .	" .. .. .	14 12 0
	529	Waimata-Tauwhareparae .. .. .	Cook .. .. .	" .. .. .	236 13 3
	530	Wainui .. .. .	" .. .. .	" .. .. .	200 0 0
	531	Waipiro Hot Springs, Tokomaru .. .. .	Waiapu .. .. .	" .. .. .	91 1 0
	532	Waipiro Hot Springs, Tologa Bay .. .. .	" .. .. .	" .. .. .	141 13 0
	533	Waipiro <i>via</i> Te Puia-Hekewai .. .. .	" .. .. .	" .. .. .	500 0 0
	534	Waipiro-Mata .. .. .	" .. .. .	" .. .. .	149 14 5
	535	Wairu Bay-East Cape .. .. .	Waiapu and Oпитiki .. .. .	Waiapu and Bay of Plenty .. .. .	88 16 2
	537	Whareponga-Reporua .. .. .	Waiapu .. .. .	Waiapu .. .. .	41 19 0
	538	Wha'atutu-Mangatu No. 1 (£1 for £1) .. .. .	Cook .. .. .	" .. .. .	300 0 0
	539	Mangaone .. .. .	Wairoa .. .. .	Hawke's Bay .. .. .	211 11 0
	541	Mohaka Bridge .. .. .	" .. .. .	" .. .. .	218 3 8
	542	Napier-Murimotu (royalty on timber) .. .. .	Hawke's Bay .. .. .	" .. .. .	36 19 9
	543	Napier-Wairoa .. .. .	Hawke's Bay and Wairoa .. .. .	" .. .. .	1,393 2 11
	544	Napier-Wairoa (Tongoio wash-out) .. .. .	Wairoa .. .. .	" .. .. .	19 2 6
	546	Potter's Road-Puketitiri .. .. .	Hawke's Bay .. .. .	" .. .. .	18 17 6
	547	Richmond Road-Block XVI., Pohue .. .. .	Wairoa and Hawke's Bay .. .. .	" .. .. .	375 0 0
	548	Rotokakarangu .. .. .	Wairoa .. .. .	" .. .. .	28 15 8
	549	Ruakituri .. .. .	Wairoa and Cook .. .. .	Waiapu and Hawke's Bay .. .. .	393 15 0
	550	Springs-Waikokopu .. .. .	Wairoa .. .. .	Hawke's Bay .. .. .	162 15 2
	552	Waikokopu .. .. .	" .. .. .	" .. .. .	99 14 1
	553	Wairoa Bridge (Frasertown) (on account of £7,000) .. .. .	" .. .. .	" .. .. .	58 9 4
	554	Wairoa-Mahia .. .. .	" .. .. .	" .. .. .	200 0 0
	555	Ahiweka (on account of £967) .. .. .	Waipawa .. .. .	Waipawa .. .. .	250 0 0
	556	Dannevirke-Tamaki .. .. .	" .. .. .	" .. .. .	125 0 0
	559	Mangabe .. .. .	" .. .. .	" .. .. .	297 12 0
	561	Mangapoaka Bridge .. .. .	" .. .. .	" .. .. .	384 5 1
	564	Mangatora Township-North-west Boundary, Weber County .. .. .	" .. .. .	Waipawa and Pahiatua .. .. .	350 0 0
	565	Maunga Road, Waikopiro (£1 for £1) .. .. .	" .. .. .	Waipawa .. .. .	300 0 0
	566	Ngapaeruru .. .. .	" .. .. .	" .. .. .	1,998 17 10
	568	Ormondville-Waikopiro .. .. .	" .. .. .	" .. .. .	153 7 6
	569	Paeroa .. .. .	" .. .. .	" .. .. .	173 10 9
	570	Porangahau-Wimbledon .. .. .	Patangata .. .. .	Waipawa and Pahiatua .. .. .	227 10 0
	573	Ruahine .. .. .	Waipawa .. .. .	Waipawa .. .. .	112 15 3
	574	Ruanui (Waikopiro) .. .. .	" .. .. .	" .. .. .	264 14 8
	575	Ruhia .. .. .	" .. .. .	" .. .. .	33 19 0
	579	Waikopiro .. .. .	" .. .. .	" .. .. .	352 16 3
	580	Waikopiro Improved-farm Settlement .. .. .	" .. .. .	" .. .. .	83 5 5
	581	Whakarara Road and Bridge .. .. .	" .. .. .	" .. .. .	200 0 0
	582	Angora .. .. .	Weber .. .. .	Pahiatua .. .. .	12 12 0
	584	Mill Stream Road .. .. .	" .. .. .	" .. .. .	86 12 0
	585	Oporae .. .. .	" .. .. .	" .. .. .	8 9 0
	586	Otawhao (Upper) .. .. .	Woodville .. .. .	" .. .. .	51 13 4
	587	Rhone Creek Deviation (£1 for £1) .. .. .	Weber .. .. .	" .. .. .	431 9 1
	589	Te Awapu ahi .. .. .	" .. .. .	" .. .. .	301 5 9
	590	Weber-Waione .. .. .	Weber and Akitio .. .. .	" .. .. .	246 3 8
	591	Wimbledon-North-west boundary, Weber County, <i>via</i> Waipatiki (£1,000, £1 for £1) .. .. .	Weber .. .. .	" .. .. .	1,091 7 5
	592	Works not specifically provided for .. .. .	" .. .. .	" .. .. .	31 6 8
	593	Contingencies and engineering .. .. .	" .. .. .	" .. .. .	126 16 11
		Total—Hawke's Bay .. .. .			£18,893 2 9
		TARANAKI—			
	594	Autawa .. .. .	Clifton .. .. .	Egmont .. .. .	150 0 0
	596	Derwent Improved-farm Settlement .. .. .	" .. .. .	" .. .. .	18 17 6
	597	Everett .. .. .	Taranaki .. .. .	" .. .. .	65 0 0
	598	Junction Road (£1 for £1) .. .. .	Clifton and Taranaki .. .. .	" .. .. .	901 10 10
	599	Kaipikari .. .. .	Clifton .. .. .	" .. .. .	100 0 0
	600	Kaka .. .. .	" .. .. .	" .. .. .	300 0 0
	601	Kelly .. .. .	Taranaki .. .. .	" .. .. .	100 0 0
	602	Maikai .. .. .	Clifton .. .. .	" .. .. .	120 6 6
	604	Makino .. .. .	" .. .. .	" .. .. .	184 16 0
	605	Mangaopa-Purangī .. .. .	" .. .. .	" .. .. .	391 10 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 for Year ended 31st March, 1931.
		ROADS, ETC.— <i>continued</i> .			
		TARANAKI— <i>continued</i> .			£ s. d.
104	607	Mataro .. .. .	Clifton	Egmont	549 14 0
	608	Matau .. .. .	"	"	300 15 4
	609	Mimi-Mokau (£445, £1 for £1)	"	"	195 12 2
	610	Mokau Ferry Service .. .. .	"	"	50 8 3
	611	Moki .. .. .	"	"	1,099 16 5
	612	Monmouth .. .. .	Stratford	"	50 0 0
	613	Ngatoto .. .. .	Clifton	"	99 3 4
	614	Okau .. .. .	"	"	120 13 4
	615	Okoke (£320, £1 for £1)	"	"	547 5 8
	616	Otaraoa .. .. .	"	"	175 18 5
	618	Piko .. .. .	"	"	274 12 10
	619	Pukemahoe .. .. .	"	"	78 3 7
	621	Stanley Road (£1 for £1)	Stratford	"	216 1 8
	622	Te Arei .. .. .	Taranaki	"	70 0 0
	623	Tooi .. .. .	Clifton	"	13 16 0
	624	Uruti .. .. .	"	"	1 7 9
	625	Barrett Road .. .. .	Taranaki	Taranaki	150 0 0
	626	Carrington .. .. .	"	"	324 0 9
	627	Egmont, Lower (£1 for £1)	"	"	454 0 9
	628	Kent (£100, £1 for £1)	"	"	209 8 10
	629	Korito .. .. .	"	"	100 0 0
	630	Manutahi .. .. .	"	"	76 8 5
	631	Maude .. .. .	"	"	28 1 5
	632	Okahu .. .. .	Egmont	"	217 5 7
	633	Pitone .. .. .	Taranaki	"	30 19 6
	634	Upper Frankley (£1 for £1)	"	"	220 0 0
	635	Mangawhero-iti Bridge (£1 for £1)	Stratford	Hawera	128 9 9
	637	Akama (flood damages)	"	Patea	20 0 0
	638	Arnold .. .. .	"	"	85 11 0
	639	Brewer (£1 for £1)	"	"	110 10 0
	640	Brewer Road-Taihore Road	"	"	990 8 8
	641	Ball Road .. .. .	Patea	"	54 3 10
	642	Clark's Track .. .. .	Stratford	"	10 0 0
	643	Douglas Road North (flood damages)	"	"	69 0 0
	644	Junction Road (Tawhiwhi Ridge)	"	"	1,046 15 4
	645	Kaitieke .. .. .	"	"	37 8 5
	646	Karewa Road .. .. .	Hawera	"	47 16 0
	648	Kohuratahi Road-Tangarakau River	Stratford	"	291 1 2
	649	Maben .. .. .	Patea	"	116 2 10
	650	Makahu .. .. .	Stratford	"	7 7 8
	651	Manga and Upper Punewhakau	"	"	80 9 6
	653	Mangaehu Bridge, Sections 18 and 19, Block II., Omona (£1 for £3)	"	"	88 6 2
	654	Mangaehu Road North (£1 for £1)	"	"	179 10 0
	655	Mangaehu Road South (£1 for £1)	"	"	300 0 0
	656	Mangaotuku (£1 for £1)	"	"	533 0 0
	657	Mangaowata .. .. .	"	"	177 15 0
	658	Mangere Improved-farm Settlement	"	"	365 9 8
	659	Marco .. .. .	"	"	50 5 10
	660	Mataimoana .. .. .	Patea	"	420 0 0
	662	Matirangi .. .. .	Stratford	"	99 3 2
	663	Moeawatea .. .. .	Hawera	"	33 17 6
	664	Moturoa .. .. .	Patea	"	5 0 0
	665	Murcott .. .. .	Stratford	"	127 16 0
	666	Nukuhau .. .. .	Patea	"	42 8 6
	667	O'Connor's Track .. .. .	Stratford	"	50 0 0
	668	Ohura (south of Paorae Stream)	Stratford and Clifton	Patea and Egmont	4,493 13. 1
	669	Okotuku .. .. .	Patea	Patea	20 0 0
	670	Patea River Bridge (Ball Road)	"	"	57 5 0
	671	Patea River (snagging)	"	"	200 0 0
	674	Pohokura .. .. .	Stratford	"	79 17 5
	675	Punewhakau (£1 for £1)	"	"	82 16 8
	676	Punewhakau Creek Bridge	"	"	7 14 0
	677	Putikituna .. .. .	"	"	90 2 4
	678	Raekohua .. .. .	"	"	15 12 0
	679	Rawhitiroa .. .. .	Hawera and Patea	"	1,187 5 5
	680	Rotorangi .. .. .	Patea	"	99 19 1
	683	Tangahoe .. .. .	Hawera	"	752 5 11
	684	Taumatatahi Improved-farm Settlement	Patea	"	13 14 8
	685	Tawhiwhi .. .. .	Stratford	"	9 10 0
	686	Topuni (£1 for £1)	"	"	273 6 9
	687	Tututawa (£270, £1 for £1)	"	"	318 19 10
	688	Upper Waitotara Valley	Patea	"	160 0 0
	689	Vera .. .. .	Stratford	"	78 14 1
	690	Weraweraonga .. .. .	Patea	"	189 19 8
	691	Whangamomona Valley	Stratford	"	21 19 1
	692	Whenuakura Valley	Patea	"	73 7 1
	693	Whitianga .. .. .	Stratford	"	250 0 0
	694	Works not specifically provided for	"	"	317 12 9
	695	Contingencies and engineering	"	"	349 1 1
		Total—Taranaki .. .. .			£22,696 7 3

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

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure for Year ended 31st March, 1901.
		ROADS, ETC.— <i>continued.</i>			£ s. d.
104	697	WANGANUI— Gorge-Ohutu Improved-farm Settlement (£458, £1 for £1)	Rangitikei	Rangitikei	479 8 4
	699	Hautapu Improved-farm Settlement .. ..	Wanganui	"	195 0 0
	700	Hautapu River Bridge, near Taihape (£1 for £1) ..	Rangitikei	"	135 10 0
	701	Hiwera .. ..	"	"	169 1 9
	702	Horouta-Pukeokahu (£500, £1 for £1) .. ..	Rangitikei and Hawke's Bay	"	620 2 8
	703	Huia (£150, £1 for £1) .. ..	Rangitikei	"	102 8 0
	704	Huikumu .. ..	Waimarino	"	89 14 3
	705	Hukaroa .. ..	"	"	20 12 6
	706	Kaka .. ..	Rangitikei	"	12 0 0
	707	Karetu .. ..	"	"	208 13 10
	708	Karioi-Rangiwaea .. ..	Waimarino	"	287 16 2
	709	Kauakeke .. ..	Rangitikei	"	164 4 8
	710	Kaweka (£150, £1 for £1) .. ..	"	"	180 0 0
	711	Kopurutuku .. ..	Waimarino	"	54 6 4
	713	Makohine Valley .. ..	Rangitikei	"	195 15 11
	714	Makotuku Valley .. ..	Waimarino	"	297 3 9
	715	Mangahouhou .. ..	"	"	85 19 9
	716	Mangamahoe Bridge .. ..	Rangitikei	"	11 15 9
	717	Mangamahoe-Mataroa .. ..	"	"	550 4 3
	718	Manganui-o-te-ao .. ..	Waimarino	"	111 5 1
	719	Mangaone-Mataroa .. ..	Rangitikei	"	615 5 11
	720	Mangapapa (£100, £1 for £1) .. ..	"	"	100 0 0
	721	Mangarewa .. ..	Waimarino	"	75 3 7
	722	Mangatete .. ..	"	"	134 4 6
	723	Mangatoroa extension .. ..	"	"	44 0 6
	724	Mangaweka-Te Kapua .. ..	Rangitikei	"	808 3 1
	725	Mangawharariki .. ..	"	"	140 17 8
	726	Mangawhero Bridge (Aberfeldie) .. ..	Wanganui	"	1,257 5 7
	727	Mangawhero-Murimotu .. ..	Waimarino	"	87 4 2
	728	Masterton-Tenui Improved-farm Settlement ..	Rangitikei	"	207 14 10
	729	Matahiwi-Mangaetoroa .. ..	Waimarino	"	57 15 0
	730	Mataiaponga (£70, £1 for £1) .. ..	Rangitikei	"	53 11 3
	731	Mataroa-Mangaweka .. ..	"	"	172 3 5
	732	Middle Road .. ..	Waimarino	"	184 6 1
	733	Moawhango Bridge, Horouta .. ..	Rangitikei	"	24 12 6
	736	Moawhango-Te Horo .. ..	Hawke's Bay and Wanganui	"	94 17 9
	737	Moawhango Valley Road (£111, £1 for £1) ..	Rangitikei	"	148 9 2
	738	Motete extension .. ..	Waimarino	"	31 7 0
	739	Ohakura .. ..	Wanganui	"	124 16 6
	741	Ohingaiti-Waiouru .. ..	Rangitikei, Wanganui, and Waimarino	"	2,509 15 8
	742	Ohutu (access to W. A. Spring and others) ..	Rangitikei	"	13 10 0
	743	Ohutu Improved farm Settlement .. ..	"	"	267 2 7
	745	Orakura Improved-farm Settlement .. ..	"	"	191 13 5
	746	Otaranoho .. ..	Waimarino	"	92 7 5
	747	Otuarei Improved-farm Settlement .. ..	Rangitikei	"	21 9 8
	748	Paengaroa-Turangarere .. ..	Wanganui	"	269 6 9
	749	Pohonuiatane Block (£250, £1 for £1) .. ..	Rangitikei	"	295 9 2
	750	Pohonuiatane District .. ..	"	"	186 17 6
	751	Raetihi flood damages .. ..	Waimarino	"	97 7 7
	752	Raetihi-Ohura .. ..	"	"	125 10 1
	753	Raetihi-Parapara-Mason's .. ..	Waimarino and Wanganui	"	124 17 0
	754	Rangitikei Bridge, Mangaweka .. ..	Rangitikei and KIWITEA	"	3,246 15 4
	755	Rangitikei Bridge, Otara .. ..	Ditto	"	255 11 2
	756	Rangitikei Bridge, Vinegar Hill (£1 for £1) ..	"	"	54 3 0
	757	Rata-Maire .. ..	Waimarino	"	99 17 0
	758	Raupiu .. ..	Wanganui	"	65 10 10
	759	Retaruke Valley .. ..	Waimarino	"	97 2 0
	760	Rongoiti Improved-farm Settlement .. ..	Wanganui	"	109 14 6
	761	Rotoaira-Waimarino .. ..	Waimarino, East Taupo, and West Taupo	Rangitikei, Egmont, and Bay of Plenty	82 3 0
	762	Ruanui-Turangarere .. ..	Wanganui	Rangitikei	38 17 0
	763	Taheke .. ..	Rangitikei	"	137 9 3
	765	Taihape and Mangaweka flood damages .. ..	"	"	75 0 0
	766	Taihape-Mataroa .. ..	Rangitikei and Wanganui	"	1,518 1 0
	767	Taihape-Otuarei .. ..	Rangitikei and Hawke's Bay	"	104 13 10
	768	Taihape Township roads (£350, £1 for £1) ..	Rangitikei	"	124 2 3
	770	Taumararui-Ohakune .. ..	Waimarino and West Taupo	Rangitikei and Egmont	251 6 6
	771	Te Komai .. ..	Wanganui	Rangitikei	99 19 2
	772	Te Kumu-Mangaone (£1 for £1) .. ..	Rangitikei	"	100 0 0
	773	Torere-Horouta .. ..	"	"	255 9 6
	774	Turakina Bridge, Lilburn's Ford (£1 for £1) ..	"	"	110 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 for Year ended 31st March, 1901.
		ROADS, ETC.— <i>continued</i> .			
		WANGANUI— <i>continued</i> .			£ s. d.
104	775	Turakina Valley (£305, £1 for £1) .. ..	Rangitikei ..	Rangitikei ..	759 17 2
	776	Turakina Valley (extension) .. ..	Waimarino and Wanganui ..	" ..	428 17 8
	778	Waipuna Ridge .. ..	Waimarino ..	" ..	215 19 2
	782	Wanganui District Flood-damages .. ..	Waimarino, Wanganui, and Rangitikei ..	" ..	131 6 4
	784	Weston .. ..	Rangitikei ..	" ..	46 2 5
	785	Makakaho (Upper Waitotara) .. ..	Patea ..	Patea ..	285 10 7
	786	Puao (£1 for £1) .. ..	" ..	" ..	101 5 3
	787	Tangarakau River .. ..	Stratford ..	" ..	200 0 0
	788	Rangitikei Bridge, Bull's .. ..	Rangitikei and Manawatu ..	Manawatu ..	739 6 11
	789	Village settlements .. ..	" ..	" ..	405 6 3
	790	Works not specifically provided for .. ..	" ..	" ..	264 19 11
	791	Contingencies and engineering .. ..	" ..	" ..	172 1 8
		Total—Wanganui .. ..	" ..	" ..	£23,034 17 0
		WELLINGTON—			
	792	Hautapu No. 2 .. ..	Rangitikei ..	Oroua ..	188 12 0
	793	Kawatau North (£73, £1 for £1) .. ..	" ..	Rangitikei ..	26 11 6
	794	Makopua .. ..	" ..	" ..	78 7 2
	795	Omatane .. ..	" ..	" ..	150 14 9
	796	Potaka .. ..	" ..	" ..	213 5 0
	797	Apiti Main South (£1 for £1) .. ..	Kiwitea and Pohangina ..	Oroua ..	65 1 6
	798	Apiti-Rangiwahia (Main South Road) .. ..	Ditto ..	" ..	414 4 4
	799	Ashurst Domain (groins) .. ..	Kairanga ..	" ..	30 0 0
	800	Auputa (£217, £1 for £1) .. ..	Kiwitea ..	" ..	79 14 9
	801	Coal Creek and Horopito Stream Bridges (Apiti-Norsewood Road) .. ..	Pohangina ..	" ..	16 3 8
	802	Conspicuous Road .. ..	Kiwitea ..	" ..	93 18 3
	804	Hautapu-Ruahine .. ..	Kiwitea and Rangitikei ..	" ..	202 19 10
	805	Kawatau Improved-farm Settlement .. ..	Kiwitea ..	" ..	131 19 10
	806	Kawatau Valley (£300, £1 for £1) .. ..	" ..	" ..	474 1 10
	807	Kawera .. ..	" ..	" ..	142 18 1
	809	Kimbolton .. ..	" ..	" ..	109 0 0
	810	Kiwitea Middle Road (Tapuae Block) .. ..	" ..	" ..	190 10 8
	811	Lagoon Road (£1 for £1) .. ..	" ..	" ..	65 0 0
	812	Mangamoko (Middle) .. ..	" ..	" ..	100 0 0
	813	Mangamoko (Sandon Block) .. ..	" ..	" ..	100 0 0
	815	Mangarere Road (Hautapu Block) .. ..	" ..	" ..	166 19 10
	816	Mangawharariki (£1 for £1) (see also Wanganui District) .. ..	" ..	" ..	139 19 5
	817	McBeth's-Birmingham .. ..	" ..	" ..	200 0 0
	818	Ohingaiti-Pemberton (£350, £1 for £1) .. ..	" ..	" ..	322 18 0
	819	Onslow .. ..	" ..	" ..	199 14 8
	820	Pemberton Improved-farm Settlement .. ..	" ..	" ..	92 0 7
	821	Pohangina .. ..	Pohangina ..	" ..	112 9 4
	823	Pohangina Valley Forest Reserve .. ..	" ..	" ..	166 0 6
	824	Potaka Low-level Bridge .. ..	Kiwitea and Rangitikei ..	Oroua and Rangitikei ..	86 15 2
	825	Pourangaki (£1 for £1) .. ..	Kiwitea ..	Oroua ..	100 0 0
	827	Tap Road .. ..	" ..	" ..	49 17 1
	828	Titirangi .. ..	" ..	" ..	118 10 9
	830	Tunipo .. ..	Pohangina ..	" ..	21 18 4
	831	Umutoi Road .. ..	Kiwitea ..	" ..	130 8 1
	834	Palmerston-Foxton (Ngawakarau) .. ..	Kairanga ..	Palmerston & Manawatu ..	288 10 0
	835	Akaroa Road .. ..	Akitio ..	Pahiatua ..	14 13 0
	837	Akitio River Suspension Bridge .. ..	" ..	" ..	43 19 1
	838	Ballance-Manawatu Gorge .. ..	Pahiatua ..	" ..	661 15 0
	839	Central Road (Hall Farm-homestead Settlement) .. ..	" ..	" ..	195 11 8
	840	Christchurch Association .. ..	Masterton ..	" ..	26 4 4
	841	Oonoor-Kumeroa .. ..	Pahiatua and Woodville ..	" ..	100 0 0
	842	Cross Road (Hall Survey District) .. ..	Pahiatua ..	" ..	154 1 11
	843	Dew's Road .. ..	" ..	" ..	114 11 7
	844	Eglinton .. ..	" ..	" ..	188 9 9
	845	Girdswood .. ..	" ..	" ..	100 0 0
	846	Hill Road .. ..	" ..	" ..	78 16 6
	847	Huia and Waikereru .. ..	Akitio ..	" ..	637 15 9
	848	Hukanui-Mangamaire .. ..	Pahiatua ..	" ..	98 16 4
	849	Kaitawa Ridge .. ..	" ..	" ..	164 6 6
	850	Kaituna .. ..	Akitio ..	" ..	133 19 5
	851	Kawakawa .. ..	" ..	" ..	121 8 10
	852	Kopikopiko Road .. ..	Pahiatua ..	Masterton ..	544 2 5
	853	Korora .. ..	Akitio ..	Pahiatua ..	68 4 5
	854	Kuware .. ..	Masterton ..	" ..	6 0 0
	855	Lang's Bridge .. ..	Mauriceville ..	Masterton ..	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 for Year ended 31st March, 1904.
		ROADS, ETC.—continued.			
		WELLINGTON—continued.			
104	856	Makairo—Coonor .. .. .	Pahiatua .. .. .	Pahiatua .. .. .	£ s. d. 331 11 4
	857	Makairo—Kumeroa .. .. .	Pahiatua and Woodville .. .. .	" .. .. .	117 14 4
	859	Makoura Road .. .. .	Akitio .. .. .	" .. .. .	55 8 6
	860	Makuri—Pongaroa .. .. .	" .. .. .	" .. .. .	1,133 2 11
	861	Makuri Township .. .. .	Pahiatua .. .. .	" .. .. .	30 10 3
	862	Manawatu Bridge (Upper Gorge) .. .. .	Pahiatua and Woodville .. .. .	" .. .. .	3,502 14 2
	864	Mangahao (Tutaekara) .. .. .	Pahiatua .. .. .	" .. .. .	104 8 2
	866	Mangatainoka River protective works .. .. .	" .. .. .	" .. .. .	90 0 0
	867	Mangatiti .. .. .	Akitio .. .. .	" .. .. .	522 17 2
	868	Mangatoro Stream Bridge .. .. .	Pahiatua .. .. .	" .. .. .	72 11 8
	869	Manuhara (£100, £1 for £1) .. .. .	Akitio .. .. .	" .. .. .	145 17 1
	870	Marainanga Road .. .. .	" .. .. .	" .. .. .	70 0 5
	871	Mariua Ridge Road .. .. .	Pahiatua .. .. .	" .. .. .	98 3 3
	872	McLeod's .. .. .	Akitio .. .. .	" .. .. .	47 9 11
	873	Moore's Road Bridge .. .. .	Pahiatua .. .. .	" .. .. .	131 17 7
	874	Mount Arthur Road .. .. .	Akitio .. .. .	" .. .. .	163 19 5
	877	Ngaturi—Aohanga .. .. .	Pahiatua .. .. .	" .. .. .	16 2 0
	879	Nikau—Omata .. .. .	" .. .. .	" .. .. .	44 13 0
	880	Ohineriata .. .. .	" .. .. .	" .. .. .	80 11 2
	881	Pahiatua Nos. 1, 2, 3, 4 .. .. .	Akitio .. .. .	" .. .. .	355 5 1
	882	Pahiatua—Palmerston .. .. .	Pahiatua & Kairanga .. .. .	Pahiatua & Palmerston .. .. .	982 18 8
	883	Pakowai Road .. .. .	Akitio .. .. .	Pahiatua .. .. .	25 19 8
	884	Pakowai—Tenui .. .. .	" .. .. .	" .. .. .	144 0 6
	885	Paraengahuata .. .. .	" .. .. .	" .. .. .	123 11 2
	886	Piper's Road .. .. .	Pahiatua .. .. .	" .. .. .	393 16 6
	887	Pongaroa—Aohanga .. .. .	Akitio .. .. .	" .. .. .	255 19 4
	888	Pongaroa Township .. .. .	" .. .. .	" .. .. .	18 19 2
	889	Pukewai .. .. .	Pahiatua .. .. .	" .. .. .	178 4 6
	890	Rakaunui Bridle-track .. .. .	Akitio .. .. .	" .. .. .	195 8 2
	891	Rakaunui Village Settlement Bridle-track (Sections 20—22) .. .. .	" .. .. .	" .. .. .	1 4 0
	892	Rakaunui Road .. .. .	" .. .. .	" .. .. .	442 6 1
	893	Range Road .. .. .	" .. .. .	" .. .. .	390 8 8
	894	Rock Road .. .. .	Pahiatua .. .. .	" .. .. .	81 14 3
	895	Spur Road .. .. .	Akitio .. .. .	" .. .. .	184 7 6
	896	Sugar-loaf Road .. .. .	" .. .. .	" .. .. .	239 18 5
	897	Tiraumea Road .. .. .	Pahiatua .. .. .	" .. .. .	52 9 10
	898	Towai .. .. .	Akitio .. .. .	" .. .. .	376 14 7
	899	Turitea—Makuri .. .. .	Pahiatua .. .. .	" .. .. .	42 7 1
	900	Tutaekara—Nikau .. .. .	" .. .. .	" .. .. .	90 8 3
	901	Utewai Road (Waterfalls) .. .. .	Masterton .. .. .	" .. .. .	349 3 2
	903	Waterfalls—Waione .. .. .	Akitio & Masterton .. .. .	Pahiatua and Masterton .. .. .	1,529 7 4
	905	Waihi—Akitio .. .. .	Akitio .. .. .	Pahiatua .. .. .	244 16 8
	906	Waihi Valley .. .. .	" .. .. .	" .. .. .	474 1 0
	907	Waihoki Valley .. .. .	" .. .. .	" .. .. .	471 14 3
	908	Waione roads .. .. .	" .. .. .	" .. .. .	199 15 2
	910	Waiowaka Road .. .. .	" .. .. .	" .. .. .	201 17 3
	911	Waipatukaka .. .. .	" .. .. .	" .. .. .	214 11 3
	912	Waituna Road (Makairo) .. .. .	Pahiatua .. .. .	" .. .. .	44 19 9
	915	Alfredton—Waterfalls .. .. .	Masterton .. .. .	Masterton .. .. .	287 6 5
	916	Barton's Road .. .. .	Masterton and Mauriceville .. .. .	" .. .. .	144 15 8
	917	Bell's Road .. .. .	Eketahuna .. .. .	" .. .. .	49 5 6
	918	Bideford (Mangapakeha) (£1 for £1) .. .. .	Masterton .. .. .	" .. .. .	136 5 0
	921	Dagg's Road .. .. .	Mauriceville .. .. .	" .. .. .	150 0 0
	923	Falkner's Road .. .. .	Eketahuna .. .. .	" .. .. .	223 2 4
	924	Flat Bush (£1 for £1) .. .. .	Masterton .. .. .	" .. .. .	196 10 0
	925	Glendonald (Wairere) .. .. .	" .. .. .	" .. .. .	150 0 0
	926	Hinemoa—Alfredton Road .. .. .	Masterton and Pahiatua .. .. .	Masterton and Pahiatua .. .. .	14 2 6
	927	Hukanui—Kakariki .. .. .	Eketahuna .. .. .	Masterton .. .. .	20 0 0
	928	Hukanui—Pahiatua .. .. .	" .. .. .	" .. .. .	196 3 10
	929	Hukanui Railway-station—Hamua Bridge .. .. .	" .. .. .	" .. .. .	143 7 6
	930	Kaipororo .. .. .	Eketahuna and Mauriceville .. .. .	" .. .. .	25 16 0
	932	Larsen's Road .. .. .	Eketahuna .. .. .	" .. .. .	46 16 3
	933	Mairi-iri (Kapua Block) (£1 for £1) .. .. .	Masterton .. .. .	" .. .. .	150 0 0
	935	Mangamahoe .. .. .	Mauriceville .. .. .	" .. .. .	161 18 7
	936	Mangaone (Section 120, Block I.) .. .. .	Eketahuna .. .. .	" .. .. .	29 2 9
	937	Mangaoronga .. .. .	" .. .. .	" .. .. .	61 1 0
	938	Mangaparapara (£1 for £1) .. .. .	Masterton .. .. .	" .. .. .	300 0 0
	940	Mangaraupi .. .. .	Eketahuna .. .. .	" .. .. .	41 4 9
	941	Mangaroa .. .. .	" .. .. .	" .. .. .	14 8 6
	942	Mangatainoka River Bridge (Hamua) .. .. .	Pahiatua .. .. .	" .. .. .	25 0 5
	945	Mangatainoka Valley .. .. .	Eketahuna .. .. .	" .. .. .	199 12 6
	946	Mari's Road .. .. .	" .. .. .	" .. .. .	73 11 7
	947	Masterton—Gladstone (£1 for £1) .. .. .	Masterton and Wairarapa South .. .. .	" .. .. .	298 2 6
	948	Masterton—Tenui (£1 for £1) .. .. .	Masterton and Castlepoint .. .. .	" .. .. .	100 0 0

TABLE No. 4—continued.

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

Vote No.	Item No.	Name of Work.	County.	Electorate	Net Expenditure for Year ended 31st March, 1904.
		ROADS, ETC.—continued.			
		WELLINGTON—continued.			
104	950	Maungatakatō .. .. .	Masterton ..	Masterton ..	£ 71 7 1
	951	Miki Miki .. .. .	" ..	" ..	15 9 0
	952	Mount Baker (Tawataia Tollgate), Mangamahoe .. .. .	" ..	" ..	40 18 4
	954	Mount Bruce .. .. .	Mauriceville and Masterton ..	" ..	633 11 1
	956	Parkville—Mangatainoka .. .. .	Eketahuna ..	" ..	31 7 1
	958	Parkville (South Road) .. .. .	" ..	" ..	0 4 0
	959	Pori .. .. .	Masterton ..	" ..	0 15 0
	960	Pukehoi .. .. .	Eketahuna ..	" ..	39 4 7
	961	Puketoi .. .. .	Masterton ..	" ..	78 2 1
	962	Ruamahanga Bridge (Upper Opaki) .. .. .	Masterton and Mauriceville ..	" ..	2,171 6 1
	963	Saunders Road .. .. .	Masterton ..	" ..	143 2 7
	964	Stirling Block .. .. .	Eketahuna ..	" ..	52 6 0
	968	Upper Opaki (£1 for £1) .. .. .	Masterton ..	" ..	136 9 9
	969	Waingawa .. .. .	" ..	" ..	299 4 0
	972	Waiwera Block .. .. .	Eketahuna and Pahiatua ..	Masterton and Pahiatua ..	161 0 8
	973	Wangaehu (£1 for £1) .. .. .	Masterton and Mauriceville ..	Masterton ..	249 11 9
	975	Beef Creek Road .. .. .	Wairarapa South ..	Wairarapa ..	125 0 0
	976	Bismarck Road .. .. .	Wairarapa South and Masterton ..	" ..	229 19 0
	977	Blairlogie—Homewood (£117, £1 for £1) .. .. .	Masterton ..	" ..	583 14 9
	979	Cross Creek .. .. .	Featherston ..	" ..	20 11 5
	980	Fernyhurst Road (£150, £1 for £1) .. .. .	Masterton ..	" ..	415 7 7
	981	Gladstone—East Coast .. .. .	Wairarapa South ..	" ..	239 12 3
	983	Hautotara Traffic-bridge (£1 for £1) .. .. .	Featherston ..	" ..	15 10 9
	984	Hinau Gully .. .. .	Wairarapa South ..	" ..	23 3 9
	985	Kaitangata .. .. .	" ..	" ..	229 10 0
	986	Kaiwhata Valley .. .. .	" ..	" ..	386 12 10
	988	Mangaru .. .. .	Masterton ..	" ..	45 0 0
	989	Mangatarere Valley .. .. .	Wairarapa South ..	" ..	86 17 0
	990	Martinborough—Gladstone (£1 for £1) .. .. .	Featherston and Wairarapa South ..	" ..	11 15 0
	991	Martinborough—Pahaoa .. .. .	Featherston ..	" ..	100 0 0
	992	Moffat and Jarvis Road .. .. .	Wairarapa South ..	" ..	148 19 5
	993	McNaughton's Road .. .. .	Masterton ..	" ..	106 0 6
	994	Ngakonui .. .. .	Featherston ..	" ..	300 6 7
	995	Pahaoa (£1 for £1) .. .. .	" ..	" ..	470 3 1
	996	Pahaoa Bridge .. .. .	" ..	" ..	25 2 9
	997	Pahaoa—Glendhu .. .. .	" ..	" ..	7 3 0
	998	Para (£1 for £1) .. .. .	Wairarapa South ..	" ..	52 10 0
	999	Ponatahi .. .. .	Wairarapa South and Featherston ..	" ..	220 2 5
	1000	Range Road (£1 for £1) .. .. .	Featherston ..	" ..	199 5 2
	1001	Rocky Hill .. .. .	Wairarapa South ..	" ..	53 19 6
	1002	Ruakokopatuna .. .. .	Featherston ..	" ..	20 18 6
	1004	Ruamahanga Bridge, Waihenga (£1 for £1) .. .. .	" ..	" ..	300 0 0
	1005	Te Awaite (Pine Bush Corner) .. .. .	" ..	" ..	140 6 2
	1006	Turner's Road .. .. .	Wairarapa South ..	" ..	4 3 0
	1007	Waihora Bridge .. .. .	Masterton ..	" ..	298 11 6
	1008	Waiohine Valley .. .. .	Wairarapa South ..	" ..	233 13 7
	1009	Woodside—Waiohine .. .. .	Featherston ..	" ..	85 4 4
	1010	Belmont—Pahautanui .. .. .	Hutt ..	Hutt and Otaki ..	25 10 5
	1012	Hokio (£1 for £1) .. .. .	Horowhenua ..	Otaki ..	100 0 0
	1013	Levin—Shannon (£1 for £1) .. .. .	" ..	Otaki and Manawatu ..	650 0 0
	1014	Kimberley Road .. .. .	" ..	Otaki ..	31 7 0
	1015	Manakau North .. .. .	" ..	" ..	84 15 0
	1016	Manakau South .. .. .	" ..	" ..	72 0 0
	1017	Mangakotukutuku .. .. .	Hutt ..	" ..	200 0 0
	1018	Mangaone .. .. .	Horowhenua ..	" ..	194 8 4
	1022	Ohau Bridge (£300, £1 for £1) .. .. .	" ..	" ..	1,000 0 0
	1027	Porotawhao (Levin—Foxton) .. .. .	Horowhenua and Manawatu ..	Otaki and Manawatu ..	150 0 0
	1029	Waikanae Beach Road .. .. .	Horowhenua ..	Otaki ..	161 1 11
	1030	Waikanae—Paikakariki .. .. .	Hutt ..	" ..	848 11 1
	1032	Wainui Stream Road .. .. .	" ..	" ..	146 14 1
	1033	Waitohu Valley .. .. .	Horowhenua ..	" ..	114 16 0
	1036	Ebden's Road .. .. .	Hutt ..	Hutt ..	100 0 0
	1037	Happy Creek Bridge (Akatarewa) .. .. .	" ..	" ..	50 0 0
	1038	Hutt Bridge (rebuilding) .. .. .	Borough of Lower Hutt ..	" ..	2,252 16 11
	1039	Lee's Creek Bridge (Akatarewa) .. .. .	Hutt ..	" ..	50 0 0
	1041	Pakuratahi Bridge .. .. .	" ..	" ..	150 0 0
	1042	Waikanae—Upper Hutt .. .. .	" ..	Otaki and Hutt ..	300 0 0
	1044	Wainuiomata Valley .. .. .	" ..	Hutt ..	25 0 0
	1045	Village settlement roads .. .. .	" ..	" ..	57 12 2
	1047	Works not specifically provided for .. .. .	" ..	" ..	132 16 10
	1048	Contingencies and engineering .. .. .	" ..	" ..	Cr. 108 8 6
		Total—Wellington .. .. .			£42,957 18 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 for Year ended 31st March, 1901.
ROADS, ETC.— <i>continued.</i>					
NELSON—					£ s. d.
104	1050	Eves Valley (Waimea West) (£1 for £1)	Waimea	City of Nelson	60 0 0
	1051	French Pass, Admiralty Bay, Croixelles tracks	Sounds	"	81 1 6
	1052	Nelson-Rai Saddle	Waimea	"	250 0 0
	1055	Ronga Saddle—Whangarae and Onetea	"	"	85 2 6
	1058	Aorere Valley Bridge	Collingwood	Motueka	99 18 3
	1059	Bainham	"	"	100 0 0
	1060	Belgrove—Tarnedale	Waimea and Ashley	Motueka and Hurunui	110 1 4
	1061	Belgrove—Upper Wai-iti	Waimea	Motueka	104 9 8
	1062	Bonny Doon—Bainham	Collingwood	"	199 18 9
	1063	Brooklyn Valley	Waimea	"	94 10 6
	1064	Brooklyn Valley Bridle-track	"	"	31 9 8
	1066	Collingwood—Burton Ale Creek	Collingwood	"	100 0 0
	1067	Collingwood (Main Road) (£1 for £1)	Collingwood	Motueka	89 13 9
	1068	Cook's Road—Bonny Doon	"	"	49 13 6
	1070	East Road (long cutting)—Pohara	"	"	200 0 0
	1072	Foxhill Bridge	Waimea	"	200 0 0
	1073	Glenrae	"	"	100 0 0
	1074	Glenroy Bridge (approaches)	Inangahua	"	172 4 3
	1076	Graham River Bridge	Waimea	"	42 7 0
	1077	Hewitson's Hill	"	"	75 0 0
	1079	Horse Terrace—Hunter's	Inangahua	"	97 11 3
	1081	Kaituna—Ferntown	Collingwood	"	100 0 0
	1082	Kaituna (Lower)	"	"	50 0 0
	1083	Karamea—Mud Flat	Buller	"	300 0 0
	1088	Mangles—Braeburn	Inangahua	"	100 0 0
	1090	Mangles Valley	"	"	150 0 0
	1092	Matakitaki Bridge and approaches, Murchison	"	"	5,467 15 6
	1094	Mokihinui—Little Wanganui	Buller	"	715 11 9
	1099	Motupiko Bridge (repairs)	Waimea	"	2 16 7
	1101	Motupiko (Upper)	"	"	241 14 0
	1107	Murchison	Inangahua	"	187 16 2
	1108	Murchison—Fern Flat	"	"	65 15 6
	1109	Neudorf—Dovedale	Waimea	Motueka and City of Nelson	41 18 10
	1110	Nguroa—Puponga	Collingwood	Motueka	50 0 0
	1113	Oparara Bridge	Buller	"	200 0 0
	1114	Oparara River (Limestone Bluff)	"	"	100 0 0
	1116	Pakawau Bush Road	Collingwood	"	50 0 0
	1117	Pakawau—Tamatea	"	"	150 0 0
	1120	Pretty Bridge Valley (bridge)	Waimea	"	200 0 0
	1121	Promised Land (extension)	Buller	"	300 0 0
	1126	Riwaka Valley	Waimea	"	92 10 9
	1128	Slips Road	Inangahua	"	56 14 6
	1133	Tadmor—Sherry	Waimea	"	150 0 0
	1134	Tadmor (Upper)	"	"	102 17 6
	1136	Takaka—Riwaka (£1 for £1)	Collingwood and Waimea	"	75 0 0
	1138	Tiraumea—Tutaki Plain	Inangahua	"	100 0 0
	1139	Tutaki	"	"	35 0 0
	1141	Wairoa (Upper)	Waimea	"	10 10 0
	1142	Waitapu (Willcock's Road)	Collingwood	"	537 8 5
	1150	Boatman's Valley	Inangahua	Buller	158 0 0
	1151	Brazil	"	"	123 17 0
	1157	Burke's Creek—Reefton	"	"	22 3 11
	1160	Crushington	"	"	106 9 6
	1162	Inangahua Bridge, Reefton	"	"	56 11 0
	1165	Larry's Creek (protective works)	"	"	248 17 2
	1166	Maruia, via Caslani's	"	"	42 10 0
	1172	Little Grey River Bridge (near Ikamatoa)	"	Grey	313 0 4
	1173	Works not specifically provided for	"	"	9 15 0
	1174	Contingencies and engineering	"	"	Cr. 35 11 2
		Total—Nelson			£13,022 4 2
MARLBOROUGH—					
	1175	Canvastown—Deep Creek	Marlborough	City of Nelson	31 3 0
	1176	Elaine Bay—Harvey's Bay	Sounds	"	209 2 0
	1177	Fairy Bay, North-west Bay	"	"	39 19 6
	1180	Harvey's Bay—Tawero Point	"	"	277 9 3
	1182	Nydia Bay—Havelock	Sounds and Marlborough	"	146 1 0
	1183	Nydia Bay—Havelock (Maori Bay—Black Point)	Sounds	"	4 0 6
	1185	Pelorus River—Black Point	Marlborough	"	150 0 0
	1187	Ronga Valley	"	"	185 13 8
	1190	White's Bridge	"	"	226 0 0
	1192	Tophouse	"	Motueka	25 0 0
	1193	Anakiwi—Grove	"	Wairau	13 3 4
	1194	Anakoa—Manaroa	Sounds	"	124 0 8
	1196	Arapawa Island	"	"	20 10 6
	1197	Arrowsmith's Saddle—Arrowsmith's Bay	"	"	52 1 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 for Year ended 31st March, 1904.
		<b>ROADS, ETC.—continued.</b>			
		<b>MARLBOROUGH—continued.</b>			
					£ s. d.
104	1198	Bartlett's Creek—Langley Dale .. ..	Marlborough	Wairau	152 5 8
	1201	Blenheim—Awatere River .. ..	"	"	100 0 0
	1204	Crail Bay—Manaroa .. ..	Sounds	"	391 14 9
	1205	Crail Bay—South-east Bay .. ..	"	"	391 16 1
	1206	Double Bay—Mahau .. ..	"	"	4 0 6
	1209	Fulton's—Grove .. ..	Marlborough	"	41 0 0
	1210	Grove Wharf and Shed .. ..	"	"	4 14 8
	1211	Hakahaka—Opihi .. ..	Sounds	"	20 2 6
	1212	Havelock—Grove .. ..	Marlborough	"	100 0 0
	1213	Havelock—Kaituna .. ..	"	"	108 10 0
	1215	Kaituna—Waikakaho .. ..	"	"	100 0 0
	1216	Kenepuru—Anakoa .. ..	Sounds	"	135 16 0
	1217	Kenepuru—Endeavour Inlet .. ..	"	"	304 12 6
	1218	Kiaho Canal and Track .. ..	"	"	16 14 6
	1219	Maddock's—Hodder .. ..	Marlborough	"	20 0 0
	1220	Mahakipawa—Double Bay .. ..	Sounds and Marlborough	"	59 6 0
	1221	Mahau Sound .. ..	Sounds	"	37 19 2
	1222	Mill Creek Bridge .. ..	Marlborough	"	100 0 0
	1225	Ohinetaha—Te Mahia .. ..	Sounds	"	239 15 0
	1228	Onahau—Anakiwi .. ..	Marlborough	"	102 15 6
	1229	Onahau Bay—Kenepuru Sound .. ..	Sounds	"	47 5 4
	1233	Picton—Blenheim (Mudford Flat) .. ..	Marlborough	"	50 0 0
	1234	Picton Grove .. ..	"	"	2 17 6
	1238	Port Underwood—Fighting Bay .. ..	"	"	55 7 9
	1239	Port Underwood—Opua .. ..	Sounds	"	49 3 9
	1240	Queen Charlotte Sound .. ..	"	"	1 0 0
	1241	Rai Saddle—Blenheim .. ..	Marlborough	Wairau and City of Nelson	200 0 0
	1242	Resolution Bay—Endeavour Inlet .. ..	Sounds	Wairau	120 11 2
	1243	Richmond Bay—Kenny's Isle .. ..	"	"	87 12 3
	1244	Robin Hood Bay—Ocean Bay .. ..	"	"	98 12 6
	1246	Saltwater Creek—Fulton's Gate .. ..	Marlborough	"	100 0 0
	1247	Seddon roads .. ..	"	"	199 19 10
	1248	Skiddaw Run—Te Matau-a-Maui .. ..	Sounds	"	61 8 9
	1249	Spring Creek .. ..	Marlborough	"	100 0 0
	1251	Te Awaita Wharf .. ..	Sounds	"	26 9 10
	1252	Te Mahia—Portage Bay .. ..	"	"	106 18 5
	1254	Top Valley—Bartlett's Creek .. ..	Marlborough	"	91 13 10
	1255	Torea Bay Road .. ..	Sounds	"	52 4 9
	1256	Torea Bay Wharf and Shed .. ..	"	"	50 19 10
	1257	Tory Heads—Waikawa .. ..	"	"	211 12 2
	1258	Tuamarina Creek Bridge .. ..	Marlborough	"	200 0 0
	1259	Tuamarina—Waikakaho .. ..	"	"	99 19 11
	1261	Waikawa—Picton .. ..	Sounds and Marlborough	"	76 0 0
	1263	Wairau Native Reserve protection .. ..	Marlborough	"	20 18 3
	1264	Wairau River Bridge (£1 for £1) .. ..	"	"	95 19 6
	1265	Waitaria—Manaroa .. ..	Sounds	"	267 1 5
	1266	Waitaria—Te Matau-a-Maui .. ..	"	"	21 1 2
	1268	Whatamonga—Difffenbach .. ..	Marlborough	"	30 18 0
	1269	Whatamonga—Port Underwood .. ..	Sounds	"	98 14 6
	1270	White's Bay—Port Underwood .. ..	"	"	115 9 0
	1272	Woodmen's Bend (Awatere River) .. ..	Marlborough	"	43 17 6
	1273	Yellaton Track .. ..	Sounds	"	47 0 0
	1274	Awatere River—Clarence River .. ..	Marlborough	Wairau and Hurunui	108 1 4
	1275	Clarence Bridge (protective works) .. ..	Marlborough and Kaikoura	Hurunui	196 3 1
	1276	Clarence River—Conway River .. ..	Kaikoura	"	268 10 0
	1279	Puhipuhi (£78, £1 for £1) .. ..	"	"	172 4 0
	1282	Works not specifically provided for .. ..	"	"	54 5 0
	1283	Contingencies and engineering .. ..	"	"	50 0 5
		<b>Total—Marlborough</b> .. ..			<b>£7,615 8 0</b>
		<b>WESTLAND—</b>			
	1284	Ahaura—Haupiri .. ..	Grey	Grey	261 3 9
	1286	Barrytown Road .. ..	"	"	150 0 0
	1288	Big River—Rough River .. ..	"	"	150 0 0
	1289	Greymouth—Marsden (old road) .. ..	"	"	200 0 0
	1294	Poerua—Bell Hill .. ..	"	Grey and Westland	92 10 0
	1297	Arahura Bridge (Lower) .. ..	Westland	Westland	51 4 6
	1300	Arawata Track .. ..	"	"	115 8 9
	1302	Big Bay Track .. ..	"	"	250 0 0
	1304	Bladier's Road .. ..	"	"	540 2 1
	1305	Blue River Shelter Hut .. ..	"	"	7 13 0
	1306	Bluff Track .. ..	"	"	48 2 7
	1307	Bruce Bay Landing .. ..	"	"	299 9 6
	1309	Christchurch Road (old) .. ..	"	"	25 16 5
	1310	Cook River .. ..	"	"	21 17 6
	1311	Cook Valley—Karangarua .. ..	"	"	131 3 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 for Year ended 31st March, 1904.
		ROADS, ETC.— <i>continued.</i>			
		WESTLAND— <i>continued.</i>			
104	1312	Cropp Road .. .. .	Westland	Westland	£ 7 8 6
	1313	Doughboy .. .. .	"	"	180 10 0
	1314	Goldsborough (protective works) (£1 for £1) .. .. .	"	"	7 13 3
	1315	Great South Road (Ross to Fox River) (£1 for £1) .. .. .	"	"	381 0 0
	1316	Great South Road (shelter huts) .. .. .	"	"	113 14 9
	1317	Greenstone Bridge .. .. .	Grey	"	526 14 7
	1318	Greenstone-Teremakau (widening road) .. .. .	"	"	188 13 6
	1322	Harris Road .. .. .	"	"	17 12 0
	1323	Hohonu River Bridge .. .. .	"	"	100 0 0
	1324	Hokitika River Bridge (on account of £2,000) (contribution) .. .. .	Westland	"	2,000 0 0
	1325	Hokitika River Bridge (Mout's Rivulet) .. .. .	"	"	42 14 0
	1326	Hokitika River (protection) .. .. .	"	"	113 13 9
	1327	Hunt's Beach .. .. .	"	"	414 16 6
	1328	Hunt's Beach-Makawhio .. .. .	"	"	201 19 0
	1329	Isaac Bluff Track .. .. .	"	"	76 14 8
	1330	Jackson's Valley .. .. .	"	"	201 18 0
	1331	Jacob's-Karangarua .. .. .	"	"	214 8 9
	1332	Kanieri-Kokatahi Bridge .. .. .	"	"	171 12 7
	1333	Karangarua-Main South Road .. .. .	"	"	33 13 0
	1334	Kelly's Drainage Tunnel (repairs) .. .. .	"	"	49 8 9
	1335	Koiterangi .. .. .	"	"	40 19 6
	1336	Koiterangi Municipal Reserve .. .. .	"	"	57 5 0
	1337	Koiterangi (river encroachment) .. .. .	"	"	99 19 4
	1338	Koiterangi-Whitcombe Track .. .. .	"	"	191 18 11
	1339	Kokatahi (£1 for £1) .. .. .	"	"	100 0 0
	1340	Kokatahi (Lower) .. .. .	"	"	238 4 4
	1342	Kokatahi River Bridge and approaches .. .. .	"	"	5,323 3 8
	1343	Kokatahi River (protection-works) .. .. .	"	"	350 0 0
	1345	Little Wanganui (protective works) .. .. .	"	"	200 6 5
	1347	Loop-line .. .. .	"	"	133 9 3
	1348	Mahitahi .. .. .	"	"	220 3 0
	1349	Mahitahi-Paringa Landing .. .. .	"	"	200 0 0
	1351	Mitchell's-Inchbonnie .. .. .	Grey	"	499 19 11
	1354	Murray Road .. .. .	Westland	"	6 15 0
	1356	Okuru Track .. .. .	"	"	15 4 2
	1357	Paringa Track .. .. .	"	"	99 19 1
	1358	Rangiriri Deviation .. .. .	"	"	5,612 13 6
	1361	Teremakau overflow-Sandy Creek .. .. .	"	"	24 9 3
	1362	Teremakau Settlement (protection-works) .. .. .	Grey	"	52 10 9
	1363	Teremakau Settlement Road .. .. .	"	"	26 5 3
	1364	Teremakau Traffic-bridge (repairs) .. .. .	Westland and Grey	"	584 15 9
	1368	Waitaha Bridge and Road .. .. .	Westland	"	223 18 6
	1369	Waitaha-Kakapotahi .. .. .	"	"	2,702 2 11
	1370	Waitaha Settlement .. .. .	"	"	333 10 1
	1372	Wanganui Flat .. .. .	"	"	71 2 7
	1375	Westland Ferry Service .. .. .	"	"	200 0 0
	1376	Westland (flood damages) .. .. .	"	"	50 0 0
	1379	Works not specifically provided for .. .. .	"	"	38 14 4
	1380	Contingencies and engineering .. .. .	"	"	23 4 9
		Total—Westland .. .. .			£25,009 12 8
		CANTERBURY—			
	1381	Ashley Gorge Bridge (£1 for £1) .. .. .	Ashley	Hurunui and Selwyn	792 17 3
	1382	Birch Hill .. .. .	"	Hurunui	100 0 0
	1383	Cheviot County roads .. .. .	Cheviot	"	453 7 5
	1384	Conway Accommodation-house Reserve (old P.W. cutting) .. .. .	Amuri	"	92 4 11
	1386	Conway-Waiiau (Whalesback) .. .. .	"	"	200 0 0
	1391	Port Robinson .. .. .	Cheviot	"	66 0 0
	1392	Reilley's Cookhouse .. .. .	"	"	8 13 0
	1393	Tarndale-Tophouse .. .. .	Amuri	"	100 0 0
	1394	Waiiau Ferry Service .. .. .	Cheviot	"	223 18 9
	1395	Waiiau River (Glenwye) (£1 for £1) .. .. .	Amuri	"	167 0 0
	1397	Waipara-Cheviot (£1 for £1) .. .. .	Ashley	"	200 0 0
	1398	Eyre Traffic-bridge .. .. .	"	Selwyn	400 0 0
	1399	Hawkins River Bridge (near Sheffield) .. .. .	"	"	50 0 0
	1401	Oxford Main Road (east and west) .. .. .	"	"	100 0 0
	1404	Whiteliffs-St. Helen's .. .. .	Selwyn	"	50 0 0
	1405	Cust River (Lower) (main drain embankment) (£1 for £1) .. .. .	Ashley	Kaiapoi	250 0 0
	1406	Eyreton Road District (protection-works) (£1 for £1) .. .. .	"	"	830 0 10
	1407	Waimakariri Bridge (White's) (£1 for £1) .. .. .	Selwyn	Kaiapoi and Riccarton	1,107 7 4
	1408	Roimata Village-Ferry Road (£1 for £1) .. .. .	"	Lyttelton	100 0 0
	1410	Burke's Main Drain Canal (£1 for £1) .. .. .	"	Ellesmere and Courtenay	87 19 10
	1411	Ellesmere Lake Outlet (on account of £709) .. .. .	"	Ellesmere	208 12 6
	1412	Hamilton's and Maddock's roads (Lake Ellesmere Flat) .. .. .	"	"	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 for Year ended 31st March, 1901.	
					£	s. d.
		ROADS, ETC.—continued.				
		CANTERBURY—continued.				
104	1413	Lake Ellesmere Reserve 959 .. .. .	Selwyn .. ..	Ellesmere .. ..	219	0 0
	1414	Taylor Stream Bridge .. .. .	Ashburton .. ..	Ashburton .. ..	100	0 0
	1415	Winterslow (track, near Cameron's woolshed, through Run 102) .. .. .	" .. ..	" .. ..	19	8 2
	1416	Opihi Bridge (near Pleasant Point) (£1 for £1 up to £2,200) .. .. .	Geraldine and Levels	Geraldine .. ..	2,120	9 6
	1424	Main South Road .. .. .	Levels .. ..	Timaru .. ..	250	0 0
	1426	Fairlie-Pukaki .. .. .	Mackenzie .. ..	Waitaki .. ..	200	0 0
	1427	Middle Cross-road (£1 for £1) .. .. .	Waimate .. ..	" .. ..	80	0 0
	1428	Otaio Bridge (£1 for £1) .. .. .	" .. ..	" .. ..	206	3 4
	1429	Pareora Bridge (Cannington) (£1 for £1) .. .. .	" .. ..	" .. ..	300	0 0
	1430	Skevington .. .. .	" .. ..	" .. ..	250	0 0
	1431	Waihao Bridge (£1 for £1) .. .. .	" .. ..	" .. ..	500	0 0
	1432	Waihao Bridge—Morven Railway-station .. .. .	" .. ..	" .. ..	131	19 6
	1433	White Rock Creek bridges (£1 for £1) .. .. .	" .. ..	" .. ..	200	0 0
	1434	Woolshed Gully roads .. .. .	" .. ..	" .. ..	250	0 0
	1436	Works not specifically provided for .. .. .	" .. ..	" .. ..	120	14 6
	1437	Contingencies and engineering .. .. .	" .. ..	" .. ..	Cr. 36	0 6
		Total—Canterbury .. .. .			£10,649	16 4
		OTAGO—				
	1438	Awamoko Bridge (£1 for £1) .. .. .	Waitaki .. ..	Mount Ida .. ..	300	0 0
	1439	Bendigo-Matakanui .. .. .	Vincent .. ..	" .. ..	772	16 7
	1440	Hawea Lake tracks .. .. .	" .. ..	" .. ..	100	0 0
	1441	Hawea Lindis Pass .. .. .	Vincent and Waitaki	" .. ..	129	0 0
	1442	Kyeburn-Naseby .. .. .	Maniototo .. ..	" .. ..	200	0 0
	1444	Naseby-Waipiaa .. .. .	" .. ..	" .. ..	100	0 0
	1445	Ophir-Maniototo County Boundary (via Ida Valley) .. .. .	Vincent .. ..	" .. ..	198	6 1
	1446	Patearoa-Ranfurlly .. .. .	Maniototo .. ..	" .. ..	150	0 0
	1447	Patearoa-Waipiaa .. .. .	" .. ..	" .. ..	200	0 0
	1448	Ranfurlly Railway-station Road .. .. .	" .. ..	" .. ..	100	0 0
	1449	Rugged Ridges Road (Upper Waitaki) .. .. .	Waitaki .. ..	" .. ..	200	0 0
	1450	Runs 225m and 225T to 225z .. .. .	Maniototo .. ..	" .. ..	167	5 6
	1451	St. Bathans'-Rough Ridge and Ida Valley Railway-stations .. .. .	" .. ..	" .. ..	200	0 0
	1452	Taieri Bridge (Law's Ford) .. .. .	" .. ..	" .. ..	400	0 0
	1453	Upper Taieri (Rock and Pillar), Runs 204, 204A .. .. .	" .. ..	" .. ..	200	0 0
	1455	Arrow Falls .. .. .	Lake .. ..	Wakatipu .. ..	100	0 0
	1456	Arthur's Point—Arrowtown .. .. .	" .. ..	" .. ..	100	0 0
	1457	Arthur's Point—Thirby Domain .. .. .	" .. ..	" .. ..	75	0 0
	1459	Ben Lomond .. .. .	" .. ..	" .. ..	110	0 0
	1462	Cromwell (sand removal) (£1 for £1) .. .. .	Borough of Cromwell	" .. ..	32	4 0
	1463	Garston-Black Bridge .. .. .	Lake .. ..	" .. ..	48	0 0
	1465	Kingston-Athol .. .. .	" .. ..	" .. ..	100	0 0
	1470	Rees River Groins .. .. .	" .. ..	" .. ..	20	0 0
	1472	Corner Bush .. .. .	Waikouaiti .. ..	Waikouaiti .. ..	35	12 3
	1473	Goodwood Village Settlement roads .. .. .	Waihemo .. ..	" .. ..	150	0 0
	1474	Hawksbury Bush Road .. .. .	Waikouaiti .. ..	" .. ..	90	0 0
	1475	Hummockside, Block IV. .. .. .	" .. ..	" .. ..	82	3 4
	1476	Hyde-Macrae's Flat .. .. .	Waihemo and Maniototo	" .. ..	200	0 0
	1477	Karitane—Railway-station .. .. .	Waikouaiti .. ..	" .. ..	94	0 2
	1478	Kartigi Beach (near Shag Point) (£1 for £1) .. .. .	Waitaki .. ..	" .. ..	60	0 0
	1479	Kilmog Hill .. .. .	Waikouaiti .. ..	" .. ..	25	0 0
	1480	Macrae's Flat—Dunback .. .. .	Waihemo .. ..	" .. ..	200	0 0
	1481	Murdering Beach .. .. .	Waikouaiti .. ..	" .. ..	100	0 0
	1482	Puketapu roads .. .. .	Waihemo .. ..	" .. ..	200	0 0
	1483	Puketiraki Native Reserve .. .. .	Waikouaiti .. ..	" .. ..	50	0 0
	1485	Seacliff-Puketiraki .. .. .	" .. ..	" .. ..	74	7 9
	1486	Shag River Bridge (Bushy) .. .. .	Waihemo .. ..	" .. ..	448	15 6
	1487	Sheep-yards—Round Hill .. .. .	Waikouaiti .. ..	" .. ..	75	0 0
	1488	Stoneburn .. .. .	Waihemo .. ..	" .. ..	150	0 0
	1490	Waitati-Waikari .. .. .	Waikouaiti .. ..	" .. ..	31	6 8
	1491	Fulton's Bridge (West Taieri) .. .. .	Taieri .. ..	Taieri .. ..	198	0 0
	1492	Taieri Bridge—Pukekura .. .. .	" .. ..	" .. ..	31	14 1
	1495	Clyde-Lake County Boundary .. .. .	Vincent .. ..	Tuapeka .. ..	373	16 0
	1496	Clyde and Alexandra—Ophir .. .. .	" .. ..	" .. ..	153	0 0
	1497	Clyde-Tuapeka County Boundary .. .. .	" .. ..	" .. ..	211	10 0
	1498	Rae's Junction—Heriot .. .. .	Tuapeka .. ..	" .. ..	100	0 0
	1500	Tuapeka West, Block VIII. .. .. .	" .. ..	" .. ..	300	0 0
	1503	Waipori-Waitahuna (Boggy Flat) .. .. .	" .. ..	" .. ..	100	0 0
	1504	Anderson's Road (£2 10s. for £1) .. .. .	Boroughs of Roslyn and Mornington	Dunedin .. ..	500	0 0
	1505	Dunedin and East Taieri Blocks .. .. .	Boroughs of Roslyn and Maori Hill	" .. ..	100	0 0
	1506	Leith Valley (£1 for £1) .. .. .	Borough of Maori Hill	" .. ..	100	0 0
	1507	Main South Road (Kaikorai) .. .. .	Borough of Roslyn	" .. ..	150	0 0
	1508	North Harbour and Blueskin .. .. .	Borough of Maori Hill	" .. ..	100	0 0
	1509	Water of Leith (protective works) .. .. .	Ditto .. ..	" .. ..	200	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 for Year ended 31st March, 1903.
		<b>ROADS, ETC.—<i>continued.</i></b>			
		<b>OTAGO—<i>continued.</i></b>			
104	1510	Watt's Bridge (Pine Hill) .. .. .	Borough of North-east Valley	Dunedin ..	£ 100 0 0
	1511	Blanket Bay—Ravensbourne .. .. .	Borough of West Harbour	Chalmers ..	50 0 0
	1512	Dunedin—Port Chalmers (£40, £1 for £2)	Ditto ..	" ..	200 0 0
	1515	Port Chalmers (£10, £1 for £1) .. .. .	Borough of Port Chalmers	" ..	205 7 6
	1516	Portobello .. .. .	Peninsula ..	" ..	293 12 6
	1517	Portobello—Tairaroa .. .. .	" ..	" ..	328 6 1
	1518	Tomahawk (£1 for £1) .. .. .	" ..	" ..	200 0 0
	1519	Wickliff Bay .. .. .	Peninsula ..	Port Chalmers ..	200 0 0
	1521	Anderson's Bay Road .. .. .	Boroughs of South Dunedin, St. Kilda, and Caversham	Caversham ..	71 10 0
	1522	Dunedin—Look-out Point .. .. .	Borough of Caversham	" ..	150 0 0
	1523	Akatore .. .. .	Bruce ..	Bruce ..	150 0 0
	1525	Balclutha—Pukepito (£1 for £1) .. .. .	" ..	" ..	200 0 0
	1526	Centre Road, Inch-Clutha (£1 for £1) .. .. .	" ..	" ..	255 0 0
	1527	Clarendon, Block VI. .. .. .	" ..	" ..	189 7 6
	1528	Henley—Berwick Bridge .. .. .	Taireri ..	" ..	200 0 0
	1529	Inch-Clutha River District (£1 for £1) .. .. .	Bruce ..	" ..	176 5 0
	1531	Kaitangata Riding (£1 for £1) .. .. .	" ..	" ..	182 13 11
	1532	Lovell's Flat, Hillend (£1 for £1) .. .. .	" ..	" ..	200 0 0
	1535	Millburn—Circle Hill (£1 for £1) .. .. .	" ..	" ..	150 0 0
	1536	Stirling—Benhar (£1 for £1) .. .. .	" ..	" ..	51 0 0
	1537	Table Hill, Blocks I., V., and VI. (£1 for £1)	" ..	" ..	108 15 0
	1538	Taireri Mouth Village Settlement .. .. .	" ..	" ..	100 0 0
	1539	Tokomairiro Blocks (£1 for £1) .. .. .	" ..	" ..	100 0 0
	1540	Tokomairiro Riding (£1 for £1) .. .. .	" ..	" ..	35 10 0
	1542	Wangaloa—Coombe Hay (£1 for £1) .. .. .	" ..	" ..	50 10 0
	1543	Ahuriri Flat .. .. .	Clutha ..	Clutha ..	123 15 0
	1544	Balclutha Bridge (£1 for £1) .. .. .	" ..	" ..	*1,075 6 2
	1545	Barr's Road .. .. .	" ..	" ..	15 2 11
	1546	Carriek's Road (Section 57, Block III., Glenomaru)	" ..	" ..	0 8 0
	1547	Catlin's Blocks .. .. .	" ..	" ..	22 18 6
	1548	Catlin's (Upper Road) .. .. .	" ..	" ..	10 0 0
	1549	Catlin's River Valley Road .. .. .	" ..	" ..	12 12 11
	1552	Glenkenich Blocks .. .. .	Tuapeka ..	" ..	430 0 0
	1553	Glenomaru, Block V. (Goldsbury's and Forsyth's Road)	Clutha ..	" ..	7 5 9
	1554	Glenomaru Blocks .. .. .	" ..	" ..	65 2 0
	1555	Hay's Road .. .. .	" ..	" ..	177 12 11
	1556	Heathfield .. .. .	" ..	" ..	15 19 2
	1557	Hewson Road (Block IV., Catlin's) .. .. .	" ..	" ..	59 6 4
	1558	Hukihuki .. .. .	" ..	" ..	73 4 0
	1559	Hunt's Road .. .. .	" ..	" ..	100 0 0
	1560	Kaler's Road .. .. .	" ..	" ..	166 19 4
	1562	Morton's Road .. .. .	" ..	" ..	0 7 6
	1563	Mouat's Saddle .. .. .	" ..	" ..	28 5 9
	1564	Owaka Bridge (£1 for £1) .. .. .	" ..	" ..	50 0 0
	1565	Owaka—Long Beach Creek .. .. .	" ..	" ..	486 0 8
	1566	Owaka—Purekireki (£100, £1 for £1)	" ..	" ..	197 7 8
	1568	Rankleburn Blocks .. .. .	Tuapeka ..	" ..	25 0 0
	1569	Rankleburn Bush (£91, £1 for £1) .. .. .	" ..	" ..	141 8 0
	1570	Ratanui—Whitehead .. .. .	Clutha ..	" ..	103 15 4
	1571	Rimu, Blocks XII. and XIII. .. .. .	" ..	" ..	15 19 10
	1572	Rimu, Block XIV. .. .. .	" ..	" ..	24 3 0
	1573	Rimu Improved-farm Settlement .. .. .	" ..	" ..	17 17 9
	1574	Tautuku, Block VIII. .. .. .	" ..	" ..	225 4 3
	1576	Waipahi—Pukerau .. .. .	" ..	" ..	30 0 0
	1577	Waiwera Bridge (£1 for £1) .. .. .	" ..	" ..	57 15 0
	1578	Warepa, Blocks I. to XI. .. .. .	" ..	" ..	50 0 0
	1579	Woodland Blocks .. .. .	" ..	" ..	94 8 1
	1580	Woodland, Block X. .. .. .	" ..	" ..	2 5 0
	1581	Woodland, Block IX., Improved-farm Settlement..	" ..	" ..	95 14 10
	1584	Works not specifically provided for .. .. .	" ..	" ..	35 13 3
	1585	Contingencies and engineering .. .. .	" ..	" ..	175 13 9
		Total—Otago .. .. .			*16,849 8 1
		<b>SOUTHLAND—</b>			
	1586	Balfour—Cattle Flat .. .. .	Southland ..	Wakatipu ..	100 0 0
	1587	Balfour—North Longridge School .. .. .	" ..	" ..	100 0 0
	1588	Balfour—Pahiwi (£150, £1 for £1) .. .. .	" ..	" ..	300 0 0
	1589	Balfour—Riversdale .. .. .	" ..	" ..	100 0 0
	1590	Black Swamp Road .. .. .	" ..	" ..	100 0 0
	1591	Butel's Cutting (Balfour) .. .. .	" ..	" ..	100 0 0
	1593	Otama Valley .. .. .	" ..	" ..	94 19 0

\* Includes £398 0s. 3d. expended out of "Unauthorised Account."

TABLE NO. 4—continued.

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

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure for Year ended 31st March, 1904.
		ROADS, ETC.—continued.			
		SOUTHLAND—continued.			
104	1594	Waimea Bridge (Mandeville) .. .. .	Southland	Wakatipu	£ 200 0 0
	1595	Waimea Valley—Riversdale .. .. .	"	"	200 0 0
	1596	Wendon District roads .. .. .	"	"	100 0 0
	1597	Wendonside .. .. .	"	"	100 0 0
	1598	Aparima School Road—Boundary-line of Hundreds (£1 for £1)	Wallace	Wallace	61 16 0
	1600	Baird's Hill .. .. .	"	"	100 0 0
	1601	Balfour—Dipton .. .. .	Southland	"	500 0 0
	1602	Boundary-line of Hundreds through Heddon Bush	Wallace	"	100 0 0
	1604	Centre Bush—Otapiri, <i>via</i> Lora .. .. .	Southland	"	100 0 0
	1605	Clifden Bridge—Waiau Mouth .. .. .	Wallace	"	121 7 4
	1610	Dodd's Hill (Otapiri Gorge) .. .. .	Southland	"	100 0 0
	1612	Fernhills Bridge .. .. .	"	"	200 0 0
	1613	Flint's Bush (Waterford and Elgin Streets)	Wallace	"	50 0 0
	1614	Gladfield—Winton (£1 for £1) .. .. .	"	"	100 0 0
	1615	Harvey's Road—Nightcaps .. .. .	"	"	50 0 0
	1616	Haslett's Road .. .. .	Southland	"	100 0 0
	1617	Heddon Bush—Otautau, <i>via</i> Bayswater (£1 for £1)	Wallace	"	100 0 0
	1618	Heddon Bush (school road) .. .. .	"	"	39 19 6
	1621	Longwood Blocks .. .. .	"	"	79 14 8
	1622	Longwood, Block XVIII. .. .. .	"	"	159 4 6
	1624	Lumsden—Balfour .. .. .	Southland	Wakatipu	100 0 0
	1626	Nutall's Road (Longwood—Railway-station)	Wallace	Wallace	28 0 0
	1627	Orawia—Clifden (Bush Road) .. .. .	"	"	113 13 6
	1628	Orepuki Railway-station (£1 for £1) .. .. .	"	"	101 2 1
	1629	Orepuki—Drummond's Ferry (Longwood, Block XVI.)	"	"	494 2 0
	1634	Pahai Village .. .. .	"	"	50 0 0
	1635	Papatotara Improved-farm Settlement .. .. .	"	"	81 9 8
	1636	Papatotara Punt (Drummond's Ferry) .. .. .	"	"	314 2 1
	1638	Riverton—Howell's Point .. .. .	"	"	109 8 1
	1640	South Hillend School Road .. .. .	Southland	"	200 0 0
	1641	Te Tua Road .. .. .	Wallace	"	14 14 7
	1645	Waimea bridges (Balfour) .. .. .	Southland	Wakatipu	200 0 0
	1648	Wakapatu Railway-station—Beach .. .. .	Wallace	Wallace	100 0 0
	1650	Baird's Road (Block IX., Waikawa) .. .. .	Southland	Mataura	150 0 0
	1651	Dacre—Edendale .. .. .	"	"	150 0 0
	1652	Dacre—Irvine's .. .. .	"	"	100 0 0
	1653	Gore—Mataura Bridge .. .. .	"	"	72 3 9
	1654	Gore—Pukerau .. .. .	"	"	100 0 0
	1655	Gore—Reaby .. .. .	"	"	100 0 0
	1656	Gore—Seaward Downs .. .. .	"	"	100 0 0
	1658	Haldane Improved-farm Settlement .. .. .	"	"	117 15 5
	1659	Hand's Road .. .. .	"	"	82 15 0
	1660	Hedgehope—Mataura .. .. .	"	"	200 0 0
	1661	Hedgehope Railway-station—Pebble Hills	"	"	100 0 0
	1664	Kidd's Road .. .. .	"	"	324 0 0
	1665	Mabel District .. .. .	"	"	100 0 0
	1667	Millar's Road .. .. .	"	"	100 0 0
	1668	Mokoreta, Block XIV. .. .. .	"	"	41 7 5
	1669	Mokoreta—Redan .. .. .	"	"	350 0 0
	1671	Morton Mains Railway-station—Gorge .. .. .	"	"	100 0 0
	1673	Niagara Bridge Road (Block VII., Waikawa)	"	"	96 15 10
	1674	Otamita River Foot-bridge (£1 for £1) .. .. .	"	"	50 0 0
	1675	Otara—Haldane Post-office .. .. .	"	"	59 14 2
	1677	Oteramika, (Anderson, Holz and Niederer, and Templeton's Roads)	"	"	124 10 6
	1680	Oteramika, Section 26, Block V., to Section 6, Block XIII.	"	"	125 13 6
	1682	Paton's Road .. .. .	"	"	150 0 0
	1683	Titiroa—Mataura Island (£1 for £2) .. .. .	"	"	100 0 0
	1684	Toe-toes, Block X. .. .. .	"	"	68 0 5
	1685	Tokonui—Waikawa .. .. .	"	"	100 0 0
	1686	Waikaka Valley .. .. .	"	"	150 0 0
	1687	Waikawa .. .. .	"	"	332 13 8
	1688	Waikawa Improved-farm Settlement .. .. .	"	"	140 4 8
	1689	Waikawa—Long Beach Creek .. .. .	"	"	213 17 10
	1690	Waikawa—Otara .. .. .	"	"	198 3 10
	1691	Waikawa, Section 4, Block IV. (Crosbie's)	"	"	43 13 2
	1692	Waikawa—Wyndham Valley .. .. .	"	"	21 14 6
	1696	Greenvale Road .. .. .	"	Wakatipu	200 0 0
	1697	Clifton .. .. .	"	Invercargill	219 3 2
	1698	East Road (main road) .. .. .	"	"	900 0 0
	1699	Elles Road .. .. .	North Invercargill Borough	"	150 0 0
	1700	Kelvin Road .. .. .	Avenal Borough .. .. .	"	150 0 0
	1702	Layard Street .. .. .	North Invercargill Borough	"	150 0 0
	1703	Oteramika Old Road (Blocks I., II., Invercargill Hundred)	Southland	Awarua	100 0 0
	1706	Seaward Bush (Molson Street) .. .. .	"	Invercargill	157 7 8

TABLE No. 4—continued.

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

Vote No.	Item No.	Name of Work.	County.	Electorate	Net Expenditure for Year ended 31st March, 1904.
		ROADS, ETC.—continued.			
		SOUTHLAND—continued.			
104	1709	Tisbury Road .. .. .	Southland	Invercargill	£ 150 0 0
	1710	Tisbury Road—Clifton Street (on account of £480) ..	"	"	180 4 11
	1711	Bainfield .. .. .	"	Awarua	200 0 0
	1713	Bluff Road—Greenhills .. .. .	"	"	100 0 0
	1715	Blyth Road, towards Motu—Rimu Farm Settlement	"	"	150 0 0
	1716	Campbelltown roads .. .. .	"	"	844 16 1
	1718	Colyer's Road .. .. .	"	"	38 7 1
	1719	Devereaux (East Winton) .. .. .	"	"	130 18 3
	1720	Forest Hill (Cassell's and Duffy's Road) .. .. .	"	"	100 0 0
	1721	Forest Hill Hundred (through Sections 83, 121, and 103)	"	"	100 0 0
	1722	Fosbinder's Road .. .. .	"	"	100 0 0
	1724	Henderson—Rouse's Road .. .. .	"	"	98 2 10
	1726	Hokonui School .. .. .	"	"	150 0 0
	1728	Invercargill—Block XXII. .. .. .	"	"	55 16 0
	1729	Invercargill Hundred Blocks .. .. .	"	"	111 19 4
	1730	Invercargill Hundred, Block IX., Finlayson and Taylor Road	"	"	150 0 0
	1731	Invercargill Hundred Outfall Drain, Block XX. ..	"	"	85 0 0
	1733	Longbush—Rimu (£1 for £1) .. .. .	"	"	100 0 0
	1735	McFettridge Road—Oreti .. .. .	"	"	100 0 0
	1738	Makarewa Bridge at Section 161, Forest Hill Hundred	"	"	200 0 0
	1739	Makarewa Bridge—Wallacetown .. .. .	"	"	200 0 0
	1740	Makarewa Bridge (West Plains) .. .. .	"	"	200 0 0
	1743	Makarewa—Hedgehope Flood-channel .. .. .	"	"	152 18 0
	1744	Massey's Tramway Road .. .. .	"	"	Cr. 4 6 0
	1745	Mokotua Creek Road and Bridge .. .. .	"	"	36 8 3
	1747	Murchison's Road, Forest Hill .. .. .	"	"	100 0 0
	1750	Norman's Road .. .. .	"	"	100 0 0
	1751	Oreti—Coster's (through Sections 35, 58, 40, 30, and 28, Oreti Hundred)	"	"	141 10 4
	1753	Otapiri Railway-station .. .. .	"	"	200 0 0
	1754	Otatara .. .. .	"	"	280 10 4
	1755	Otatara, Block XVII., Section 36 .. .. .	"	"	16 3 2
	1756	Otatara Outfall Drain .. .. .	"	"	37 15 4
	1757	Oteramika, Block VII. (Invercargill Hundred) ..	"	"	142 12 2
	1759	Sandhills—Campbelltown .. .. .	"	"	82 10 0
	1760	Seaward Bush (Murphy's Road—Knipe's Land) ..	"	"	3 17 6
	1761	Seaward Moss .. .. .	"	"	13 16 1
	1762	Spar Bush, Bay Road .. .. .	"	"	200 0 0
	1763	Spar Bush Block .. .. .	"	"	100 0 0
	1765	Stewart Island (training-wall and approach to wharf)	Stewart Island	"	200 0 0
	1766	Stewart's Road, Otakau .. .. .	Southland	"	50 0 0
	1767	Thompson's Bay Crossing .. .. .	"	"	200 0 0
	1768	Thompson's Road, West Plains .. .. .	"	"	100 0 0
	1772	Waihopi Bridge, Gladstone .. .. .	"	"	3,000 0 0
	1773	Waihopi—Otatara School and Ferry .. .. .	"	"	100 0 0
	1774	Waimatua, Seaward Bush .. .. .	"	"	100 7 8
	1775	Waimatuku Bush .. .. .	"	"	100 0 0
	1777	West Plains .. .. .	"	"	70 0 0
	1778	West Plains bridges .. .. .	"	"	100 0 0
	1779	West Plains (Mullins's) .. .. .	"	"	300 0 0
	1780	West Plains (Todd's) .. .. .	"	"	150 0 0
	1781	Wilson's Crossing .. .. .	"	"	100 0 0
	1782	Winton, Block III. .. .. .	"	"	7 14 0
	1783	Winton, Block VIII. .. .. .	"	"	295 6 0
	1786	Winton Hundred, Blocks. II., III., VI., and VII.	"	"	200 0 0
	1789	Works not specifically provided for .. .. .	"	"	31 12 5
	1790	Contingencies and engineering .. .. .	"	"	96 7 11
		Total—Southland .. .. .			£22,004 0 2
		General—			
	1791	Compensation for injuries to employees while in discharge of their duties, medical and other attendance during illness, and contingent expenses in connection with same	"	"	899 12 7
	1792	Compensation and contingent expenses in connection with the acquisition of land for roads, drains, gravel-pits, &c.	"	"	1,744 4 0
	1793	Plant not chargeable to any particular work .. .. .	"	"	427 12 5
	1794	Road deviation and other surveys .. .. .	"	"	140 17 6
	1795	Flood-damage .. .. .	"	"	173 0 9
		Total—General .. .. .			£2,855 7 3
		Vote No. 104—Total for 1903-4 .. .. .			*£256,830 1 11

\* Includes £398 0s. 3d. expended out of "Unauthorised" Account.

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

Vote No.	Item No.	Name of Work.	County.	Electorate.	Net Expenditure for Year ended 31st March, 1904.
					£ s. d.
105	1	MAINTENANCE OF MAIN ROADS. Great North Road (Awanui to Warkworth, <i>via</i> Mangonui, Hukerenui, Waipu, and Wellsford)	Mangonui, Whangaroa, Bay of Islands, Whangarei, Otamatea, and Rodney	Bay of Islands, Marsden, and Kaipara	3,689 14 8
	4	Te Kuiti—Uruti .. .. .	Kawhia and Clifton	Egmont ..	3,054 19 2
	5	Tauranga—Napier ( <i>via</i> Rotorua, Waiotapu, and Taupo)	Tauranga, Rotorua, East Taupo, Wairoa, and Hawke's Bay	Bay of Plenty and Hawke's Bay	1,327 17 10
	6	Ohura (south of Paora Stream) .. .. .	Stratford and Clifton	Patea and Egmont	2,875 5 3
	7	Pipiriki—Waiouru .. .. .	Waimarino ..	Rangitikei ..	2,965 6 1
	8	Belgrove—Westport—Reefton .. .. .	Inangahua and Buller	Motueka and Buller	6,858 18 1
	9	Kumara—Springfield .. .. .	Westland and Selwyn	Westland and Selwyn	6,371 8 6
	10	Ross—Okarito and Fox River .. .. .	Westland ..	Westland ..	195 11 0
		Vote No. 105—Total for 1903-4 .. .. .	..	..	£27,289 0 7
		TOURIST ROADS, ETC.			
106	2	TE KUITI— Hangatiki—Waitomo .. .. .	Kawhia ..	Waikato ..	28 7 3
		Total—Te Kuiti .. .. .	..	..	£28 7 3
		ROTORUA—			
	3	Atiamuri—Orakei Korako .. .. .	East Taupo ..	Bay of Plenty ..	1,213 1 7
	4	Awahou—Hamurana Springs .. .. .	Rotorua ..	" ..	91 13 9
	5	Echo Lake Geyser .. .. .	" ..	" ..	175 19 6
	6	Galatea—Waikaremoana .. .. .	Whakatane, East Taupo, and Wairoa	" ..	57 3 0
	8	Okere Falls .. .. .	Rotorua ..	" ..	51 0 6
	10	Rotoiti—Tarawera, <i>via</i> Okataina .. .. .	" ..	" ..	95 8 4
	11	Rotoiti Township (Mariko Street) .. .. .	" ..	" ..	25 0 0
	12	Rotorua—Ngongataha Mount .. .. .	" ..	" ..	47 8 0
	13	Rotorua—Taupo, <i>via</i> Waiotapu .. .. .	Rotorua & E. Taupo	" ..	1,099 11 8
	14	Rotorua—Wairoa .. .. .	Rotorua ..	" ..	176 7 0
	15	Rotowhero—Galatea .. .. .	Rotorua, East Taupo, and Whakatane	" ..	178 19 8
	16	Taupo—Te Aratiatia Rapids .. .. .	East Taupo ..	" ..	11 2 0
	17	Te Whaitē—Ruatahuna .. .. .	Whakatane ..	" ..	60 3 0
	18	Tokaanu Road and Wharf .. .. .	East Taupo ..	" ..	120 16 6
	19	Tokaanu—Waihi .. .. .	East Taupo and West Taupo	" ..	18 8 0
	20	Tokaanu—Taupo .. .. .	East Taupo ..	" ..	146 16 4
	21	Waikato Bridge, Tokaanu .. .. .	" ..	" ..	31 4 6
	22	Waimangu Geyser—Kakaramea .. .. .	Rotorua ..	" ..	44 7 2
		Total—Rotorua .. .. .	..	..	£8,644 10 6
		HAWKE'S BAY—			
	23	Napier—Wairoa .. .. .	Hawke's Bay and Wairoa	Hawke's Bay ..	160 4 0
	24	Waikaremoana Accommodation-house Road .. .. .	Wairoa ..	" ..	343 11 1
		Total—Hawke's Bay .. .. .	..	..	£503 15 1
		TARANAKI—			
	26	Upper Egmont .. .. .	Taranaki ..	Egmont ..	192 19 0
	28	Dawson's Falls .. .. .	Stratford ..	Patea ..	200 0 0
		Total—Taranaki .. .. .	..	..	£392 19 0
		WANGANUI—			
	29	Pipiriki—Puraro .. .. .	Waimarino ..	Rangitikei ..	15 4 0
	30	Pipiriki—Raetihi .. .. .	" ..	" ..	156 13 7
	31	Pipiriki Township .. .. .	" ..	" ..	43 0 3
	33	Wanganui River Trust .. .. .	Wanganui, Waimarino, Waitotara, and Stratford	Rangitikei and Patea	2,200 0 0
	34	Waiouru—Tokaanu .. .. .	Waimarino and East Taupo	Bay of Plenty ..	399 13 6
		Total—Wanganui .. .. .	..	..	£2,814 11 4
		NELSON—			
	35	Maruia Hot Springs .. .. .	Inangahua ..	Buller ..	135 5 1
		Total—Nelson .. .. .	..	..	£135 5 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 for Year ended 31st March, 1904.
		TOURIST ROADS, ETC.— <i>continued.</i>			
		WESTLAND—			£ s. d.
106	37	Haupiri Hot Springs .. .. .	Grey .. .. .	Grey .. .. .	56 11 0
	40	Haast Pass .. .. .	Westland .. .. .	Westland .. .. .	200 12 4
	41	Lake Brunner Road .. .. .	Grey .. .. .	" .. .. .	186 9 7
	43	Mount Greenland Track .. .. .	Westland .. .. .	" .. .. .	149 14 4
	46	Waiho Springs-Glacier .. .. .	" .. .. .	" .. .. .	13 8 4
		Total—Westland .. .. .			£606 15 7
		CANTERBURY—			
	49	Pukaki-Mount Cook .. .. .	Mackenzie .. .. .	Waitaki .. .. .	1,225 15 5
		Total—Canterbury .. .. .			£1,225 15 5
		OTAGO—			
	50	Queenstown-Glenorchy .. .. .	Lake .. .. .	Wakatipu .. .. .	308 10 8
		Total—Otago .. .. .			£308 10 8
		SOUTHLAND—			
	52	Flagstaff Road, Campbelltown .. .. .	Southland .. .. .	Awarua .. .. .	100 0 0
	54	Kapipi Bridge .. .. .	Stewart Island .. .. .	" .. .. .	60 0 0
	55	Mason Bay .. .. .	" .. .. .	" .. .. .	100 0 0
	56	Paterson's Inlet-Mason Bay .. .. .	" .. .. .	" .. .. .	100 0 0
	59	Port William-Horse-shoe Bay .. .. .	" .. .. .	" .. .. .	250 6 4
	60	Port William-Lee Bay .. .. .	" .. .. .	" .. .. .	92 10 0
	61	Stewart Island roads and tracks .. .. .	" .. .. .	" .. .. .	644 8 0
	66	Manapouri-Dusky Sound .. .. .	Fiords .. .. .	Wallace .. .. .	1,648 14 0
	71	Te Anau-Sutherland Falls .. .. .	Wallace and Lake .. .. .	Wakatipu .. .. .	5 5 0
		Total—Southland .. .. .			£3,001 3 4
		GENERAL—			
	72	Works not specifically provided for .. .. .			159 19 3
		Vote No. 106—Total for 1903-4 .. .. .			£12,821 12 6
		LOANS TO LOCAL BODIES ACCOUNT— ROADS TO OPEN UP CROWN LANDS.			
		AUCKLAND—			
119	2	Kaueranga Block .. .. .	Whangarei .. .. .	Bay of Islands .. .. .	54 18 6
	4	Kohumaru Block .. .. .	Mangonui .. .. .	" .. .. .	30 6 6
	11	Otukai Block .. .. .	" .. .. .	" .. .. .	20 4 3
	12	Owai Block .. .. .	Whangarei .. .. .	" .. .. .	179 0 10
	13	Pakanae Block .. .. .	Hokianga .. .. .	" .. .. .	18 12 0
	15	Pareokawa Block .. .. .	" .. .. .	" .. .. .	252 9 6
	20	Te Huehue Block .. .. .	" .. .. .	" .. .. .	185 12 6
	22	Waimatanui Block .. .. .	Hokianga .. .. .	Bay of Islands .. .. .	295 2 9
	28	Mangakahia Block .. .. .	Whangarei .. .. .	Marsden .. .. .	41 14 9
	29	Mangakahia No. 2 Block .. .. .	" .. .. .	" .. .. .	63 19 0
	31	Tangihua Block .. .. .	" .. .. .	" .. .. .	69 7 4
	34	Mariborough Block .. .. .	Hokianga .. .. .	Kaipara .. .. .	447 9 3
	35	Maropu Block .. .. .	Hobson .. .. .	" .. .. .	56 2 9
	36	Maungaru Block .. .. .	" .. .. .	" .. .. .	7 17 0
	37	Tokatoka No. 2 Block .. .. .	Otamatea .. .. .	" .. .. .	888 4 9
	40	Tauhoa Block .. .. .	Rodney .. .. .	" .. .. .	54 19 0
	41	Awaroa No. 2 Block .. .. .	Raglan .. .. .	Franklin .. .. .	171 13 4
	42	Opuatia No. 2 Block .. .. .	" .. .. .	" .. .. .	8 6 2
	43	Opuatia No. 3 Block .. .. .	" .. .. .	" .. .. .	33 6 0
	44	Puriri Block .. .. .	" .. .. .	" .. .. .	157 3 6
		Total—Auckland .. .. .			£3,036 9 8
		TE KUITI—			
	48	Te Puroa Block .. .. .	Raglan .. .. .	Franklin .. .. .	343 4 0
	52	Kawhia Block .. .. .	Kawhia .. .. .	Waikato .. .. .	8 4 5
	53	Kinohaku West No. 2 Block .. .. .	" .. .. .	" .. .. .	132 9 4
	60	Ouruwhero Block .. .. .	" .. .. .	" .. .. .	217 15 4
	62	Pirongia West Block .. .. .	" .. .. .	" .. .. .	6 1 0
	64	Puketarata No. 2 Block .. .. .	Kawhia and West Taupo .. .. .	" .. .. .	57 13 5
	65	Puketarata No. 3 Block .. .. .	Kawhia .. .. .	" .. .. .	295 19 4
	70	Whangaingatakapu Block .. .. .	" .. .. .	" .. .. .	53 0 0
	73	Mahoenui Block .. .. .	" .. .. .	Egmont .. .. .	66 17 8
	74	Mangaroa Block .. .. .	Clifton .. .. .	" .. .. .	860 8 2
	76	Pakeho Block .. .. .	Kawhia .. .. .	" .. .. .	41 10 4
	78	Taurangi Block .. .. .	Clifton .. .. .	" .. .. .	70 7 0
	79	Te Kuiti Block .. .. .	Kawhia .. .. .	Egmont & Waikato .. .. .	63 12 0
	80	Waikaka Block .. .. .	Clifton .. .. .	Egmont .. .. .	845 1 5
	82	Waitangata Block .. .. .	" .. .. .	" .. .. .	713 17 1
	83	Whareorino Block .. .. .	Kawhia .. .. .	" .. .. .	688 17 0
		Total—Te Kuiti .. .. .			£4,464 17 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 for Year ended 31st March, 1904.
LOANS TO LOCAL BODIES ACCOUNT— ROADS TO OPEN UP CROWN LANDS— <i>continued.</i>					£ s. d.
ROTORUA—					
119	84	Kaikokupu Block .. .. .	Rotorua & Tauranga	Bay of Plenty	116 15 5
	87	Mangorewa—Kaharoa Block .. .. .	Rotorua	"	388 17 1
	89	Okohiriki Block .. .. .	Rotorua & Piako	"	640 19 2
	90	Okohiriki No. 1 E Block .. .. .	Rotorua	"	28 12 6
	96	Tumu—Kaituna Block .. .. .	Tauranga	"	584 18 10
	97	Waiawa Block .. .. .	Opotiki	"	207 9 0
	98	Taumata Whakauma Block .. .. .	Rotorua & Tauranga	"	44 0 0
Total—Rotorua .. .. .					£2,011 12 0
HAWKE'S BAY—					
	99	Huiarau Block .. .. .	Cook	Waiapu	234 17 0
	103	Wharekopae—Tahora No. 2 Block .. .. .	"	"	406 12 2
	104	Whakapaupakihi Block .. .. .	Opotiki	Bay of Plenty	270 9 11
	105	Mangapoike Block .. .. .	Wairoa	Hawke's Bay	253 17 6
	106	Nuhaka No. 3 Block .. .. .	"	"	26 3 2
	107	Waiau Block .. .. .	"	"	221 14 8
	108	Mangatoro No. 1 Block .. .. .	Waipawa	Waipawa	13 11 5
	109	Ngapaeruru Block .. .. .	"	"	45 10 6
	110	Umutaoroa Block .. .. .	"	"	71 12 11
	111	Whakarara Block .. .. .	"	"	24 10 0
Total—Hawke's Bay .. .. .					£1,568 19 3
TARANAKI—					
	112	Autawa Block .. .. .	Clifton	Egmont	100 16 0
	113	Heao Block .. .. .	"	"	40 3 0
	115	Mangaowata Block .. .. .	"	"	456 2 6
	116	Mangatawa Block .. .. .	"	"	858 18 9
	117	Mataro Block .. .. .	"	"	38 17 5
	119	Moki Block .. .. .	"	"	108 3 7
	120	Rerekapa—Moanataire Block .. .. .	"	"	1,501 3 7
	121	Tangitu Block .. .. .	"	"	1,165 4 4
	122	Tirangi Block .. .. .	"	"	647 19 1
	123	Waikekeho Block .. .. .	"	"	185 16 0
	124	Waro Block .. .. .	"	"	88 6 6
	125	Kuraiti Block .. .. .	Hawera and Patea	Patea	367 13 7
	127	Llewellyn Block .. .. .	Stratford	"	331 8 7
	128	Makahu Block .. .. .	"	"	227 8 6
	129	Patupuremu Block .. .. .	Patea	"	435 8 6
	130	Poarangi Block .. .. .	Stratford	"	65 11 3
	131	Tahora Block .. .. .	"	"	123 12 5
	132	Vera Block .. .. .	"	"	240 4 0
	133	Waingarara Block .. .. .	"	"	104 10 6
	134	Whenuakura Block .. .. .	Hawera, Patea, and Stratford	"	282 6 1
Total—Taranaki .. .. .					£7,364 14 2
WANGANUI—					
	136	Gladstone Block .. .. .	Waimarino	Rangitikei	31 11 10
	137	Kaitieke Block .. .. .	"	"	61 14 6
	138	Mowhanau Village—settlement Block .. .. .	Waitotara	"	216 16 3
	139	Ngamatea—Maungakaretu Block .. .. .	Wanganui	"	184 10 8
	140	Ohinewairua—Pukeokahu Block .. .. .	Rangitikei and Hawke's Bay	"	188 13 10
	141	Oraukura Block .. .. .	Rangitikei	"	141 17 2
	142	Pohonuiatane Block .. .. .	"	"	267 16 10
	143	Pukeokahu Block .. .. .	"	"	525 12 6
	146	Tauakira Block .. .. .	Wanganui	"	657 0 6
	147	Tiriraukawa—Hautapu Block .. .. .	Rangitikei	"	524 16 3
Total—Wanganui .. .. .					£2,800 10 4
WELLINGTON—					
	149	Hautapu—Ruahine No. 2 Block .. .. .	Rangitikei	Rangitikei and Oroua	449 8 4
	151	Kaiwaka (IV., VIII., XI.) Block .. .. .	Featherston	Wairarapa	369 14 10
	152	Dannevirke Centennial Block .. .. .	Akitio	Pahiatua	232 14 0
Total—Wellington .. .. .					£1,051 17 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 for Year ended 31st March, 1901.
		LOANS TO LOCAL BODIES ACCOUNT— ROADS TO OPEN UP CROWN LANDS— <i>continued</i> .			
		MARLBOROUGH—			£ s. d.
119	154	Pine Valley Block .. .. .	Marlborough ..	Wairau ..	166 0 1
	156	Tinline Block .. .. .	" ..	Nelson ..	143 7 9
	158	Waipapa Block .. .. .	Kaikoura ..	Hurunui ..	1,484 13 11
		Total—Marlborough .. .. .	..	..	£1,794 1 9
		OTAGO—			
	161	Naseby, Maniototo, and Gimmerburn Block .. .. .	Maniototo ..	Mount Ida ..	206 13 4
	162	Naseby No. 2 Block .. .. .	" ..	" ..	21 10 2
	163	Swinburn Farm-homestead Block .. .. .	" ..	" ..	35 0 6
	164	Catlin's (IV., V., VII., VIII.) Blocks .. .. .	Clutha ..	Clutha ..	58 15 11
		Total—Otago .. .. .	..	..	£321 19 11
		GENERAL—			
	174	Works not specifically provided for .. .. .	..	..	£1,337 17 1
		Vote No. 119—Total for 1903-4 .. .. .	..	..	£25,752 18 10
		* Votes 104, 105, 106, and 119—Grand total for 1903-4 .. .. .	..	..	*£322,698 13 10
		Add expenditure of previous years .. .. .	..	..	£5,911,403 12 11
		Total expenditure to 31st March, 1904 .. .. .	..	..	£6,234,097 6 9

\* Includes £398 0s. 3d. expended out of "Unauthorised" Account.



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

Vote No.	Item No.	Name of Work.	County.	Net Expenditure for Year ended 31st March, 1904.
		ROADS ON GOLDFIELDS.		
107	1	Subsidies towards the construction of roads and tracks in mining districts, and minor works for the development of mineral resources	..	£ 3,092 s. 0 d. 7
				£3,092 0 7
		<i>Auckland.</i>		
	3	Cabbage Bay—Port Charles and Cape Colville .. .. .	Coromandel ..	227 0 0
	4	Tairua—Whenuakite .. .. .	" ..	150 0 0
	6	Tokatea—Kennedy Bay .. .. .	" ..	150 0 0
	7	Coromandel—Kuaotunu <i>via</i> Matarangi .. .. .	" ..	328 0 0
	8	Tiki—Kaimarama .. .. .	" ..	170 0 0
	9	Tiki—Manaia .. .. .	" ..	25 0 0
	10	Manaia—Waikawau .. .. .	" ..	535 8 0
	11	Mercury Bay—Whenuakite and Boat Harbour .. .. .	" ..	100 0 0
	12	Kuaotunu—Mercury Bay .. .. .	" ..	100 0 0
	13	Whitianga—Gumtown .. .. .	" ..	250 0 0
	14	Coromandel—Whangapoua .. .. .	" ..	300 0 0
	15	Kikowhakarere—Cabbage Bay .. .. .	" ..	216 0 0
	16	Wharf Road, Coromandel .. .. .	" ..	400 0 0
	17	Whitianga—Kaimarama .. .. .	" ..	248 7 9
	18	Mahakirau Goldfield road .. .. .	" ..	80 0 0
	19	Tiki—Te Koumu .. .. .	" ..	150 0 0
	21	Ohuka Creek Bridge .. .. .	" ..	180 0 0
	22	Four-in-Hand Road .. .. .	" ..	100 0 0
	24	Waiwawa River Bridge .. .. .	" ..	100 0 0
	28	Driving Creek School Bridge, Tokatea Road .. .. .	" ..	136 18 6
	29	Waitaia Mine—Battery .. .. .	" ..	40 0 0
	31	McCull's Creek Bridge .. .. .	" ..	50 0 0
	32	Karaka Creek encroachment .. .. .	" ..	50 0 0
	33	Ward's Road—Cape Colville .. .. .	" ..	150 0 0
	34	Driving Creek—Tokatea .. .. .	" ..	100 0 0
	35	Dredging Waiwawa River .. .. .	" ..	200 0 0
	36	East side of Range .. .. .	" ..	100 0 0
	37	Optonui—Mercury Bay .. .. .	" ..	200 0 0
	38	Bridge and approaches, Waitaia Mine road .. .. .	" ..	100 0 0
	43	Thames—Waikawau .. .. .	Thames ..	55 0 0
	44	Thames—Hikutaiia .. .. .	" ..	268 0 0
	45	Upper Tararu Road .. .. .	" ..	135 16 0
	46	Tapu Creek and extension .. .. .	" ..	103 0 0
	49	Turua—Netherton .. .. .	" ..	103 0 0
	50	Hikutaiia—Whangamata "Wires" Track .. .. .	" ..	200 0 0
	51	Omahu—Whangamata .. .. .	" ..	200 0 0
	53	Neavesville—Upper Landing .. .. .	" ..	74 6 0
	55	Swamp Creek Bridge .. .. .	" ..	100 0 0
	56	Thames—Whangamata .. .. .	" ..	185 5 2
	57	Whangamata—Wentworth .. .. .	" ..	103 0 0
	58	Karaka Creek Road .. .. .	" ..	100 0 0
	59	Hape Creek Road .. .. .	" ..	100 0 0
	60	Waiotahi Road .. .. .	" ..	50 0 0
	61	Waiomo Creek Road .. .. .	" ..	93 0 0
	65	Moanataiari Road .. .. .	" ..	100 0 0
	67	Upper Tairua Bridge .. .. .	" ..	156 5 0
	68	Kauaeranga Suspension Bridge .. .. .	" ..	250 13 4
	69	Maratoto Road .. .. .	" ..	100 0 0
	72	Hikutaiia—Waihi .. .. .	Ohinemuri ..	147 3 6
	73	Waitekauri—Golden Cross .. .. .	" ..	62 0 0
	74	Waihi—Whangamata .. .. .	" ..	54 0 0
	75	Paeroa—Te Aroha .. .. .	" ..	106 8 0
	76	Paeroa—Waitoa .. .. .	" ..	300 0 0
	77	Komata Reefs—Waitekauri .. .. .	" ..	65 0 0
	78	Hikutaiia—Waitekauri .. .. .	" ..	78 0 0
	79	Grace Darling Road .. .. .	" ..	47 8 9
	80	Netherton roads .. .. .	" ..	223 0 6
	81	Tui Mine Track .. .. .	" ..	168 0 0
	82	Waihi—County Boundary .. .. .	" ..	390 7 9
	83	Komata Creek Road .. .. .	" ..	165 13 0
	84	Karangahake Mountain Track .. .. .	" ..	31 0 0
	85	Dividing-range Track—Mangakino .. .. .	" ..	105 0 0
	86	Karangahake Hill Track .. .. .	" ..	51 5 0
	87	Waitawheta Road, deviation .. .. .	" ..	81 0 0
	88	Hikutaiia—Maratoto .. .. .	" ..	98 0 0
	89	Waitekauri Hill Track .. .. .	" ..	100 0 0
	90	Mackaytown—Rahu .. .. .	" ..	162 12 1
	91	Waitekauri—Jubilee .. .. .	" ..	92 10 0
	98	Te Aroha—Karangahake—Waitawheta .. .. .	" ..	199 14 0
				£10,137 2 4

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

Vote No.	Item No.	Name of Work.	County.	Net Expenditure for Year ended 31st March 1904.		
ROADS ON GOLDFIELDS—continued.						
<i>Marlborough.</i>						
107	95	Havelock—Tuamarina .. .. .	Pelorus Road Board	£	s.	d.
	97	Top Valley Road .. .. .	"	150	0	0
	98	Picton—Grove .. .. .	"	29	3	6
	99	Cullensville Road Track .. .. .	"	511	6	7
				50	0	0
				£740 10 1		
<i>Nelson.</i>						
	101	Bonny Doon .. .. .	Collingwood	200	0	0
	104	Kaituna—Ferntown .. .. .	"	132	0	0
	106	Takaka—Collingwood " Inland " Road .. .. .	"	625	0	0
	107	Bainham—Upper Aorere .. .. .	"	49	19	10
	108	Taitapu Boundary Track .. .. .	"	12	6	6
	109	Collingwood Bridge .. .. .	"	3,244	3	11
	110	Pakawau—Tamatea .. .. .	"	174	0	0
	111	Bainham Bridge .. .. .	"	578	10	0
	113	Slate River Roads .. .. .	"	200	0	0
	114	Aorere Bridge, repairs .. .. .	"	72	5	3
	115	West Wanganui Inlet Bridge .. .. .	"	116	14	0
	119	Wangapeka—Baton .. .. .	Waimea	150	0	0
	120	Thorpe—Churchill .. .. .	"	100	0	0
	121	Shaggy Road .. .. .	"	100	0	0
	122	Riwaka—Kaiteriteri Beach .. .. .	"	53	19	6
	126	Motueka Valley—Baton .. .. .	"	200	0	0
	127	Stanley Brook Bridge .. .. .	"	300	0	0
	130	Millerton Road .. .. .	Buller	400	0	0
	131	Lyell Bridge—Ryan's .. .. .	"	200	0	0
	132	Wilson Lead Road .. .. .	"	250	0	0
	133	Granity Creek South .. .. .	"	350	0	0
	134	North Beach—Karamea .. .. .	"	100	0	0
	135	Westport—Mokihinui .. .. .	"	450	0	0
	137	Costello's Hill Road .. .. .	"	200	0	0
	138	Addison's Road—Buller Road .. .. .	"	250	0	0
	139	Promised Land—Ohinemuri Creek .. .. .	"	100	0	0
	140	Land of Promise Road .. .. .	"	50	0	0
	143	Mokihinui end of Westport Road .. .. .	"	150	0	0
	145	Fairdown—Beach .. .. .	"	100	0	0
	147	Charleston—Brighton .. .. .	"	300	0	0
	148	Brighton—Grey County Boundary .. .. .	"	150	0	0
	149	Glass-eye Creek Track .. .. .	"	100	0	0
	150	Lyell—Cedar Creek .. .. .	"	300	0	0
	151	Millerton—Mine Creek .. .. .	"	200	0	0
	152	Mokihinui—Ngakawau .. .. .	"	450	0	0
	153	Waimangaroa—Birchfield .. .. .	"	200	0	0
	154	Waimangaroa—Fairdown .. .. .	"	139	7	3
	155	Lyell—Denniston Hill .. .. .	"	200	0	0
	156	Mountain Creek—Addison's .. .. .	"	100	0	0
	157	Britannia Mine Road .. .. .	"	100	0	0
	158	Granity Creek—Ngakawau .. .. .	"	100	0	0
	161	Cascade Creek Road .. .. .	"	250	0	0
	162	Eight Mile—Mokihinui .. .. .	"	200	0	0
	163	Burnett's Face—Coalbrookdale .. .. .	"	150	0	0
	164	Cedar Creek—Denniston .. .. .	"	200	0	0
	167	Waimangaroa—Granity .. .. .	"	150	0	0
	168	Fairdown—Sergeant's Hill, <i>via</i> Railway .. .. .	"	200	0	0
	169	Seatonville—Mokihinui .. .. .	"	200	0	0
	170	Nile Creek Bridge .. .. .	"	50	0	0
	176	Reefton—Maruia .. .. .	Inangahua	150	0	0
	177	Matakitaki—Glenroy—Maruia .. .. .	"	140	0	0
	178	Mangle's Valley Road .. .. .	"	198	9	10
	179	Blackwater—Big River .. .. .	"	150	0	0
	180	Inangahua Bridge .. .. .	"	62	12	10
	186	Maruia Road, <i>via</i> Caslanis .. .. .	"	125	0	0
	187	Snowy Creek to Reefs .. .. .	"	200	0	0
	189	Inglewood—Painkiller .. .. .	"	177	4	9
	190	Reefton—Progress .. .. .	"	280	0	0
	192	Blackwater Road (widening) .. .. .	"	75	0	0
				£14,206 13 8		
<i>Westland.</i>						
	195	Blackball—Healy's Gully .. .. .	Grey	50	0	0
	196	Seven-mile Creek—Nine-mile Bluff .. .. .	"	400	0	0
	197	Main Grey Bridge (repairs) .. .. .	"	285	1	2
	198	Moonlight Creek Bridge .. .. .	"	771	1	4
	199	Taylorville Bridge .. .. .	"	727	1	7
	200	Moonlight—Blackball .. .. .	"	25	0	0
	201	Kotuku—Bell Hill .. .. .	"	250	0	0
	202	Teremakau Bridge, to Payne's .. .. .	"	150	0	0
	203	Waipuna—Mosquito .. .. .	"	150	0	0
Carried forward .. .. .				2,808 4 1		

TABLE NO. 4—continued.

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

Vote No.	Item No.	Name of Work.	County.	Net Expenditure for Year ended 31st March, 1904.		
				£	s.	d.
		Brought forward .. ..	..	2,808	4	1
		ROADS ON GOLDFIELDS—continued.				
		Westland—continued.				
107	204	Maori Creek—Maori Gully (widening) .. ..	Grey	150	0	0
	205	Grey—Dunganville Road Bridges .. ..	"	100	0	0
	206	Nelson Creek—Bell Hill .. ..	"	250	0	0
	207	Upper Moonlight Road .. ..	"	130	0	0
	208	Paroa—Teremakau .. ..	"	316	0	0
	209	Brown's Creek Bridge, Old Marsden Road .. ..	"	250	0	0
	210	Hohonu River Bridge—Cape Terrace .. ..	"	175	0	0
	211	Saltwater Creek Bridge .. ..	"	100	0	0
	212	Roads, State Coal-mine Township .. ..	"	63	1	6
	213	Reefton—Hokitika—Ross .. ..	Westland	3,857	17	7
	214	Great South Road .. ..	"	244	6	9
	215	Hokitika—Jackson's .. ..	"	199	19	3
	216	Adair's Track (widening) .. ..	"	34	10	11
	217	Seven-mile Creek—Taipo .. ..	"	130	0	0
	218	Okarito Forks—Waiho .. ..	"	246	3	3
	219	Browning's Pass Track .. ..	"	94	1	0
	220	Seddon's Terrace Track extension .. ..	"	6	7	6
	221	Ogilvie's Beach Track .. ..	"	622	9	8
	222	Kanieri Forks Road .. ..	"	96	10	5
	223	Teremakau—Paroa .. ..	"	3	13	0
	225	Duffer's Road (widening) .. ..	"	78	14	6
	226	Kanieri Lake Road .. ..	"	201	15	8
	228	Solberg's Hill .. ..	"	49	18	4
	229	Upjohn's Hill .. ..	"	174	9	3
	230	Kanieri Bridge .. ..	"	215	15	1
	231	Larrikin's Road .. ..	"	296	1	7
	232	Saltwater Track .. ..	"	72	8	2
	233	Whitcomb Valley Road .. ..	"	152	18	0
	235	Big Dam Track repairs .. ..	"	34	6	0
				£11,154	11	6
		Otago.				
	242	Lawrence—Waipori .. ..	Tuapeka	375	0	0
	243	Lawrence—Roxburgh .. ..	"	50	0	0
	244	Waitahuna—Lawrence .. ..	"	125	0	0
	271	Lawrence—Clyde .. ..	"	500	0	0
	245	Waipori—Waitahuna .. ..	"	128	19	0
	246	Waipori—Bush Road .. ..	"	46	19	8
	247	Lawrence County boundary .. ..	"	125	0	0
	249	Waipori—Outram .. ..	"	100	0	0
	250	Beaumont—Rankleburn .. ..	"	50	0	0
	251	Beaumont—Miller's Flat .. ..	"	150	0	0
	252	Waitahuna—Round Hill .. ..	"	100	0	0
	253	Gentle Annie—Clyde .. ..	Vincent	319	12	6
	271	Lawrence—Clyde .. ..	"	220	17	6
	254	Nevis Valley Road .. ..	"	200	0	0
	255	Cromwell Borough—Lowburn .. ..	"	100	0	0
	257	Clyde—Cromwell (repairs) .. ..	"	500	0	0
	258	Cromwell—Nevis .. ..	"	250	0	0
	261	Arrowtown—Macetown .. ..	Lake	146	15	6
	262	Shotover River Track .. ..	"	181	8	0
	263	Garston—Nevis .. ..	"	228	7	6
	264	Crown Terrace—Cardrona .. ..	"	149	17	0
	265	Queenstown—Gentle Annie .. ..	"	300	0	0
	266	Arthur's Point—Moke Creek .. ..	"	110	0	0
	267	Cardrona Coal-pit Road .. ..	"	250	0	0
	268	Arrow Falls Road .. ..	"	300	0	0
	269	Arthur's Point—Arrowtown .. ..	"	100	0	0
	270	Sawyer's Gully Road .. ..	"	100	0	0
				£5,207	16	8
		Southland.				
	274	Road to dredging claims, Waimumu .. ..	Southland	200	0	0
	276	Garston—Nevis .. ..	"	150	0	0
	277	Mokomai Saddle Road .. ..	"	200	0	0
	278	Waikaka—Coal-pit .. ..	"	150	0	0
	279	Waikaka Valley Main Road (repairs) .. ..	"	200	0	0
	280	Central Charlton Road .. ..	"	100	0	0
	272	Orepuki Shale-works .. ..	Wallace	55	8	3
				1,055	8	3
		Expenditure for year ended 31st March, 1904 .. ..	..	45,594	3	1
		Expenditure for previous years .. ..	..	587,140	14	5
		Total expenditure to 31st March, 1904, on Roads on Goldfields .. ..	..	£632,734	17	6

Development of Goldfields.—Table No. 5.  
STATEMENT showing the EXPENDITURE for WATER-RACES on GOLDFIELDS out of Public Works Fund to 31st March, 1904, and the LIABILITIES on that Date.

LOCALITY AND NAME OF RACE.	EXPENDITURE.						LIABILITIES.						Total Expenditure and Liabilities.				
	Survey and Construction, 1870-1903.		Grants, Subsidies, 1870-1903.		Survey and Construction, 1903-1904.		Grants, Subsidies, 1903-1904.		Totals.		Authorities on Grants, Subsidies.			Contracts.		Totals.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.		£	s. d.	£	s. d.
<b>NORTH ISLAND.</b>																	
<b>AUCKLAND PROVINCIAL DISTRICT—</b>																	
Thames ..	80,708	19 3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tairua Water-race ..	..	..	34	5 4	..	..	..	..	..	..	..	..	..	..	..	..	..
Compensation, Thames Water-race ..	..	..	1,250	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
R. Kelly's water-race, Mata ..	..	..	40	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
Kuaotunu Sludge-channel ..	..	..	200	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
Drain, Te Aroha West ..	..	..	61	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
	80,708	19 3	1,585	5 4	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>MIDDLE ISLAND.</b>																	
<b>WESTLAND PROVINCIAL DISTRICT—</b>																	
<i>Subsidies—</i>																	
Hohonu ..	3	7 0	1,955	12 1	..	..	..	..	..	..	..	..	..	..	..	..	..
Hibernian ..	12	5 8	1,992	14 8	..	..	..	..	..	..	..	..	..	..	..	..	..
New River ..	21	5 0	3,496	0 3	..	..	..	..	..	..	..	..	..	..	..	..	..
Kamieri ..	1	5 6	10,310	310 18 4	..	..	..	..	..	..	..	..	..	..	..	..	..
Rimu Drainage-tunnel ..	191	19 6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ross Sludge-channel ..	..	..	1,554	10 6	..	..	..	..	..	..	..	..	..	..	..	..	..
Kumara Sludge-channel No. 2 ..	..	..	2,762	17 2	..	..	..	..	..	..	..	..	..	..	..	..	..
Kumara Sludge-channel No. 3 ..	..	..	58	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
Kumara No. 4 Main Tail-race ..	..	..	1,151	10 8	..	..	..	..	..	..	..	..	..	..	..	..	..
Kumara No. 5 Main Tail-race ..	..	..	5,365	4 9	..	..	..	..	..	..	..	..	..	..	..	..	..
Trustees Main Tail-race, Waitaea ..	..	..	1,723	16 8	..	..	..	..	..	..	..	..	..	..	..	..	..
Branch Tail-race to No. 4 Channel, Payne and party ..	..	..	100	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
Kelly's Terrace Tunnel ..	13,937	8 10	2,047	0 6	..	..	..	..	..	..	..	..	..	..	..	..	..
Wainihini Water-race ..	..	..	..	..	215	8 9	..	..	..	..	..	..	..	..	..	..	..
Quinn's Creek Water-race (purchase) ..	..	..	70	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
Raising dam, Loop-line ..	1,125	16 6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ngahere-Blackball ..	..	..	200	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
Donnelly's Creek Tail-race ..	..	..	444	4 5	..	..	..	..	..	..	..	..	..	..	..	..	..
Purchase of Byrne, O'Hallahan, and Murdoch's water-rights ..	..	..	35	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
Jones Creek Storm-channel ..	50	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<i>Government Works—</i>	193,892	14 2	..	..	390	13 4	..	..	..	..	..	..	..	..	..	..	..
Waitaea-Kumara ..	25,927	4 6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mikoni ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>NELSON PROVINCIAL DISTRICT—</b>																	
<i>Government Works—</i>																	
Nelson Creek ..	90,722	10 8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Napoleon Hill ..	257	16 7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Argyle (Charleston) ..	15,501	15 3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Black's Point ..	244	9 0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Carried forward ..	341,889	18	283,267	10 0	606	2 1	355	10	2,376,119	0 5	270	15 0	..	..	..	..	..
	80,708	19 3	1,585	5 4	..	..	..	..	..	..	..	..	..	..	..	..	..
	1,958	19 1	2,005	0 4	..	..	..	..	..	..	..	..	..	..	..	..	..
	3,517	5 3	10,312	3 10	..	..	..	..	..	..	..	..	..	..	..	..	..
	191	19 6	1,554	10 6	..	..	..	..	..	..	..	..	..	..	..	..	..
	2,762	17 2	58	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
	1,151	10 8	5,365	4 9	..	..	..	..	..	..	..	..	..	..	..	..	..
	1,723	16 8	100	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
	2,047	0 6	..	..	215	8 9	..	..	..	..	..	..	..	..	..	..	..
	70	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1,125	16 6	200	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
	444	4 5	35	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..
	50	0 0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	193,892	14 2	..	..	390	13 4	..	..	..	..	..	..	..	..	..	..	..
	25,927	4 6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	90,722	10 8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	257	16 7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	15,501	15 3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	244	9 0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	341,889	18	283,267	10 0	606	2 1	355	10	2,376,119	0 5	270	15 0	..	..	..	..	..

STATEMENT showing the EXPENDITURE for WATER-RACES on GOLDFIELDS out of Public Works Fund to 31st March, 1904, 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, 1870-1903.		Grants Subsidies, 1870-1903.		Survey and Construction, 1903-1904.		Grants Subsidies, 1903-1904.		Totals.				Authorities on Grants, Subsidies.	Contracts.	Totals.			
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.						£	s. d.	£
Brought forward . . . . .	341,889	18 2	33,267	10 0	606	2 1	355	10 2	2,976,119	0 5	..	..	270	15 0	270	15 0	376,389	15 5
MIDDLE ISLAND—continued. NELSON PROVINCIAL DISTRICT— <i>ctd.</i> <i>Subsidies</i> —																		
Jones, Baxter, and party, water-race from Roaring Meg			800	0 0					800	0 0							800	0 0
Bell Hill Co.'s Race			500	0 0					500	0 0							500	0 0
Randall Creek Water-race	322	18 2							322	18 2							322	18 2
Wills and party, water-race at Sulky Gully			218	0 0					218	0 0							218	0 0
OTAGO PROVINCIAL DISTRICT— <i>Subsidies</i> —																		
Arrow			612	10 0					612	10 0							612	10 0
Beaumont and Tuapeka	4	6 2	640	0 0					644	6 2							644	6 2
Carriek Range			9,249	13 1					9,249	13 1							9,249	13 1
Mount Pisgah			200	0 0					200	0 0							200	0 0
Lawrence Drainage-channel			3,092	19 0					3,092	19 0							3,092	19 0
Ophir Tail-race			1,150	0 0					1,150	0 0							1,150	0 0
Muddy Creek Channel			850	0 0					850	0 0							850	0 0
St. Bathans			1,687	10 0			125	0 0	1,812	10 0			187	10 0			2,000	0 0
Maerewhenua	1,065	0 0							1,065	0 0							1,065	0 0
Artesian wells, Maniototo	20	0 0							20	0 0							20	0 0
Improving water-supply, Oamaru	1,150	7 2							1,150	7 2							1,150	7 2
Mountain Hut Water-race	4,831	12 0			48	0 0			4,879	12 0							4,879	12 0
Government Works—																		
Mount Ida	73,623	12 10			29	10 2			73,653	3 0			200	0 0			73,853	3 0
Waipori	11,263	1 0							11,263	1 0							11,263	1 0
CANTERBURY PROVINCIAL DISTRICT— <i>Subsidy</i> —																		
Ninety-mile Beach Water-race	65	6 7							65	6 7							65	6 7
SOUTHLAND PROVINCIAL DISTRICT— <i>Subsidy</i> —																		
Round Hill			133	19 4					133	19 4							133	19 4
GENERAL—																		
Increased water-supply	530	4 0	100	0 0					630	4 0							630	4 0
DEPARTMENTAL—																		
Salaries, travelling, advertising, &c.	6,720	6 8							6,720	6 8							6,720	6 8
TOTALS	441,486	12 9	52,502	1 5	683	12 3	480	10 2	2,495,152	16 7			658	5 0			2,495,811	1 7
SUMMARY.																		
NORTH ISLAND	80,708	19 3	1,585	5 4					82,294	4 7							82,294	4 7
MIDDLE ISLAND	441,486	12 9	52,502	1 5	683	12 3	480	10 2	2,495,152	16 7			658	5 0			2,495,811	1 7
TOTALS	522,195	12 0	54,087	6 9	683	12 3	880	10 2	2,577,447	1 2			658	5 0			2,578,105	6 2

## Development of Goldfields.—Table No. 5a.

STATEMENT showing ASSISTANCE towards PROSPECTING, and MISCELLANEOUS SERVICES, out of Public Works Fund to 31st March, 1904, and the LIABILITIES on that Date.

	Total Expenditure to 31st March, 1903.		Net Expenditure during 12 Months ended 31st March, 1904.		Total Net Expenditure to 31st March, 1904.		Liabilities on 31st March, 1904.		Total Net Expenditure and Liabilities.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Assistance towards prospecting* ..	15,447	4 10	1,088	17 3	16,536	2 1	1,380	9 7	17,916	11 8
Purchase of diamond-drill ..	722	1 5	..	..	722	1 5	..	..	722	1 5
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. ..	..	..	6,099	18 1	6,099	18 1	..	..	6,099	18 1
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	31,001	6 8	5,176	17 7	36,178	4 3	..	..	36,178	4 3
Water Conservation—										
Reports on Coromandel Harbour and Kuaotunu Sludge-channel	80	12 6	..	..	80	12 6	..	..	80	12 6
Engineer's salary and expenses ..	2,423	3 5	182	5 4	2,605	8 9	..	..	2,605	8 9
Reports on Ross Flat ..	284	10 8	..	..	284	10 8	..	..	284	10 8
Eweburn Reservoir ..	16,446	17 11	12	17 11	16,459	15 10	..	..	16,459	15 10
Home Gully Dam ..	1,025	12 6	2	8 0	1,028	0 6	..	..	1,028	0 6
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—										
Waitekauri ..	445	2 5	..	..	445	2 5	..	..	445	2 5
Karangahake ..	607	6 5	..	..	607	6 5	..	..	607	6 5
Mackeytown ..	351	0 0	..	..	351	0 0	..	..	351	0 0
Clyde ..	375	0 0	746	13 2	1,121	13 2	..	..	1,121	13 2
Alexandra ..	..	..	600	0 0	600	0 0	..	..	600	0 0
Thames Drainage Board contribution	1,000	0 0	..	..	1,000	0 0	..	..	1,000	0 0
Waimumu Main Tail-race ..	500	0 0	1,002	13 5	1,502	13 5	..	..	1,502	13 5
Charlton Creek Main Tail-race ..	236	5 5	126	12 2	362	17 7	..	..	362	17 7
Totals ..	99,608	11 2	15,114	2 11	114,722	14 1	1,380	9 7	116,103	3 8

TABLE No. 6.

STATEMENT showing the EXPENDITURE on TELEGRAPHS out of Public Works Fund to 31st March, 1904, and the Liabilities on that Date.

Line.	Expenditure	Total	
	during Twelve Months ended 31st March, 1904.	Expenditure and Liabilities.	
	£	s.	d.
<b>Telephone Exchanges,—</b>			
Asburton .. .. .	22	2	5
Auckland .. .. .	2,834	15	7
Blenheim .. .. .	14	17	0
Christchurch .. .. .	899	13	6
Dannevirke .. .. .	95	8	1
Dunedin .. .. .	1,953	9	1
Feilding .. .. .	22	5	6
Gisborne .. .. .	113	12	5
Greymouth .. .. .	141	5	0
Hamilton .. .. .	69	10	8
Hawera .. .. .	16	19	1
Hokitika .. .. .	92	8	3
Invercargill .. .. .	70	7	11
Masterton .. .. .	83	14	5
Napier .. .. .	245	1	9
Nelson .. .. .	22	10	9
New Plymouth .. .. .	28	18	0
Oamaru .. .. .	62	4	7
Pahiatua .. .. .	4	5	10
Palmerston North .. .. .	324	17	2
Rotorua .. .. .	47	18	4
Stratford .. .. .	1	12	11
Thames .. .. .	6	14	9
Timaru .. .. .	357	0	1
Wanganui .. .. .	126	4	6
Wellington .. .. .	774	9	7
Westport .. .. .	12	9	3
Whangarei .. .. .	120	16	1
<b>New wires,—</b>			
Doubtless Bay—Auckland .. .. .	170	6	3
Fairburns—Victoria Valley .. .. .	11	14	6
Waiotemarama .. .. .	116	12	2
Paradise .. .. .	51	13	6
Warkworth—Whangarei .. .. .	130	14	0
Te Kopuru—Dargaville .. .. .	15	11	6
Ruapekapeka .. .. .	5	6	10
Naumai—Raupo .. .. .	1	5	0
Koutu .. .. .	13	14	7
Wayby .. .. .	0	4	0
Albany .. .. .	114	13	3
Hobsonville .. .. .	62	5	11
East Tamaki .. .. .	14	4	2
Whitford .. .. .	128	12	7
Ngaruawahia—Waingaro .. .. .	366	11	10
Waetenga .. .. .	0	2	5
Piriaka .. .. .	2	2	2
Taumarunui .. .. .	1	4	6
Paengaroa .. .. .	4	1	0
Kauaeranga Valley .. .. .	3	17	6
Waimangu .. .. .	165	16	3
Taupo—The Spa .. .. .	6	13	6
Waipawa—Blackburn—Wakarara .. .. .	193	17	1
Weber—Waione .. .. .	22	14	4
Dannevirke—Waipukurau .. .. .	159	15	5
Mangatera—Umutaoroa .. .. .	8	9	10
Gladstone—Te Wharau .. .. .	5	19	6
Martinborough—Pahaoa .. .. .	13	9	9
Opunake—Pungarehu .. .. .	3	2	10
Awatuna—Te Keri .. .. .	14	8	0
Okaiawa—Matapu .. .. .	12	12	8
Normanby—Eltham .. .. .	1	0	0
Hawera—Manaita .. .. .	2	1	0
Carried forward .. .. .	10,466	9	4

TABLE NO. 6—*continued.*STATEMENT showing EXPENDITURE ON TELEGRAPHS out of Public Works Fund—*continued.*

Line.	Expenditure during Twelve Months ended 31st March, 1903.			Total Expenditure and Liabilities.		
	£	s.	d.	£	s.	d.
Brought forward .. .. .	10,466	9	4			
<i>New Wires—continued.</i>						
Fordell-Wangaehu .. .. .	6	2	4			
Turangarere .. .. .	7	13	3			
Taihape-Mataroa-Ngaurokehu-Ruanui .. .. .	459	19	10			
Mangaweka-Taihape .. .. .	57	12	5			
Wellington-Palmerston North-Feilding .. .. .	44	11	8			
Tokomaru-Shannon .. .. .	25	14	0			
Wellington-New Plymouth .. .. .	98	6	3			
Wellington City Tramways .. .. .	252	11	4			
Kaituna-Okaramio .. .. .	10	15	0			
Grassmere .. .. .	1	8	0			
Wharanui .. .. .	0	15	0			
Pelorus Extension .. .. .	308	8	8			
Puponga .. .. .	3	16	6			
Golden Downs .. .. .	2	12	0			
Mokihinui-Karamea .. .. .	1,714	8	1			
Globe Hill-Crushington .. .. .	36	17	8			
Dommett .. .. .	7	0	5			
Scargill .. .. .	3	10	6			
Tuahiwi .. .. .	24	4	9			
Harewood Road .. .. .	28	17	3			
Lincoln Trunk .. .. .	24	11	4			
Ashburton-Christchurch .. .. .	6	19	1			
Timaru-St. Andrews-Waimate .. .. .	89	8	10			
St. Andrews-Otaio .. .. .	17	10	2			
Timaru-Ashburton (metallic circuit) .. .. .	31	19	9			
Kurow Omarama .. .. .	372	2	7			
Outram-Woodside .. .. .	28	12	6			
Mosgiel-Woodside .. .. .	164	13	4			
Woodside-Mangatua .. .. .	106	10	5			
Waitati-Waikouaiti .. .. .	17	8	1			
Waikaia-Wendonside .. .. .	7	16	0			
Ophir-Poolburn .. .. .	110	18	1			
Frankton-Lower Shotover .. .. .	62	0	0			
Clinton-Balclutha .. .. .	158	1	2			
Long Gully .. .. .	6	11	6			
Gore-Chatton .. .. .	5	12	6			
Te Tua-Tuatapere .. .. .	119	9	4			
Purchase of material .. .. .	32,560	14	8			
	47,226	19	7			
Expenditure to 31st March, 1903 .. .. .	1,006,465	9	11			
				1,053,692	9	6
Total expenditure .. .. .				1,053,692	9	6
Liabilities, 31st March, 1904 .. .. .				43,877	0	0
Total expenditure and liabilities .. .. .				£1,097,569	9	6



TABLE No. 7.

STATEMENT showing the EXPENDITURE on PUBLIC BUILDINGS out of Public Works Fund to 31st March, 1904, and the LIABILITIES on that Date.

	Total Expenditure to 31st March, 1903.			Expenditure for Year ended 31st March, 1904.			Total Expenditure to 31st March, 1904.			Liabilities on Authorities, Contracts, &c., 31st March, 1904.			Total Expenditure and Liabilities.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Judicial .. .. .	472,080	0	6	25,978	3	3	498,058	3	9	3,751	13	6	501,809	17	3
Postal and Telegraph .. .. .	332,371	18	9	53,917	8	2	386,289	6	11	5,364	9	0	391,653	15	11
Customs .. .. .	16,598	15	10	8,719	4	3	25,318	0	1	16,883	18	6	42,206	18	7
Offices for Public Departments .. .. .	231,740	10	8	8,568	2	4	240,308	13	0	3,610	14	10	243,919	7	10
Hospitals for Mental Diseases .. .. .	485,759	11	8	15,812	0	2	501,571	11	10	2,371	6	1	503,942	17	11
Defence Depot, Wellington .. .. .	3,473	6	2	2,071	16	10	5,545	3	0	249	15	10	5,794	18	10
School-buildings .. .. .	1,145,757	17	8	87,088	16	4	1,232,846	14	0	2,804	8	9	1,235,651	2	9
Hospitals .. .. .	59,223	8	3	4,290	19	6	63,514	7	9	750	0	0	64,264	7	9
Quarantine Stations .. .. .	6,863	19	5	..	..	6,863	19	5	..	..	..	6,863	19	5	
Survey .. .. .	543	4	5	..	..	543	4	5	..	..	..	543	4	5	
Parliament Buildings .. .. .	60,954	3	7	601	17	10	61,556	1	5	..	..	61,556	1	5	
Government House, Auckland .. .. .	4,940	0	4	..	..	4,940	0	4	..	..	..	4,940	0	4	
Government House, Wellington .. .. .	8,331	0	2	..	..	8,331	0	2	..	..	..	8,331	0	2	
Agricultural .. .. .	7,628	5	8	2,504	4	0	10,132	9	8	82	0	6	10,214	10	2
Public Health .. .. .	..	..	..	6,314	16	9	6,314	16	9	103	16	3	6,418	13	0
Preparation of Plans, etc. .. .. .	..	..	..	324	3	10	324	3	10	3	2	11	327	6	9
Miscellaneous .. .. .	16,438	8	8	..	..	16,438	8	8	358	2	1	16,796	10	9	
Totals .. .. .	2,852,704	11	9	216,191	13	3	3,068,896	5	0	36,338	8	3	3,105,234	13	3

TABLE No. 8.

STATEMENT showing the EXPENDITURE on LIGHTHOUSES, HARBOUR WORKS, and HARBOUR DEFENCES out of Public Works Fund, to 31st March, 1904, and the LIABILITIES on that Date.

	Total Expenditure to 31st March, 1903.			Net Expenditure during 12 Months ended 31st March, 1904.			Total Expenditure to 31st March, 1904.			Liabilities on Authorities, Contracts, &c., to 31st March, 1904.			Total Expenditure and Liabilities.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
<b>LIGHTHOUSES.</b>															
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 Campbell .. .. .	74	0	6	2,215	0	4	2,289	0	10	..	..	..	2,289	0	10
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 .. .. .	7,028	14	8	585	19	3	7,614	13	11	..	..	..	7,614	13	11
Cape Palliser .. .. .	6,712	9	6	..	..	..	6,712	9	6	..	..	..	6,712	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 .. .. .	9,230	13	9	40	0	0	9,270	13	9	..	..	..	9,270	13	9
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
Jack's Point .. .. .	..	..	..	457	6	5	457	6	5	11	18	11	469	5	4
Kahurangi Point .. .. .	6,166	18	0	2,908	0	1	9,074	18	1	72	2	0	9,147	0	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
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	11	11	..	..	..	9,454	11	11	..	..	..	9,454	11	11
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
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 .. .. .	153,519	11	3	6,206	6	1	159,725	17	4	84	0	11	159,809	18	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, 1903.	Net Expenditure during 12 Months ended 31st March, 1904.	Total Expenditure to 31st March, 1904.	Liabilities on Authorities, Contracts, &c., to 31st March, 1904.	Total Expenditure and Liabilities.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
<b>HARBOUR WORKS.</b>					
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
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 .. .. .	..	2 10 0	2 10 0	..	2 10 0
Orua Bay Wharf .. .. .	..	83 3 10	83 3 10	16 16 2	100 0 0
Waiwera Wharf .. .. .	..	350 0 0	350 0 0	..	350 0 0
Mercury Bay Wharf .. .. .	..	3 14 6	3 14 6	..	3 14 6
Opotiki Wharf .. .. .	..	190 5 0	190 5 0	309 15 0	500 0 0
Waiuku Channel .. .. .	357 11 6	..	357 11 6	..	357 11 6
Coromandel Wharf .. .. .	Cr. 0 10 0	..	Cr. 0 10 0	..	Cr. 0 10 0
Waitara Harbour .. .. .	2,000 0 0	..	2,000 0 0	..	2,000 0 0
Removing eel-weirs, Patea River .. .. .	50 0 0	..	50 0 0	..	50 0 0
Wairoa Harbour .. .. .	1,500 0 0	..	1,500 0 0	..	1,500 0 0
Mokau Wharf .. .. .	12 13 9	..	12 13 9	..	12 13 9
Nuhaka, land for harbour purposes .. .. .	..	141 12 6	141 12 6	..	141 12 6
Napier Harbour .. .. .	2,672 14 9	175 0 0	2,847 14 9	..	2,847 14 9
Manawatu River, snagging .. .. .	214 13 3	..	214 13 3	..	214 13 3
Fox on Marine Reserve, Protection of .. .. .	50 0 0	..	50 0 0	..	50 0 0
Castlepoint Jetty .. .. .	51 14 1	..	51 14 1	..	51 14 1
Cape Campbell Lighthouse Jetty .. .. .	6 5 0	..	6 5 0	..	6 5 0
Kaikoura Jetty and Harbour .. .. .	2,912 16 10	..	2,912 16 10	..	2,912 16 10
Picton, removal of old wharf .. .. .	94 0 0	..	94 0 0	..	94 0 0
Nelson, dredging harbour .. .. .	2,806 15 8	..	2,806 15 8	..	2,806 15 8
Motueka Wharf, protection .. .. .	100 0 0	158 11 11	258 11 11	41 8 1	300 0 0
Collingwood Harbour .. .. .	745 18 8	..	745 18 8	..	745 18 8
Pakawau Wharf .. .. .	2 0 0	..	2 0 0	..	2 0 0
Karamea Wharf .. .. .	559 19 11	..	559 19 11	..	559 19 11
Little Wanganui Wharf, wharf approach, and snagging river .. .. .	336 0 10	..	336 0 10	..	336 0 10
Westport Harbour .. .. .	14,110 18 7	..	14,110 18 7	..	14,110 18 7
Greymouth Harbour .. .. .	127,233 19 6	..	127,233 19 6	..	127,233 19 6
Hokitika Harbour .. .. .	58,780 5 10	..	58,780 5 10	..	58,780 5 10
Okarito Wharf, repairs and extension .. .. .	287 10 10	104 8 9	391 19 7	..	391 19 7
Okarito Harbour, fascine work .. .. .	..	127 0 6	127 0 6	..	127 0 6
Akaroa—Le Bon's Bay Wharf, repairs .. .. .	..	55 0 0	55 0 0	..	55 0 0
Lyttelton, reclamation-works, Sticking Point .. .. .	1,827 11 7	83 7 3	1,910 18 10	..	1,910 18 10
Okuru Wharf .. .. .	300 0 0	..	300 0 0	..	300 0 0
Timaru Harbour .. .. .	100,000 0 0	..	100,000 0 0	..	100,000 0 0
Taiaroa Heads Lighthouse, enlarging and repairing dwelling .. .. .	83 7 1	..	83 7 1	..	83 7 1
Dunedin, St. Clair, Protection of Ocean Beach .. .. .	..	146 14 0	146 14 0	..	146 14 0
Martin's Bay, removal of rock .. .. .	5 0 0	..	5 0 0	..	5 0 0
Port Levy Jetty .. .. .	250 0 0	..	250 0 0	..	250 0 0
Toitois Jetty .. .. .	1,000 0 0	..	1,000 0 0	..	1,000 0 0
Balclutha Jetty .. .. .	250 0 0	..	250 0 0	..	250 0 0
Catlin's River, removal of rocks .. .. .	277 19 0	..	277 19 0	..	277 19 0
Catlin's River Jetty .. .. .	1,015 7 7	..	1,015 7 7	..	1,015 7 7
Queenstown Beacon .. .. .	35 0 0	..	35 0 0	..	35 0 0
Queenstown Jetty .. .. .	297 8 0	..	297 8 0	..	297 8 0
Jackson's Bay Jetty .. .. .	32 6 4	..	32 6 4	..	32 6 4
Raising dredge "Hapuka" .. .. .	777 7 9	..	777 7 9	..	777 7 9
Miscellaneous .. .. .	400 0 0	..	400 0 0	..	400 0 0
Stewart Island Wharf, Horseshoe Bay .. .. .	230 0 0	..	230 0 0	..	230 0 0
Chatham Islands: Waitangi, removal and extension of wharf and store .. .. .	20 0 0	..	20 0 0	..	20 0 0
Chatham Islands: Shed at Pitt Island .. .. .	1 10 0	..	1 10 0	..	1 10 0
<b>Total Harbour Works .. .. .</b>	<b>324,526 17 11</b>	<b>1,771 8 3</b>	<b>326,298 6 2</b>	<b>367 19 3</b>	<b>326,666 5 5</b>
<b>HARBOUR DEFENCES.</b>					
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 colony .. .. .	236,867 0 10	2,885 7 10	239,752 8 8	54 6 3	239,806 14 11
Land for depots and batteries .. .. .	38,327 14 6	..	38,327 14 6	..	38,327 14 6
<b>Total Harbour Defences .. .. .</b>	<b>513,306 13 1</b>	<b>2,885 7 10</b>	<b>516,192 0 11</b>	<b>54 6 3</b>	<b>516,246 7 2</b>
<b>Grand total .. .. .</b>	<b>991,353 2 3</b>	<b>10,863 2 2</b>	<b>1,002,216 4 5</b>	<b>506 6 5</b>	<b>1,002,722 10 10</b>

## APPENDICES TO THE PUBLIC WORKS STATEMENT. 1904.

## APPENDIX A.

AUDITED STATEMENT OF EXPENDITURE ON PUBLIC WORKS  
OUT OF THE PUBLIC WORKS FUND FOR THE YEAR  
1903-4.*Prepared in compliance with Section 8 of "The Public Works Act, 1894."*

SIR,— Public Works Department, Wellington, 11th June, 1904.  
In compliance with the 8th section of "The Public Works Act, 1894," 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.,  
JAS. MCGOWAN,  
Acting Minister for 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 1903-4.

Class.	Votes.	Summary.	Appropriation.	Expenditure.	Credits.	Net Expenditure.
			£	£ s. d.	£ s. d.	£ s. d.
		PUBLIC WORKS FUND.				
XXIV.	85	Public Works, Departmental ..	15,776	16,991 13 3	902 14 3	16,088 19 0
XXV.	86-87	Railways .. .. .	905,687	928,947 14 8	26,707 2 8	802,240 12 0
XXVI.	88-97	Public Buildings .. .. .	254,478	229,521 0 4	13,329 7 1	216,191 13 3
XXVII.	98-100	Lighthouses, Harbour-works, and Harbour Defences .. .. .	18,500	11,161 0 11	297 18 9	10,863 2 2
XXVIII.	101	Tourist and Health Resorts ..	20,000	15,775 6 4	132 2 1	15,643 4 3
XXIX.	102	Immigration .. .. .	4,300	798 8 4	800 0 0 <i>Cr.</i>	6 11 8
XXX.	103-107	Roads, Bridges, and other Public Works .. .. .	420,274	392,986 15 1	31,941 17 0	361,044 18 1
XXXI.	108	Development of Goldfields ..	20,000	17,873 14 2	1,595 8 10	16,278 5 4
XXXII.	109	Purchase of Native Lands ..	10,000	6,181 3 8	829 9 0	5,351 14 8
XXXIII.	110	Telegraph Extension .. .. .	50,000	60,869 2 4	13,642 2 9	47,226 19 7
XXXIV.	111	Rates on Native Lands .. .. .	950	666 0 3	..	666 0 3
XXXV.	112	Contingent Defence .. .. .	50,000	42,739 10 4	4,015 14 1	38,723 16 3
XXXVI.	113, 114	Lands Improvement .. .. .	7,500	2,019 3 11	..	2,019 3 11
		Unauthorised .. .. .	..	40,365 16 0	39,568 17 1	796 18 11
		Total Public Works Fund ..	1,777,465	1,666,891 9 7	133,762 13 7	1,533,128 16

Public Works Department.

G. J. CLAPHAM,  
Accountant.

Examined and found correct.

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

J. K. WARBURTON,  
Controller and Auditor-General.

NOTE.—Charges and expenses of raising loans, £87,248 17s., and expenditure charged to special account, Paeroa-Waihi Railway, £26,462 15s. 2d., 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.
	<b>PUBLIC WORKS FUND.</b>				
85	Public Works, Departmental— Public Works, Departmental .. .. .	15,776	16,991 13 3	902 14 3	16,088 19 0
	<b>Railways—</b>				
	<b>Railway Construction—</b>				
	Kawakawa—Grahamtown .. .. .	15,000	10,939 2 8	25 4 5	10,913 18 3
	Helensville Northwards .. .. .	15,000	11,789 0 9	1 8 0	11,787 12 9
	Paeroa—Waihi .. .. .	10,000	14,307 5 2	14,311 18 6	Cr. 4 13 4
	Gisborne—Karaka .. .. .	15,000	14,726 2 6	396 3 2	14,329 19 4
	Stratford—Kawakawa .. .. .	10,000	8,720 15 11	8 3 10	8,712 12 1
	Mount Egmont Branch .. .. .	5,000	850 4 5	..	850 4 5
	Marton—Te Awamutu .. .. .	200,000	175,836 12 9	856 12 4	174,480 0 5
	Blenheim—Waipara .. .. .	35,000	27,844 4 2	23 19 5	27,815 4 9
	Midland Railway .. .. .	70,000	54,062 13 5	515 3 8	53,547 9 9
86	Ngahere—Blackball .. .. .	10,000	19,537 16 2	..	19,537 16 2
	Greymouth—Hokitika (Extension to Ross) .. .. .	10,000	27,071 19 1	2,009 4 0	25,062 15 1
	Otago Central .. .. .	70,000	48,115 9 2	118 9 3	47,996 19 11
	Heriot Extension .. .. .	6,000	6,057 6 4	0 7 7	6,056 18 9
	Catlin's—Seaward Bush .. .. .	10,000	6,924 4 3	113 10 0	6,810 14 3
	Riversdale—Switzers .. .. .	4,000	2,639 1 0	0 1 6	2,638 19 6
	Orepuki—Waiau .. .. .	8,000	3,970 7 11	14 3 2	3,956 4 9
	Land-claims and other Old Liabilities on Construction Account .. .. .	1,100	299 11 9	4 11 10	294 19 11
	Surveys, New Lines of Railway .. .. .	1,000	1,368 9 10	..	1,368 9 10
	Permanent-way and other Materials .. .. .	60,000	57,225 13 9	5,102 5 2	52,123 8 7
87	Additions to Open Lines .. .. .	350,587	337,161 13 8	3,200 16 10	333,960 16 10
	<b>Public Buildings—</b>				
88	General .. .. .	16,668	13,530 2 6	1,964 1 8	11,566 0 10
89	Judicial .. .. .	30,750	26,090 1 9	111 18 6	25,978 3 3
90	Postal and Telegraph .. .. .	59,940	60,845 14 10	6,928 6 8	53,917 8 2
91	Customs .. .. .	12,270	8,719 4 3	..	8,719 4 3
92	Hospitals for Mental Diseases .. .. .	21,000	16,267 12 2	455 12 0	15,812 0 2
93	School Buildings .. .. .	61,000	57,789 11 0	..	57,789 11 0
94	School Buildings (Special) .. .. .	33,300	29,347 2 10	47 17 6	29,299 5 4
95	Agricultural .. .. .	5,000	2,518 15 8	14 11 8	2,504 4 0
96	General Hospitals and other Charitable Institutions .. .. .	8,550	8,097 18 7	3,806 19 1	4,290 19 6
97	Public Health .. .. .	6,000	6,314 16 9	..	6,314 16 9
	<b>Lighthouses, Harbour-works, and Harbour Defences—</b>				
98	Lighthouses .. .. .	5,000	6,206 6 1	..	6,206 6 1
99	Harbour-works .. .. .	3,500	2,058 18 8	287 10 5	1,771 8 3
100	Harbour Defences .. .. .	10,000	2,895 16 2	10 8 4	2,885 7 10
101	Tourist and Health Resorts— Tourist and Health Resorts .. .. .	20,000	15,775 6 4	132 2 1	15,643 4 3
102	Immigration— Immigration .. .. .	4,300	793 8 4	800 0 0	Cr. 6 11 8
	<b>Construction and Maintenance of Roads, Bridges, and other Public Works—</b>				
103	Roads, Departmental .. .. .	*19,870	21,348 3 10	2,440 5 7	18,907 18 3
104	Roads, &c. .. .. .	†309,872	285,363 9 9	28,931 8 1	256,432 1 8
105	Maintenance of Main Roads, &c. .. .. .	31,459	27,859 1 11	570 1 4	27,289 0 7
106	Tourist Roads, &c. .. .. .	20,373	12,821 12 6	..	12,821 12 6
107	Roads on Goldfields, &c. .. .. .	†38,700	45,594 7 1	0 2 0	45,594 5 1
108	Development of Goldfields— Development of Goldfields .. .. .	20,000	17,873 14 2	1,595 8 10	16,278 5 4
109	Purchase of Native Lands— Purchase of Native Lands .. .. .	10,000	6,181 3 8	829 9 0	5,351 14 8
110	Telegraph Extension— Telegraph Extension .. .. .	50,000	60,869 2 4	13,642 2 9	47,226 19 7
111	Rates on Native Lands— Rates on Native Lands .. .. .	950	666 0 3	..	666 0 3
112	Contingent Defence— Contingent Defence .. .. .	50,000	42,739 10 4	4,015 14 1	38,723 16 3
113	Lands Improvement— Improved-farm Settlements .. .. .	6,000	804 10 0	..	804 10 0
114	Lands, Miscellaneous .. .. .	1,500	1,214 13 11	..	1,214 13 11
	<b>Unauthorised—</b>				
	Services not provided for .. .. .	..	40,365 16 0	39,568 17 1	796 18 11
	<b>Total Public Works Fund .. .. .</b>	<b>1,777,465</b>	<b>1,666,891 9 7</b>	<b>133,762 13 7</b>	<b>1,533,128 16 0</b>

\* Inclusive of £1,500 transferred from Vote 104 under order of Governor, 2nd March, 1904.

† Exclusive of £9,000—£1,500 transferred to Vote 103 and £7,500 transferred to Vote 107—under order of Governor, 2nd March, 1904.

‡ Inclusive of £7,500 transferred from Vote 104, under order of Governor, 2nd March, 1904.

NOTE.—Charges and expenses of raising loans, £87,248 17s., and expenditure charged to special account, Paeroa—Waihi Railway, £26,462 15s. 2d., not included in above figures.

## 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, 1904, prepared in Terms of Section 38, Part IV., of "The Public Revenues Act, 1891," and forwarded, as therein provided, to the Audit Office.

Class.	Votes.	Summary.	Total.
PUBLIC WORKS FUND.			
XXV.	86	Railways .. .. .	£ 76,151 2 3
XXVI.	88-96	Public Buildings.. .. .	36,338 8 3
XXVII.	98-100	Lighthouses, Harbour Works, and Harbour Defences .. .. .	506 6 5
..	..	Paeroa-Waihi Railway Account .. .. .	4,296 15 11
			117,292 12 10
CONSOLIDATED FUND.			
XIX.	72	Public Buildings .. .. .	1,294 0 5

Vote No.	Name of Vote.	Total.
PUBLIC WORKS FUND.		
86	Railway-construction—	£ s. d.
	Kawakawa-Grahamtown .. .. .	2,572 7 3
	Helensville Northwards .. .. .	77 15 9
	Gisborne-Karaka .. .. .	3,547 9 11
	Stratford-Kawakawa .. .. .	1 1 8
	Marton-Te Awamutu .. .. .	9,662 4 5
	Blenheim-Waipara .. .. .	4,626 0 9
	Midland Railway .. .. .	37,868 7 5
	Ngahere-Blackball .. .. .	3,405 3 11
	Greymouth-Hokitika (extension to Ross) .. .. .	7,760 10 1
	Otago Central .. .. .	2,513 2 4
	Heriot Extension .. .. .	119 12 2
	Catlin's-Seaward Bush .. .. .	558 14 7
	Riversdale-Switzer's .. .. .	1,280 18 6
	Orepuki-Waiiau .. .. .	.. .. .
	Land-claims, &c. .. .. .	.. .. .
	Surveys, New Lines of Railway .. .. .	.. .. .
	Permanent-way Materials .. .. .	2,157 13 6
		76,151 2 3
	Public Buildings—	
88	General .. .. .	4,221 15 8
89	Judicial .. .. .	3,751 13 6
90	Postal and Telegraph .. .. .	5,864 9 0
91	Customs .. .. .	16,888 18 6
92	Hospitals for Mental Diseases .. .. .	2,371 6 1
93	School Buildings (part of vote only) .. .. .	2,804 8 9
95	Agricultural .. .. .	82 0 6
96	General Hospitals and other Charitable Institutions .. .. .	750 0 0
97	Public Health .. .. .	103 16 3
		36,338 8 3
	Lighthouses, Harbour Works, and Harbour Defences—	
98	Lighthouses .. .. .	84 0 11
99	Harbour Works .. .. .	367 19 3
100	Harbour Defences .. .. .	54 6 3
		506 6 5
..	Paeroa-Waihi Railway Account .. .. .	4,296 15 11
Total, Public Works Fund.. .. .		117,292 12 10
CONSOLIDATED FUND.		
72	Public Buildings .. .. .	1,294 0 5

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

Public Works Department, 30th April, 1904.

**APPENDIX C.**  
**SCHEDULE of CONTRACTS CURRENT on the 1st April, 1903, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1904.**

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.
<b>RAILWAYS.</b>							
May 6, 1902	Kawakawa-Grahamtown	Whangarei Bridge	G. M. Fraser and Co.	April 17, 1903	Oct. 29, 1903	\$ 6,788 3 3	
July 4, 1901	Paeroa-Waih	Ohinemuri Bridge	J. and A. Anderson	Feb. 13, "	"	\$ 8,771 15 11	
Feb. 9, 1904	"	Ohinemuri Bridges, 2 and 3 Superstructure	J. and A. Anderson	May 21, 1905	"	\$ 3,540 0 0	
Oct. 25, 1902	Gisborne-Karaka	Waipaea Bridge	John McLean and Sons	March 15, 1904	"	\$ 6,885 0 0	
March 22, 1903	Stratford-Kawakawa	Surfacemen's Cottages	F. W. Crawford	July 23, 1903	Aug. 5, 1903	\$ 649 18 0	
May 8, 1901	Marton-Te Awamutu, N.E.	Taurarunui Bridge	Scott Bros. (Limited)	Feb. 3, "	Dec. 23, "	\$ 11,500 9 0	
June 8, 1903	"	Whakapapa Bridges	G. Fraser and Sons (Limited)	Aug. 2, 1904	"	\$ 6,184 4 3	
May 8, 1901	Marton-Te Awamutu, S.E.	One 22 ft. 6 in. Steel-girder Span for Hautapu River Bridge	Scott Bros. (Limited)	Sept. 3, 1902	Oct. 30, 1902	\$ 1,180 0 0	
Oct. 19, 1903	"	Taihape Station-buildings	Russell and Bignell	July 16, 1904	"	\$ 1,245 6 0	
Feb. 8, 1904	"	9 Cottages, Taihape	Russell and Bignell	July 16, "	"	\$ 3,483 0 0	
March 20, 1903	Blenheim-Waipara, S.E.	6 Platelayers' Cottages	J. P. Petersen	July 31, 1903	July 31, 1903	\$ 1,495 0 0	
Sept. 11, 1902	"	Hurunui Bridge	Scott Bros. (Limited)	May 30, 1904	"	\$ 3,598 17 0	
June 4, 1903	"	Cylinders, Hurunui Bridge	Scott Bros. (Limited)	July 11, 1903	July 11, 1903	\$ 310 17 1	
Nov. 18, "	Midland (Motupiko-Tadmor)	Motuka Bridge	Langlands and Dixon	Nov. 23, "	Mar. 23, 1904	\$ 8,681 18 0	
Jan. 12, "	"	Land plan Survey	F. J. Ledger	March 31, "	June 30, 1903	\$ 165 0 0	
Sept. 17, 1902	" (Reefton-Inangahua)	Inangahua Bridge (near Reefton)	J. Fitzgerald	Feb. 1, 1904	"	\$ 6,394 10 0	
Dec. 4, "	"	Patterson's Creek Viaduct (at Landing)	M. O'Connor	July 26, "	"	\$ 6,853 0 10	
Feb. 12, 1901	" (Springfield end)	Staircase Viaduct and Broken River Bridge	Scott Bros. (Limited)	Oct. 15, 1902	April 9, 1903	\$ 11,082 8 6	
Oct. 12, 1903	"	"	Cleveland Bridge and Engineering Company	Oct. 12, 1905	"	\$ 26,269 7 0	
Sept. 1, 1902	Ngahere-Blackball	Ngahere Bridge	H. Bignell	April 9, 1904	"	\$ 23,331 3 11	
Aug. 21, "	Greymouth-Hokitika (extension to Ross)	Hokitika Bridge	O. Campbell	April 12, "	"	\$ 26,541 10 1	
Feb. 18, 1903	Otago Central	Timber for Staging Poolburn Viaduct	Thomson, Bridger, and Co.	April 8, 1903	April 8, 1903	\$ 411 6 3	
April 27, "	"	Ironbark Timber	Fitzroy Timber-getters' Association	July 7, "	Aug. 14, "	\$ 453 2 6	
June 11, "	"	Timber for Staging, Manuherekia Bridge	J. Murdoch and Co.	June 25, "	July 3, "	\$ 237 10 0	
Dec. 23, "	"	Station-buildings, Ophir and Lauder	O. Campbell	May 23, 1904	"	\$ 2,477 0 0	
March 10, 1904	Heriot Extension	Station-buildings, Ophir and Lauder	McLean and Cox	Aug. 3, "	"	\$ 1,485 0 0	
June 16, 1902	Riversdale-Switzers	Mataura Bridge	McKechnie and Flemming	May 25, 1903	Feb. 22, 1904	\$ 4,799 18 6	
Feb. 1, 1904	Cathin's-Seaward Bush	Station-buildings, Cathin's River	R. Wilson	April 11, 1904	"	\$ 527 10 11	
Dec. 23, 1902	Orepuki-Waian	Wairoaka Station-buildings	E. W. Bone	May 10, 1903	July 7, 1903	\$ 903 8 0	
June 19, 1903	Permanent-way, Rails	85 Sets Points and Crossings	Cooper and Duncan	Jan. 1, 1904	"	\$ 1,010 0 0	
April 27, "	" Sleepers	3,000 Ironbark Sleepers	Fitzroy Timber getters' Association	July 7, 1903	Aug. 14, 1903	\$ 453 2 6	

APPENDIX C—continued.

SCHEDULE of CONTRACTS CURRENT on the 1st April, 1903, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1904—continued.

Date of Contract.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
					£ s. d.	
AUCKLAND.						
June 25, 1902	Steel cell-doors, Mount Eden Gaol, Auckland	Beaney and Sons, Auckland	Dec. 7, 1902	Aug. 6, 1903	162 0 0	
Dec. 3, "	Native School, Residence, Te Teko	F. Moody, Whakatane	Feb. 4, 1903	April 15, "	499 15 0	
Dec. 2, "	Native School, Residence, Paeroa	Palmer and Judge, Waihi	Feb. 27, "	Mar. 4, "	387 17 0	
Dec. 19, "	Native School, Te Kaha	J. H. Moir, Opotiki	April 9, "	June 20, "	950 0 0	
Jan. 10, "	Additions, &c., to Sanatorium, Cambridge	C. H. Frankham, Auckland	April 6, "	Aug. 7, "	3,080 0 0	
Feb. 9, "	Additions, &c., Mount Albert Industrial School	C. H. Frankham, Auckland	April 30, "	July 7, "	885 0 0	
Feb. 26, "	Additions, &c., Police-station, Ponsoby	Mathieson and Baldeck, Auckland	May 20, "	June 6, "	349 16 8	
April 8, 1903	Teacher's Cottage, Kenana Native School	T. M. Lane and Sons, Totara North	July 1, "	July 4, "	262 0 0	
April 23, "	Repairs, &c., Departmental Buildings, Gisborne	Morrison Bros., Gisborne	June 18, "	Aug. 21, "	542 0 0	
June 1, "	Removal of Post-office, Pahi	E. Morris, Auckland	July 29, "	Sept. 19, "	212 0 0	
June 12, "	Iron Staircase and Railings, Mount Eden Gaol, Auckland	James McIntyre, Onehunga	Dec. 8, "	" "	203 5 4	
Sept. 4, "	Additions to Native School, Taumarunui	Potts and Hardy, Cambridge	Oct. 23, "	Nov. 5, 1903	279 0 0	
Aug. 6, "	Cottage, Cable Station, Doubtless Bay	T. M. Lane and Sons, Totara North	Dec. 1, "	Dec. 22, "	500 0 0	
Aug. 26, "	Native School, Oruanui	Salmon and Powick, Hamilton	May 4, 1904	" "	636 10 0	Assigned to Kusabs and Hardley, Rotua.
Aug. 26, "	Native School, Waitahuna	Salmon and Powick, Hamilton	May 4, "	" "	773 18 0	Ditto.
Sept. 1, "	Police-quarters, Te Awamutu	T. Rickett, Te Awamutu	Dec. 25, 1903	April 9, 1904	542 7 5	
Sept. 1, "	Police-quarters, Waihi	T. E. Palmer, Waihi	Dec. 25, "	Jan. 30, "	688 15 0	
Dec. 5, "	Fumigating-shed, Auckland	H. M. Solloway, Devonport	Jan. 26, 1904	" "	266 0 0	
Jan. 9, 1904	Native School, Kaingahoa	W. Cook and Son, Waimate North	April 19, "	Apr. 28, "	618 0 0	
Feb. 5, "	Native School, Tupaparuru	J. E. Guthrie, Auckland	May 5, "	Apr. 9, "	320 0 0	
March 17, "	Native School, Oramahoe	W. Cook and Son, Waimate North	June 3, "	" "	199 0 0	
HAWKE'S BAY.						
Sept. 12, 1902	Post-office, Napier (Spit)	Cooper and Son, Napier	April 1, 1903	July 11, 1903	2,170 16 7	
Dec. 2, "	Government Buildings, Napier	Bull Bros., Napier	Aug. 26, "	" "	4,743 15 9	
Jan. 30, 1903	Alterations, &c., Police-sergeant's Residence, Napier	Yull and Frame, Napier	April 30, "	May 18, 1903	225 15 0	
May 21, "	Alterations, &c., Police-station, Woodville	T. Cole, Woodville	July 30, "	Aug. 20, "	215 8 8	
TARANAKI.						
Jan. 23, 1903	Post-office, Kaponga	A. R. Burrell, Hawera	April 23, 1903	May 22, 1903	436 7 8	
May 29, "	Post-office, Urenui	Boon Bros., New Plymouth	Aug. 11, "	Jan. 18, 1904	457 0 0	
Aug. 29, "	Post-office, Eltham	E. Hooker, New Plymouth	Feb. 24, 1904	" "	1,950 0 0	
Feb. 9, 1904	Native Hostel, New Plymouth	Cliff Bros., New Plymouth	May 9, "	" "	750 0 0	

**APPENDIX C—continued.**  
**SCHEDULE of CONTRACTS CURRENT on the 1st April, 1903, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1904—continued.**

Date of Contract.	Name of Contract.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
					£ s. d.	
<b>PUBLIC BUILDINGS—continued.</b>						
May 22, 1902	Magistrate's Courthouse, Wellington	James Trevor and Sons, Wellington	9, 1903	Sept. 1, 1903	8,025 0 0	
Aug. 6, "	New Wing, Terrace Gaol, Wellington	James Russell, Wellington	29, 1903	Mar. 30, 1904	2,963 0 0	
Aug. 14, "	Customhouse, Wellington	W. H. Bennett, Wellington	Jan. 12, 1904	"	26,998 0 0	
Sept. 5, "	Post-office Clock, Wanganui	W. Littlejohn and Son, Wellington	Aug. 26, 1903	April 13, 1904	715 0 0	
Sept. 5, "	Post-office Clock, Feilding	W. Littlejohn and Son, Wellington	Aug. 26, 1903	April 13, "	475 0 0	
Jan. 19, 1903	Post-office, Woodville	E. T. Rendle, Woodville	Aug. 19, "	Feb. 9, "	2,005 0 0	
Nov. 18, 1902	Post-office, Hunterville	Zajonskowski Bros., Marton	May 14, "	Oct. 17, 1903	1,985 15 10	
Nov. 6, "	Post-office, Levin	Adams and Cooper, Levin	May 28, "	July 18, "	1,694 17 0	
Dec. 15, "	Post-office, Carterton	R. Sanders, Wellington	June 26, "	July 29, "	2,982 0 0	
Dec. 17, "	Post-office, Raetihi	A. H. Christie, Wanganui	March 23, "	May 12, "	465 17 3	
Feb. 26, 1903	Head Attendant's Residence, Porirua Asylum	J. Brooks, Wellington	May 23, "	June 26, "	338 16 0	
Feb. 16, "	Additions to Photo. Gallery, Government Printing Office	McGill and French, Wellington	June 16, "	May 28, "	449 12 6	
March 26, "	Courthouse, Levin	H. B. France, Levin	July 13, "	Sept. 13, "	590 0 0	
March 28, "	Auxiliary Asylum, Porirua	Barker and Crump, Palmerston N.	June 23, "	Oct. 20, "	2,630 17 0	
April 6, "	Industrial School, Levin	Lawrence Williamson, Levin	Aug. 28, 1903	July 16, 1903	5,016 14 1	
April 14, "	Customhouse Additions, Wanganui	Russell and Bignell, Wanganui	Nov. 12, "	Jan. 12, "	238 15 5	
April 8, "	Veterinary Laboratory, Wallaceville	R. A. Wakelin, Wellington	Nov. 12, "	Jan. 12, "	1,623 0 6	
May 15, "	Removal, &c., Police Buildings, Lower Hutt	J. McWilliams, Lower Hutt	July 15, "	"	"	
May 18, "	Police-station, Mangaweka	Jensen and Morris, Taihape	Oct. 10, "	Nov. 26, 1903	627 10 0	
Aug. 24, "	Offices and Laboratory for Mines Department	A. Cooper and Son, Napier	May 14, 1904	"	"	
Aug. 22, "	Constable's Residence, Featherston	A. Bicknell, Greytown North	Dec. 10, 1903	Dec. 10, 1903	517 0 0	
Aug. 26, "	Steel Cell Doors, Terrace Gaol, Wellington	S. Luke and Co., Wellington	Oct. 24, "	Mar. 22, 1904	285 0 0	
Oct. 12, "	Removal of Buildings, Foxton Pilot-station	Wildbore Bros., Palmerston North	Jan. 12, 1904	"	250 0 0	
March 22, 1904	Alterations, &c., Police-station, Hunterville	T. Ellwood, Mangaweka	May 18, "	"	280 0 0	
<b>NELSON.</b>						
March 2, 1903	Auxiliary Reservoir, Nelson Asylum	W. Miller and Sons, Nelson	June 21, 1903	July 29, 1903	596 18 0	
April 27, "	Additions, &c., Constable's Quarters, Seddonville	Hill and Martin, Westport	June 17, "	June 16, "	220 5 0	
July 24, "	Additions, &c., Courthouse, Westport	John Marshall, Westport	Oct. 22, 1903	Dec. 5, "	923 0 0	
<b>MARLBOROUGH.</b>						
Jan. 23, 1903	Painting, &c., Government Buildings, Blenheim	J. D. Iremonger, Blenheim	April 23, 1903	April 3, 1903	155 0 0	
Feb. 7, "	Police Quarters, Havelock	May and McKinley, Blenheim	May 7, "	July 11, "	433 11 7	
Feb. 20, "	Cast-iron Tower, Cape Campbell Lighthouse	Charles Judd, Thames	Aug. 11, "	Sept. 1, 1903	1,499 6 0	
<b>WESTLAND.</b>						
May 8, 1903	New Board-room, Hokitika Survey Office	Drake and Muir, Greymouth	July 29, 1903	Aug. 15, 1903	249 10 0	
July 18, "	Police-station, Okarito	T. H. Orr, Hokitika	Jan. 10, 1904	Nov. 14, "	485 0 0	





APPENDIX C—continued.  
SCHEDULE of CONTRACTS CURRENT on the 1st April, 1903, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1904—continued.

Date of Contract.	Name of Contractor.	Name of Contractor.	Contract to be completed.	Date Contract was completed.	Amount of Contract.	Remarks.
					£ s. d.	
MISCELLANEOUS—continued.						
WELLINGTON.						
May 23, 1903	Chimney-sweeping, Public Buildings, Wellington	Harry Smith, Wellington	Mar. 31, 1904	Mar. 31, 1904	185 0 0	
Aug. 31, "	Removal of Rubbish, "	J. Keir, Wellington	Mar. 31, "	Mar. 31, "	106 15 0	
April 20, "	Window-clearing, "	Gawler and Carlew, Wellington	Mar. 31, "	Mar. 31, "	288 0 0	
May 27, "	Stores Supply, Wellington, Classes I., II., V., VI., XI., XI., Items 7, 8, 9, 17, and XII.	Briscoe and Co. (Limited), Wellington	Mar. 31, 1905	"	Schedule rates	
June 4, "	Stores Supply, Wellington	A. and T. Burt (Limited)	Mar. 31, 1906	"	"	
May 21, "	Class VII.	Smith and Smith, Wellington	Mar. 31, "	"	"	
May 20, "	Classes VIII., IX., and X.	P. Hutson and Co., Wellington	Mar. 31, "	"	"	
May 21, "	Class XI., Items 1 to 6, 14 to 16, 18 to 20, 23 to 26, 28, 30	W. M. Bannatyne and Co., Wellington	Mar. 31, "	"	"	
May 22, "	Class XI., Items 10 to 13, 21, 22, 27, 29, 31, 32	N. Guthridge (Limited), Wellington	Mar. 31, "	"	"	
NELSON.						
May 31, 1902	Collingwood Bridge at Ferntown	G. M. Fraser and Co., Dunedin	May 8, 1903	July 7, 1903	5,148 13 6	
Dec. 1, 1903	Taylorville Suspension Bridge	W. Woolf, Greymouth	May 1, 1904	Mar. 8, 1904	593 5 5	
Mar. 28, 1904	Approaches Aore Bridge	C. Dixon, Nelson	Sept. 18, "	"	724 17 0	
WESTLAND.						
Jan. 20, 1903	Moonlight Creek Foot-bridge	H. J. Reynolds, Hokitika	July 20, 1903	July 13, 1903	696 13 0	
Sept. 17, 1902	Kokotahi Bridge	John Fitzgerald, Greymouth	Sept. 10, "	Oct. 31, "	5,364 3 7	
May 20, 1903	Stores Supply, Greymouth, Classes I., II., III., V., VI., VIII., X., and XI., Items 1 to 9, 14 to 20, 23 to 26, and 28	Forsyth and McKay, Greymouth	Mar. 31, 1906	"	Schedule rates	
May 21, "	Stores Supply, Greymouth, Class IV., Items 1 to 5, 18 to 37, and IX.	D. McLean, Greymouth	Mar. 31, "	"	"	
May 23, "	Stores Supply, Greymouth, Class VII.	E. M. Holmes, Greymouth	Mar. 31, "	"	"	
May 22, "	Stores Supply, Greymouth, Class XI., Items 3, 4, 10 to 13, 21, 22, 26 to 32	N. Guthridge (Limited), Greymouth	Mar. 31, "	"	"	
May 22, "	Stores Supply, Hokitika, Class XII.	C. Hansen, Greymouth	Mar. 31, "	"	"	
May 26, "	Hokitika, Classes I., II., III., IV., Items 1 to 5, 18 to 37, V., VI., IX., and XI., Items 3, 4, 6, 7, 9, 10, 11, 14 to 17, 19, 21, to 25, 30 to 32	Johnson and Co., Hokitika	Mar. 31, "	"	"	
May 26, "	Stores Supply, Hokitika, Classes VII., VIII., X., Items 4, 5, 9 to 19, 21 to 23, XI., Items 13, 27, 29, and XII	James Renton, Hokitika	Mar. 31, "	"	"	
May 21, "	Stores Supply, Hokitika, Class XI., Items 1, 2, 5, 8, 18, 20, 26, and 28	W. M. Bannatyne and Co., Hokitika	Mar. 31, "	"	"	
CANTERBURY.						
March 16, 1904	Supply of 300 Asylum Bedsteads	Holmes and Sons, Christchurch	July 7, 1904	"	468 15 0	
April 8, "	Cold Swimming Bath, Haumer	W. Wadey, Rangiora	July 31, "	"	954 0 0	
June 4, 1903	Stores Supply, Christchurch, Classes I., II., IV., Items 1 to 5, 18 to 37, V., VI., VIII., IX., X., XI., Items 8, 24, 25, 33, 34, 35	Ashby, Bergh, and Co., Christchurch	Mar. 31, 1906	"	Schedule rates	
June 4, "	Stores Supply, Christchurch, Class III.	A. and T. Burt (Limited), Christchurch	Mar. 31, "	"	"	



APPENDIX D.

SCHEDULE of SLEEPER CONTRACTS CURRENT ON 1st April, 1903, and CONTRACTS ENTERED INTO by the Public Works Department during the Year ended 31st March, 1904, 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.
3 May, 1902	G. F. Dickson	Kawakawa	5,000 totara	s. d.	Kawakawa	30 Nov., 1903..	5,000	1 June, 1903.
17 Sept., "	C. H. Clinkard	Makau	1,000 "	3 3	Taheroa	31 Dec., "	323	19 Feb., 1904.
13 Oct., "	R. McMillan	Kaukapakapa	2,000 "	3 3	Taheroa	13 Mar., "	2,000	30 Nov., 1903.
28 Nov., "	John Paul	Puhoi	1,000 "	3 3	Anuroa	1 June, "	1,000	16 Dec., "
29 Nov., "	Alf. Kelly	Ongarue	500 "	3 0	Ongarue	29 Jan., "	60	7 Jan., 1904.
3 Dec., "	Hinaki Ropih	Taumarunui	400 "	3 0	Taumarunui	3 Feb., "	137	In hand.
18 May, 1903	C. Straka	Taheroa	1,000 "	3 3	Taheroa	31 Dec., "	1,000	23 Dec., 1903.
18 June, "	Edwin McMillan	Kaukapakapa	1,000 "	3 3	Kaukapakapa	13 Sept., "	1,000	31 Aug., "
13 Aug., "	Ellis and Burnand	Otorohanga	3,000 "	3 3	Ongarue	13 Dec., "	3,000	19 Feb., 1904.
9 Sept., "	C. Straka	Taheroa	1,000 "	3 3	Taheroa	25 Dec., "	1,000	31 Dec., 1903.
22 April, 1903	H. Melvor	Piriaka	620 totara	3 0	Matapuna	22 April, "	620	22 April, "
24 April, "	C. Richards	Taumarunui	866 "	3 0	Taumarunui	1 July, "	866	1 July, "
24 April, "	C. J. Ryan	Ongarue	877 "	3 0	Ongarue	15 Aug., "	877	15 Aug., "
25 April, "	A. Bell	Taumarunui	207 "	3 0	Taumarunui	25 April, "	207	25 April, "
29 April, "	C. G. Dallas	Ongarue	373 "	3 0	Ongarue	15 Mar., 1904..	373	15 Mar., 1904.
1 May, "	Alf. Edwards	Kaikoh	528 "	3 3	Kawakawa	1 May, 1903	528	1 May, 1903.
5 May, "	A. M. Riddell	Ongarue	398 "	3 0	Ongarue	5 May, "	398	5 May, "
13 May, "	R. McMillan	Kaukapakapa	1,800 "	3 3	Taheroa	19 Feb., 1904..	1,800	19 Feb., 1904.
1 June, "	G. F. Dickson	Kawakawa	841 puriri	4 0	Kawakawa	1 June, 1903..	841	1 June, 1903.
6 Aug., "	Ngatai te Mamaku	Taumarunui	363 totara	3 3	Taumarunui	17 Nov., "	363	17 Nov., "
6 Aug., "	Toa	Ongarue	510 "	3 0	Ongarue	6 Aug., "	510	6 Aug., "
5 Nov., "	C. J. Ryan	Ongarue	690 "	3 3	Ongarue	1 Dec., "	690	1 Dec., "
12 Nov., "	A. M. Riddell	Waitekauri	366 "	3 3	Waikino	12 Nov., "	366	12 Nov., "
21 Nov., "	Thomas Hutchinson	Piriaka	516 "	3 6	Waikino	18 Dec., "	516	18 Dec., "
22 Jan., 1904	H. Melvor	Taumarunui	239 "	3 3	Matapuna	22 Jan., 1904..	239	22 Jan., 1904.
8 Feb., "	E. W. Simmons	Taumarunui	214 "	3 3	Taumarunui	8 Mar., "	214	8 Mar., "
8 Feb., "	W. H. Howe	Ongarue	237 "	3 3	Ongarue	8 Feb., "	237	8 Feb., "
11 Feb., "	J. Gordon	Taumarunui	255 "	3 3	Taumarunui	11 Feb., "	255	11 Feb., "
17 Feb., "	J. McCarthy	Waitekauri	310 "	3 3	Waikino	17 Feb., "	310	17 Feb., "
19 Feb., "	Wm. Morgan	Paeroa	500 puriri	3 3	Waikino	27 June, "	..	In hand.
19 Feb., "	Humatamahana	Taumarunui	1,000 puriri	4 3	Taumarunui	20 Dec., "	..	In hand.
2 Mar., "	H. M. Porter	Taumarunui	314 "	3 3	Ongarue	23 Mar., "	314	23 Mar., "
15 Mar., "	C. G. Dallas	Ongarue	205 "	3 3	Ongarue	15 Mar., "	205	15 Mar., "
Various..	Sundry small contractors	Various	1,696 various	Various	Various	Various	1,696	2 Mar., "

NORTH ISLAND.  
AUCKLAND DISTRICT.

APPENDIX D—continued.  
 SCHEDULE OF SLEEPER CONTRACTS CURRENT ON 1st April, 1903, and CONTRACTS ENTERED INTO BY THE PUBLIC WORKS DEPARTMENT, &c.—continued.

Date of Contract or Agreement.	Contractor's Name.	Address.	Nc. 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—continued.								
TARANAKI DISTRICT.								
21 Aug., 1903	J. Foster	Midhurst	500 rimu ..	s. d. 1 3	Midhurst	21 Nov., 1903	483	21 Nov., 1903.
"	H. Crosby	"	500 " ..	1 3	"	"	483	"
21 Aug., "	P. Kelly	Toko	1,300 " ..	1 6	"	21 Nov., "	1,300	2 Nov., "
2 Nov., "	P. Kelly	"	1,050 rimu & matai	2 2	"	29 Feb., 1904	1,050	16 Feb., 1904.
RANGIHIKEI DISTRICT.								
12 Dec., 1900	Manawatu Timber Company	Feilding	5,000 totara	3 6	Mangaweka	31 Mar., 1901	2,683	Balance cancelled.
12 May, 1903	A. R. Small	Utiku	250 "	3 6	Utiku	12 Aug., 1903	250	5 June, 1903.
13 May, "	F. Morris	Taihape	250 "	3 6	"	13 Aug., "	250	3 June, "
13 May, "	G. Mist	Utiku	250 "	3 6	"	13 Aug., "	250	24 July, "
13 May, "	L. B. Dean	"	250 "	3 6	"	13 Aug., "	250	5 June, "
13 May, "	Alexander Dean	"	250 "	3 6	"	13 Aug., "	250	5 June, "
13 May, "	Joseph Torrey	"	250 "	3 6	"	13 Aug., "	261	7 Aug., "
13 May, "	P. Helem	"	250 "	3 6	"	13 Aug., "	250	3 July, "
15 May, "	W. Foley	"	250 "	3 6	"	15 Aug., "	250	7 Aug., "
15 May, "	H. Ross	"	250 "	3 6	"	15 Aug., "	250	"
15 May, "	N. Ross	"	250 "	3 6	"	15 Aug., "	250	"
19 May, "	T. E. Leach	"	250 "	3 6	"	19 Aug., "	250	7 Aug., "
19 May, "	George Prime	"	250 "	3 6	"	19 Aug., "	262	"
19 May, "	James Prime	"	250 "	3 6	"	19 Aug., "	250	"
19 May, "	W. Prime	"	250 "	3 6	"	19 Aug., "	260	"
26 May, "	R. Campbell	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	F. Olsen	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	John Bennett	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	C. H. Baufield	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	Hans Prebensen	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	Charles Ford	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	M. Farrell	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	H. F. W. Jurgens	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	H. Jurgens	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	M. J. Reardon	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	M. O'Connor	"	250 "	3 6	"	26 Aug., "	250	"
26 May, "	Joseph McCracken	"	250 "	3 6	"	26 Aug., "	250	"
1 June, "	R. Print	"	250 "	3 6	"	1 Sept., "	242	As completed.
1 June, "	J. McCarthy	"	250 "	3 6	"	1 Sept., "	257	10 Sept., 1903.
3 June, "	John McCracken	"	250 "	3 6	"	3 Sept., "	250	5 June, "
13 June, "	H. P. Jorgensen	"	200 "	3 6	"	13 Sept., "	190	As completed.

APPENDIX D—continued.

SCHEDULE OF SLEEPER CONTRACTS CURRENT ON 1st April, 1903, 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.
NORTH ISLAND—continued.								
RANGITIKEI DISTRICT—continued.								
10 July, 1903	A. Dixon	Utiku	250 totara	s. d. 3 6	Utiku	10 Oct., 1903	250	10 Sept., 1903.
10 July, "	H. Dixon	"	250 "	3 6	"	10 Oct., "	250	10 Sept., "
16 Aug., "	John A. Smith	"	250 "	3 6	"	16 Nov., "	250	10 Sept., "
16 Aug., "	W. Cameron	"	250 "	3 6	"	16 Nov., "	225	As completed.
16 Aug., "	T. Smithfield	"	250 "	3 6	"	16 Nov., "	263	10 Sept., 1903.
18 Sept., "	John H. Lyon	"	250 "	3 6	"	16 Dec., "	250	"
16 Nov., "	G. E. Little	"	250 "	3 6	"	6 Feb., 1904	250	14 Jan., 1904.
Various..	Sundry small contractors	Various	3,759 "	3 6	"	Various	3,550	"
WELLINGTON.								
— Sept., 1903	W. B. Sharp	Sydney	1,000 ironbark	4 6	Wellington	"	1,000	1 Nov., 1903.
— June, "	J. W. Wallace and Co.	Wellington	3,768 "	from 3/10 to 4/5	"	"	3,768	18 Feb., 1904.
SOUTH ISLAND.								
NELSON DISTRICT.								
24 Mar., 1903	R. Drew	Wangapeka	500 matai	3 0	Motupiko	Not fixed	500	2 Mar., 1904.
WESTPORT DISTRICT.								
10 June, 1903	P. Ahern	Cape Foulwind	500 yellow or silverpine	3 5	Westport	31 Dec., 1903	500	21 Dec., 1903.
7 Oct., "	Wm. Tiller	"	500 ditto	3 5	"	31 Dec., "	500	31 Dec., "
7 Oct., "	A. Kearns	Westport	500 "	3 5	"	31 Dec., "	500	24 Feb., 1904.
15 Feb., 1904	J. McGrath	Cape Foulwind	300 "	3 5	Wharf	16 Mar., 1904	255	Balance of order cancelled.
13 Feb., "	G. G. McKay	"	254 "	3 5	"	29 Feb., "	254	3 Mar., 1904.
13 Feb., "	J. Hobbs	Mokihinui	760 "	3 5	"	31 Mar., "	760	14 Mar., "
13 Feb., "	A. Tiller	Cape Foulwind	254 "	3 5	"	29 Feb., "	254	16 Feb., "
13 Feb., "	F. Fox	"	508 "	3 5	"	31 Mar., "	"	"
18 Feb., "	Denny Bros.	Bradshaws	254 "	3 5	"	29 Feb., "	"	"
13 Feb., "	W. Gibson	Addisons	760 "	3 5	"	29 Feb., "	"	"
13 Feb., "	J. Hobbs	Mokihinui	1,389 "	3 5	"	29 Feb., "	125	"
13 Feb., "	J. Smith	Cape Foulwind	381 "	3 5	"	31 Mar., "	"	"
13 Feb., "	A. J. Davis	Karamea	381 "	3 5	"	31 Mar., "	"	"
Various..	Sundry small contractors	Various	559 "	3 5	"	Various	305	"

APPENDIX D—continued.

SCHEDULE OF SLEEPER CONTRACTS CURRENT ON 1st April, 1903, and CONTRACTS ENTERED INTO by the Public Works Department, &c.—continued.

Date of Contract 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.
— April, 1903	J. Murdoch	Kumara	250 silver-pine	s. d. 3 3	Kumara Railway-station	..	250	May, 1903.
25 May,	Emily Lawson	"	300 ditto	3 3	"	30 June, 1903..	300	8 July, "
29 May,	G. Hunt	"	475 "	3 3	"	31 July, "	475	4 July, "
29 May,	G. Gibson	"	500 "	3 3	"	30 June, "	..	Order cancelled.
29 May,	C. W. Murtha	"	200 "	3 3	"	30 June, "	105	Balance cancelled.
18 June,	W. Stephens	Rinu	250 "	3 3	Hokitika Wharf	..	156	18 June, 1903.
22 June,	Stratford and Blair	Greymouth	500 "	3 3	Greymouth	..	500	16 Jan., 1904.
24 June,	C. P. Lausten	Red Jack's	500 "	3 3	Ngahere Station	..	500	24 June, 1903.
25 June,	J. Baxter	Kokiri	500 "	3 3	Baxter's Siding	..	500	25 June, "
27 June,	J. Craig	"	500 "	3 3	"	30 June, "	350	16 Oct., "
29 June,	W. A. Lawson	Kumara	350 "	3 3	Kumara Station	..	..	Order cancelled.
29 June,	S. Dixon	Stafford	300 "	3 3	Stafford Siding	..	500	3 Oct., 1903.
20 July,	J. Linklater	"	500 "	3 3	Awatuna Siding	..	500	17 Nov., "
29 July,	J. Dixon	"	500 "	3 3	Stafford Siding	..	500	3 Oct., "
29 July,	H. Linklater	"	500 "	3 3	"	31 Oct., "	313	3 Oct., "
30 July,	G. Balimi	Kokiri	313 "	3 3	Baxter's Siding	..	500	29 July, "
30 July,	W. Mason	Ross	500 "	3 3	Hokitika Wharf	..	500	17 Dec., "
5 Aug.,	Stratford and Blair	Greymouth	388 "	3 3	Greymouth	..	388	30 July, "
12 Aug.,	F. Fletcher	Nelson Creek	282 "	3 3	Ngahere Station	..	..	5 Aug., "
14 Aug.,	W. Hegau	Arahura	300 "	3 3	Kahinu Siding	..	..	Order cancelled.
25 Aug.,	G. Stewart	Cobden	500 "	3 3	Greymouth	..	..	Ditto.
2 Sept.,	D. O'Brien	Ngahere	500 "	3 3	"	30 Sept., "	..	"
2 Sept.,	J. Wisbey	"	500 "	3 3	Ngahere Station	..	..	"
2 Sept.,	W. G. Stuart	Kumara	500 "	3 3	"	30 Sept., "	..	"
2 Sept.,	F. W. Beirne	Ngahere	500 "	3 3	Kumara Station	..	500	23 Dec., 1903.
3 Sept.,	W. Learmont	Kanieri	250 "	3 3	Ngahere Station	..	250	28 Oct., "
8 Sept.,	G. Searle	Okarito	500 "	3 3	Hokitika Wharf	..	..	Order cancelled.
10 Sept.,	Thomas Rogers	Ngahere	500 "	3 3	Ngahere Station	..	..	"
12 Sept.,	F. C. Gosling	Ngahere	439 "	3 3	Ngahere Station	..	439	Order cancelled.
17 Sept.,	P. Johnson	Ahaura	500 "	3 3	Ngahere Station	..	500	"
19 Sept.,	W. H. Batson	Waioho Gorge	500 "	3 3	Ahaura Station	..	..	"
24 Sept.,	M. McLoughlin	No Town	500 "	3 3	Hokitika Wharf	..	..	"
17 Oct.,	G. H. Lawson	Kumara	500 "	3 3	Ngahere Station	..	500	23 Dec., 1903.
					Kumara Station	..	500	14 Mar., 1904.

SOUTH ISLAND—continued.

WESTLAND DISTRICT.

APPENDIX D—continued.  
STATEMENT OF SLEEPER CONTRACTS CURRENT ON 1st April, 1903, 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.
24 Oct., 1903	S. Dixon	Stafford	500 silver-pine	s. d. 3 3	Stafford Siding	30 Nov., 1903	500	17 Nov., 1903.
12 Nov., "	J. M. Hannat	Kamatua	500 ditto	3 3	Ikamatua Siding	31 Dec., "	500	17 Dec., "
12 Nov., "	W. Fisher	Harter's Terrace	590 "	3 3	Ngahere Station	31 Dec., "	590	7 Dec., "
14 Nov., "	J. McMahon	Reefton	577 "	3 3	Reefton Station	14 Nov., "	577	14 Nov., "
14 Nov., "	E. Lockington	"	270 "	3 3	"	14 Nov., "	270	14 Nov., "
14 Nov., "	W. H. Hunt	Nelson Creek	500 "	3 3	Ngahere Station	31 Dec., "	411	9 Dec., 1903.
19 Nov., "	J. Linklater	Stafford	500 "	3 3	Star Track	31 Dec., "	500	3 Dec., "
19 Nov., "	H. Linklater	"	500 "	3 3	"	31 Dec., "	500	Order cancelled.
25 Nov., "	James Murdoch	Kumara	500 "	3 3	Kumara Station	31 Dec., "	351	7 Mar., 1904.
28 Nov., "	M. Keenan	Rimu	500 "	3 3	Hokitika Wharf	31 Dec., "	500	25 Jan., "
1 Dec., "	T. Dudley	Totara Flat.	500 "	3 3	Totara Flat Station	31 Dec., "	500	16 Jan., 1904.
18 Dec., "	W. Powell	Humphrey's	500 "	3 3	Hokitika Wharf	31 Jan., 1904	204	"
18 Dec., "	F. Fletcher	Ngahere	250 "	3 3	Ngahere Station	31 Jan., "	250	"
18 Dec., "	C. P. Lausten	Red Jacks	250 "	3 3	"	31 Jan., "	250	"
22 Dec., "	W. Peacock	Goldborough	500 "	3 3	Stafford Siding	31 Jan., "	500	"
22 Dec., "	H. L. Thomas	Aranura	500 "	3 3	Hokitika Wharf	31 Jan., "	591	"
22 Dec., "	W. Weir	Twelve-Mile	591 "	3 3	Ngahere Station	24 Dec., 1903	500	"
24 Dec., "	W. G. Stuart	Kumara	500 "	3 3	Kumara Station	29 Feb., 1904	1,000	Order cancelled.
24 Dec., "	Hoolihan and party	Okarito	600 "	3 3	Hokitika Wharf	31 Mar., "	598	"
24 Dec., "	F. C. Gosling	Nelson Creek	1,000 "	3 3	Ngahere Station	29 Feb., "	467	"
11 Dec., "	H. L. Michel	Hokitika	598 "	3 3	Hokitika Wharf	11 Jan., "	250	"
11 Dec., "	J. Dwyer	Humphrey's	500 "	3 3	Hokitika Wharf	29 Feb., "	250	"
20 Jan., 1904	M. Kelly	Awatuna	500 "	3 3	Awatuna Siding	29 Feb., "	200	"
20 Jan., "	W. G. Stuart	Kumara	250 "	3 3	Kumara Station	29 Feb., "	500	"
30 Jan., "	Emily Lawson	"	200 "	3 3	"	29 Feb., "	344	"
4 Feb., "	C. M. Murtha	"	250 "	3 3	"	29 Feb., "	110	"
4 Feb., "	D. Weir	Ngahere	500 "	3 3	Ngahere Station	29 Feb., "	210	"
5 Feb., "	C. A. Merveldt	Stafford	350 "	3 3	Stafford Siding	29 Feb., "	748	"
9 Feb., "	T. Stephens	Rimu	200 "	3 3	Hokitika Wharf	31 Mar., "	"	"
11 Feb., "	Henry Linklater	Stafford	1,000 "	3 3	Reefton Station	31 Mar., "	"	"
16 Feb., "	F. W. Archer	Reefton	1,000 "	3 3	Kumara Station	31 Mar., "	"	"
16 Feb., "	W. A. Lawson	Kumara	250 "	3 3	Stafford Siding	31 Mar., "	"	"
16 Feb., "	Hugh Linklater	Stafford	1,000 "	3 3	Ngahere Siding	31 Mar., "	"	"
18 Feb., "	F. C. Gosling	Nelson Creek	1,000 "	3 3	"	"	"	"

SOUTH ISLAND—continued.

WESTLAND DISTRICT—continued.



**APPENDIX D—continued.**  
**SCHEDULE OF SLEEPER CONTRACTS CURRENT ON 1st April, 1903, 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.
7 Mar., 1904	W. Muir	Ross	304 silver-pine	s. d. 3 3	Hokitika Wharf	7 Mar., 1904	304	7 Mar., 1904.
11 Mar., "	W. Fisher	Nelson Creek	1,143 ditto	3 3	Ngahere Station	30 Mar., "	1,143	15 Mar., "
11 Mar., "	D. Baybutt	Totara Flat	500 "	3 3	Totara Flat Station	31 Mar., "	269	"
14 Mar., "	D. Wear	Ngahere	500 "	3 3	Ngahere Station	31 Mar., "	683	"
15 Mar., "	Jack Brothers	Kotuku	2,000 "	3 3	Kotuku Siding	30 April "	"	"
15 Mar., "	Lawson Brothers	Kumara	300 "	3 3	Kumara Station	30 April "	68	"
19 Mar., "	R. J. O'Brien	Rimu	250 "	3 3	Hokitika Wharf	30 April "	450	28 Mar., 1904.
28 Mar., "	J. Newton	Fox's	450 "	3 3	"	28 Mar., "	333	15 Mar., "
15 Mar., "	T. McMahon	Reefton	333 "	3 3	Reefton Station	15 Mar., "	333	"
Various*	Sundry small contractors	Various	2,496 "	3 3	Various	Various	2,481	Balance cancelled
WESTLAND DISTRICT—continued.								
OTAGO DISTRICT.								
19 Nov., 1903	Samuel Tomlinson	Makarewa	500 totara	3 3	Wright's Bush	19 Feb., 1904	345	"
19 Nov., "	Wm. N. McLean	Romahapa	500 "	3 0	Romahapa	19 Feb., "	"	"
17 Dec., "	John Hannan	Orepuki	1,000 "	3 6	Waimahaka	17 Mar., "	400	"

\* Contracts entered into for supply of sleepers in lots of less than 200.

## APPENDIX E.

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

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

SIR,—

Public Works Office, Wellington, 1st July, 1904.

I have the honour to submit the following report on the various works completed and in progress throughout the colony 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, 1904:—

Name of Railway.	Total Length of Railway or Section.		Expenditure to 31st March, 1904.			Liabilities on 31st March, 1904.		
	M. ch.	M. ch.	£	s.	d.	£	s.	d.
Kaihu Valley .. .. .	19	40	55,044	17	1	..	..	..
Kawakawa-Grahamtown— Opua Wharf-Hukerenui .. .. .	33	8	119,751	8	7	..	..	..
Hukerenui-Grahamtown .. .. .	25	20	157,424	6	7	2,572	7	3
Helensville Northwards to Maungaturoto .. .. .	53	15	157,097	5	1	77	15	9
Kaipara-Waikato, with Branches .. .. .	151	1	1,264,236	19	10	..	..	..
Waikato-Thames, with Branches .. .. .	75	18	403,619	15	7	4,296	15	11
Thames Valley-Rotorua .. .. .	69	33	354,817	6	11	..	..	..
Gisborne-Karaka .. .. .	18	25	88,764	18	8	3,547	9	11
Wellington-Napier and Palmerston North (including Te Aro Extension and Greytown Branch) .. .. .	233	12	2,090,713	12	9	..	..	..
Wellington-Foxton .. .. .	..	..	42,116	3	4	..	..	..
Foxton-New Plymouth, with Branches .. .. .	195	49	1,412,733	15	8	..	..	..
Stratford-Kawakawa .. .. .	101	0	41,625	13	7	1	1	8
North Island Main Trunk .. .. .	210	6	1,324,349	17	5	9,662	4	5
Nelson-Roundell .. .. .	22	73	165,670	11	0	..	..	..
Midland Railway* .. .. .	243	55	385,972	14	4	37,868	7	5
Greymouth-Nelson Creek .. .. .	7	51	166,471	11	11	..	..	..
Greymouth-Hokitika and Ross .. .. .	40	37	226,843	8	9	7,760	10	1
Westport-Ngakawau .. .. .	19	56	188,008	17	3	..	..	..
Westport-Ngakawau Extension to Mokihinui† Mokihinui Colliery Line‡ .. .. .	7	12	..	..	..	..	..	..
Ngahere-Blackball .. .. .	2	40	20,630	11	4	3,405	3	11
Greymouth-Coal Creek§ .. .. .	5	1	..	..	..	..	..	..
Picton-Waipara— Picton-McKenzie .. .. .	138	15	327,929	17	5	..	..	..
Waipara-McKenzie .. .. .	35	0	121,466	8	8	4,626	0	9
Hurunui-Waitaki, with Branches .. .. .	483	72	2,275,010	14	7	..	..	..
Canterbury Interior Main Line—Oxford-Temuka .. .. .	83	0	59,348	9	2	..	..	..
Waitaki-Bluff, with Branches .. .. .	561	48	3,547,063	17	7	1,959	5	3
Otago Central .. .. .	182	56	1,090,564	0	8	2,513	2	4
Invercargill-Kingston, with Mararoa Branch .. .. .	117	4	331,321	18	11	..	..	..
Forest Hill Railway—Winton-Hedgehope   .. .. .	12	40	22,733	19	3	..	..	..
Western Railways .. .. .	71	6	262,660	19	4	..	..	..
Preliminary surveys .. .. .	..	..	30,596	4	10	..	..	..
Miscellaneous .. .. .	..	..	10,336	19	11	..	..	..
Stock of permanent-way on hand .. .. .	..	..	42,376	4	10	2,157	13	6
Value of permanent-way in hands of Railway Department .. .. .	..	..	25,000	0	0	..	..	..
Rolling-stock .. .. .	..	..	3,273,148	18	10	36,906	14	3
<b>Total .. .. .</b>	<b>3,222</b>	<b>62</b>	<b>20,085,447</b>	<b>9</b>	<b>8</b>	<b>117,354</b>	<b>12</b>	<b>5</b>
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	..	..	..
<b>Grand total .. .. .</b>	<b>3,222</b>	<b>62</b>	<b>21,878,163</b>	<b>16</b>	<b>9</b>	<b>117,354</b>	<b>12</b>	<b>5</b>

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

† 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 funds for purchase and completion of this line were provided for out of State Coal Mines Account.

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

During the year a total length of 32 miles 11 chains of railway was opened for traffic. The following table contains particulars of the sections:—

Railway.	Section.	Length.	Date of Opening.
Helensville Northwards ... ..	Tahekeroa—Ahuroa ... ..	M. ch. 4 55	2nd September, 1903.
North Island Main Trunk ... ..	Por-o-tarao—Taumarunui ... ..	27 36	1st December, 1903.
Orepuki—Waiau ... ..	Orepuki—Waihoaka ... ..	4 40	1st October, 1903.

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

#### KAWAKAWA—GRAHAMTOWN.

*Section (7 m. 16 ch. to 15 m. ; length, about 8 miles).*—The earthworks have been finished up to the 15 m. point, but some slips have since occurred on the last half mile. These have now been practically overcome. The platelaying and ballasting have been completed up to the cuttings where the slips have occurred.

The construction of the earthworks for the extension to Grahamtown is in progress. The bridge over the Whangarei has been finished. Training-piles to guide vessels through the opening-space have been provided; also extensive soundings and borings for the wharf at Grahamtown have been made and plans are being prepared.

#### HELENSVILLE NORTHWARDS.

*Komokoriki Section (49 m. 54 ch. to 56 m. 30 ch. ; length, 6 miles 56 chains).*—On the 2nd September last part of this section was handed over to the Railway Department and opened for traffic. Work is now in progress on the remaining portion of the section, from 54 m. 29 ch. to 56 m., but slips have hindered progress very much. The rails are laid up to 55 m. 30 ch. at the mouth of the tunnel, and the line ballasted. The tunnel is now pierced and being lined.

*Kaipara Flats Section.—(56 m. 30 ch. onwards).*—A start has been made on the earthworks, but only a little work has been done.

#### PAEROA—WAIHI.

*Length, 12 miles 40 chains.*—The line is finished up to the Karangahake Station, and goods traffic has been undertaken as required since the beginning of the year. The road and railway bridge over the first crossing of the Ohinemuri River was finished at the end of October last. The tunnel has been excavated for a length of 46 chains, leaving 8 chains to be done. The lining of the length excavated is nearly completed. A contract has been let for the erection of the steel superstructures of the bridges over the second and third Ohinemuri River crossings. The concrete-work for these bridges is in progress. Some minor timber bridges have yet to be built. The earthworks between the tunnel and the termination of the line are well advanced. A contract has been let to build a stationmaster's house at Waihi. It is expected that the tunnel will be finished by the end of the year.

#### GISBORNE—KARAKA.

*Karaka Section (12 m. 65 ch. to 18 m. ; length, 5 miles 15 chains).*—The Waipaoa Bridge is now nearly completed. Work has been proceeding slowly, being mostly concentrated in piercing the tunnel from 15 m. 31½ ch. to 15 m. 41 ch. The headings met in August last. The tunnel is now well advanced towards completion, the lining being about half-done, and it is expected that it will be nearly finished in about three months. The earthworks, &c., are almost completed up to the tunnel.

#### NORTH ISLAND MAIN TRUNK RAILWAY.

##### North End.

The section from Por-o-tarao Tunnel to Taumarunui Station, a length of about 27½ miles, was finished and handed over to the Railway Department in December of last year and opened for traffic.

*Taumarunui Section (76 m. 55 ch. to 83 m. 23 ch. ; length, 6 miles 48 chains).*—The Taumarunui Bridge was completed by the contractors, Messrs. Scott Bros., in January last. The earthworks on the section were nearly finished about the beginning of the year, but some heavy slips occurred. The rails have been laid to the end of the section, but two large slips, at 80 m. 50 ch. and at 81 m. 71 ch., are still giving trouble.

*Whakapapa (129 m. to 119 m. (Marton chainage) ; length, 10 miles).*—All the bush has been felled for the railway, and also for the service road; very good progress has been made with the culverts and earthworks. The concrete piers for the Waitea Bridge have been finished, and the girders are in position. The concrete piers for the Kakahi Bridge are nearly finished. The rails have been laid to the Waitea Bridge, at 127 m. 45 ch. Some heavy slips have occurred on the section.

*Owhango Section (119 miles to 111 miles ; length, 8 miles).*—Bushfelling and the construction of the service road are now well forward. A contract has been let to Messrs G. Fraser and Sons for the manufacture and supply of all the steelwork for bridges between 128 m. and 97 m. 30 ch. Some of the girders have been delivered and are in position, and the work is now well advanced. The telephone line has been carried to Owhango. Goods and passengers were carried by the ballast-train over the unopened section to Taumarunui Station up to the time of the formal opening of the line. A sawmill is being arranged for at Kakahi to cut sleepers and other necessary timber.

## South End.

*Makohine Section (22 m. 40 ch. to 33 m. 40 ch. from Marton Junction).*—The unopened length of this section, from the Mangaweka Station to 33 m. 40 ch.—a length of one mile and three-quarters—has been maintained during the year.

*Mangaweka Section (33 m. 40 ch. to 40 m. 40 ch.; length, 7 miles).*—The Mangaweka Viaduct was finished in November last: the work of erection occupied about a year, but most of the work was done in under ten months. The Toitoti Bridge piers and superstructure have been completed during the year. The formation of the Utiku Station yard has been completed, and the metalling of the yard and approach roads is nearly finished. The fencing on the section is nearly completed. A ballast-pit has been opened at 33 m., and has been partly cleared and stripped.

*Paengarua Section (40 m. 40 ch. to 50 m. 70 ch.; length, 10 miles 30 chains).*—The formation has been completed up to Taihape Station yard, also the extensive works involved in the formation of that yard are completed; the rails have been laid up to the end of the Taihape Station, and the laying of the sidings in the station-yard has been started. Five sets of points and crossings have been put in at Utiku Station, and a backshunt siding laid and ballasted. A ballast-pit siding has been laid at 33 m., also a private siding at 40 m. 27 ch. The formation has been nearly finished up to the south end of the Mataroa Tunnel. There are still some banks to be finished between the Mataroa Tunnel and the end of the section; also some road-formation. The work of completing the short tunnel at 46 m. 20 ch. will be put in hand as soon as the materials for lining can be carried by rail. About 10½ chains of the bottom heading of the Mataroa Tunnel (49 m. 41 ch. to 49 m. 71 ch. have been driven; it should be ready for lining as soon as the short tunnel is finished, when materials will be brought by rail.

*Turangarere Section (50 m. 70 ch. to 61 m. 40 ch.; length, 10 miles 50 chains).*—Most of the culverts have been finished, and good progress has been made with the earthworks. There is, however, a considerable amount of heavy earthwork still remaining to be done. A large quantity of limestone has been broken for concrete for bridges, and it is proposed to begin the erection of the bridge-piers next summer.

*Waiouru Section (61 m. 40 ch. to 69 m.; length, 7 miles 40 chains).*—A start has been made with the earthworks on the first mile of this section. Further works will be put in hand as soon as the roads will admit of further plant and material being put on the ground. Good progress has been made at the Makohine workshops with the manufacture of the steel girders for the bridges up to 85 m. 49 ch. The quantity of steel in these bridges is about 436 tons.

## STRATFORD—WHANGAMOMONA.

*Oruru Section (6 m. 26 ch. to 11 m. 16 ch.; length, 4 miles 70 chains).*—The formation-works are nearly finished on the line, but a considerable amount of work remains to be done to finish the station-yards. All the timber bridges of short spans have been built, and a road-bridge giving access to Gordon Road Station is nearly finished. A ballast-siding about one mile long has been constructed.

## MIDLAND RAILWAY.

*Tadmor Section (31 m. to 41 m. 29 ch.; length, 10 miles 29 chains).*—The formation-works have been finished up to 40½ miles, also the road approaches to the bridge over the Motueka River. The road and railway bridge over the Motueka River has been completed. Protective works of concrete blocks and netted-boulder works are now being constructed along the up-stream faces and ends of the approach-banks. The rails have been laid up to Maniaroa Station, a length of four miles and three-quarters, and part of the ballasting has been done. A platelayer's cottage has been erected at Maniaroa Station, and it is proposed to remove the shelter-shed at Spooner's Range Tunnel and re-erect it at this station.

*Reefton-Inangahua Section.*—The bush on this section has been cleared for about three miles and a quarter, and the fencing finished for the first two miles and a quarter, and some progress has been made with the earthworks. The bridge over the Inangahua at Reefton has been finished. The erection of the combined road and railway bridge over the Inangahua at the landing is in progress. The piers are nearly finished. The contractor has been delayed by the loss of his staging by a high flood. A contract has been let for the erection of a combined road and railway bridge over the Waitahu.

*Otira Gorge.*—No construction-work has been done on this section of the railway during the year.

*Mount Torlesse section (6 m. to 18 m.; length 12 miles).*—The earthworks are in progress as far as Broken River. The first tunnel, No. 7, beyond Staircase, is finished. The heading has been driven through No. 8 tunnel, and the work of enlarging and lining is in progress. A heading has been driven for a length of 15 chains at one end of No. 9 tunnel, and the lining is completed for about 2 chains at the other end. Work is in progress on four faces in this tunnel. Blocks for tunnel-lining are now being made. The rails have been laid up to Staircase Viaduct, and the line ballasted. The concrete foundations for Staircase Viaduct are in progress, also for a small bridge over Blakiston's Creek. A contract has been let to the Cleveland Bridge Company for the erection of the steel superstructure of the Staircase and Broken River Viaducts. Also, a contract has been let for the manufacture of the steel girders required for three small bridges over creeks between Staircase and Broken River. The works on the four miles of this section from Staircase to Sloven Creek are very heavy.

## PICTON—WAIPARA.

*Omihiki Section.*—Six platelayers' cottages have been erected; also an oil-engine to pump water for the Waipara station-supply.

*Waikari Section (15 m. to 23 m. 54.42 ch.; length, 8 miles 54.42 chains).*—The formation is finished to 19 m. 20 ch., and all the cuttings up to 20 m. 62 ch. are in an advanced state. All

culverts have been finished up to the Hurunui, also a small bridge over the Scargill. About six miles of fencing have been done and the remainder is in progress. All the concrete-work is nearly finished for the Hurunui Bridge, and the contractors for the erection of the steel superstructure, Messrs. Scott Bros., have made good progress with their work. One of the 100 ft. spans is in place and partly riveted up; the other 100 ft. span is partly in place, and four of the smaller spans are also in position, leaving only one 22 ft. span to put in place. It is expected that the bridge will be finished in August. About a quarter of a mile of permanent-way has been laid beyond Scargill Station.

*Cheviot Section.*—About one mile of service road has been formed north of the Hurunui, and a start has been made with some of the cuttings. Work, however, was temporarily stopped to strengthen the parties south of the river.

#### NGAHERE—BLACKBALL RAILWAY.

The contract for the erection of the combined road and railway bridge over the Grey River has been completed, and the approaches are being made to enable the bridge to be used for road traffic.

#### COAL CREEK RAILWAY.

The works on this line have been so far finished as to enable the carriage of coal from the mines to be undertaken. The works required to form the station at the mines were very heavy, and in addition to these many minor works had to be carried out to complete the line. Works to complete the station are now in hand including buildings, water-supply, and finishing the cuttings and platelaying beyond the station required to give ample shunting accommodation.

#### HOKITIKA—ROSS RAILWAY.

A considerable amount of bushfelling has been done and the earthworks on nearly four miles of the line are practically finished, but there are yet unfinished gaps in the earthworks. Good progress has been made with the erection of the combined road and railway bridge over the Hokitika River. The river-bed has proved to be somewhat soft, necessitating the driving of additional piles in the piers to get sufficient bearing-power.

#### OTAGO CENTRAL.

All construction-works have been finished up to the end of Ophir Station yard at 111½ m., also the rails are laid to this point, but the ballasting is not quite finished. The station buildings at Lauder and Ophir are finished.

*Spottis Section (part 111 m. 40 ch. to 114 m. 18 ch. ; length, 2 miles 58 chains).*—The earthworks are finished on this part of the Spottis section, and the bridge over Spottis Creek is being built.

*Chatto Section (114 m. 18 ch. to 121 m. 38 ch. ; length, 7 miles 20 chains).*—All the culverts are finished on the first four miles of this section, and good progress has been made with those on the last three miles. A considerable amount of the earthworks has been done. Tenders have been invited for the erection of the bridge over the second crossing of the Manuherikia River at 121 m.

#### CATLIN'S RIVER RAILWAY EXTENSION.

The works on this length of three miles and a half are practically finished, but the formal opening of the line has been delayed by the flooding of the ballast-pit, some additional ballast being yet required.

#### WAIPAHI—HERIOT RAILWAY EXTENSION.

The formation-works on this line are just about completed. Two of the four bridges are completed, and the other two are well advanced. A contract for station buildings at Elie's has been let, and good progress has been made with the erection of the buildings. The permanent-way has been laid for the first 70 chains.

#### RIVERSDALE—SWITZERS RAILWAY.

The combined road and railway bridge over the Mataura River has been finished, and was opened for public traffic in April last.

#### SURVEYS OF NEW LINES, LAND-PLAN SURVEYS, ETC.

The location survey of the Kawakawa—Grahamtown line has been finished to Hukerenui, including some deviations of the original line. This connects with the survey from Whangarei. The land-plan survey of this section of the line is now in progress.

A trial survey has been run beyond 66 m. on the Helensville Northwards Railway *via* Wellsford, Te Haua, and Mainene Creeks to Kaiwaka and the Mountain Creek Gorge, passing three miles east of Maungaturoto. Another trial-line survey has been partly done, starting south of Kaiwaka, passing through the Colbeck property, and between Maungaturoto and Paparoa. Another route remains to be tried, starting from 66 m. *via* Port Albert, Topuni, and crossing the flats west of Kaiwaka.

On the extension of the Gisborne—Karakā line towards Motu a trial line has been run from Karakā for a length of nine miles and a half on the Wheao route, also about eight miles by the Waihuka route; wet weather interfered with the progress of the work. A land-plan survey of five miles and a quarter of the Gisborne—Karakā line has been done by contract.

A trial survey of a deviation of the Stratford—Whangamomona line, starting from 10 m. 55 ch. *via* the Makuri Valley to 17 m. 15 ch. on the Huiroa route, has been completed.

A survey has been made for a branch-line for ballast towards Mount Egmont, starting from Waipuku Station on the main line. After a very considerable amount of prospecting had been done rock in quantity in a convenient locality was found. The length of the line is about nine miles and a quarter, and about five miles and a half of the permanent survey have been done.

Land-plan surveys have been made of land required for rifle ranges at Brightwater and Matai, Nelson; also, land-plan survey for land required for the approaches to Aorere Bridge, Collingwood.

A survey for an alternative ballast-pit for the Tadmor section of the Midland Railway has been made.

A resurvey of part of the Midland Railway, between Broken River and Sloven Creek, has been made, and a considerable saving in cost will be effected.

The survey for a line of railway from Westport to Inangahua Junction has been in progress during the year; trial-line work has been finished, and the permanent survey has been completed for nearly six miles.

The trial surveys suggested to be made by Mr. Bogue to determine the best route over Arthur's Pass were finished last year. Plans, estimates, and other information relative to the various routes were finished and sent to Mr. Bogue in September last.

A survey for the extension of Mount Somers Tramway, also for land-plans, has been made.

A survey for a railway-line from Culverden to Hanmer Plains is now in progress.

A short deviation survey is being made on the Picton-Waipara line in the Hurunui Gorge to avoid a slip.

A trial-line survey to carry the Ngahere-Blackball line to a point nearer the Blackball mine has been located, and a permanent survey has since been made.

A land-plan survey for six miles of the Otago Central Railway, from 105 m. 40 ch. to 111 m. 40 ch., has been satisfactorily completed by contract.

A land-plan survey for six miles and a quarter of the Waipahi-Heriot extension has been satisfactorily finished by contract.

A trial survey for the extension of the Catlin's line towards Seaward Bush has been in progress since the middle of January last. Good progress has been made, though the work has been much hindered by wet weather. Nine miles and a half have been surveyed, and a number of trial lines run to determine the best location.

#### SLEEPERS.

Under contracts and agreements for the supply of sleepers, the deliveries during the year ending the 31st March last were as follows: Auckland District—25,095 totara, 841 puriri; Taranaki District—2,800 rimu, 516 matai; Rangitikei District—12,290 totara; Wellington, 4,768 ironbark; Nelson District—500 matai; Westport District—3,453 yellow or silver pine; Westland District—27,460 silver-pine; Otago District—745 totara, 311 ironbark; Lyttelton—254 ironbark.

#### ROADS, BRIDGES, ETC.

The road-bridge over the Aorere River at Collingwood has been finished. A contract has been let for the construction of a bridge over Burton Ale Creek on the approach to this bridge, and the construction of approach roads on both sides of the river is in hand.

Several small construction contracts on the Westport-Waimangaroa Road have been completed, also some other minor works on roads near Westport. A number of reports have been furnished to the Mines Department on roads and tracks.

The contract for the erection of a road-bridge over the Kokotahi River just above its junction with the Hokitika River has been finished. The formation of the approaches to the bridge was done by co-operative contracts. A wire footbridge has been built over Moonlight Creek. The pier on the left bank of the Grey River-Taylorville suspension was renewed in ironbark. Some widening was done on the Haupiri Hot Springs track, and similar work on the Ahaura, Haupiri, and Hatters' Terrace tracks. Some renewal works on the Great South Road between Waihoa and the Forks were finished, and a considerable amount of work in making good flood-damages. A report was made on damage done to the road between Stillwater and Brunner by a gold-dredger. A number of roads and tracks were inspected and reported on for the Mines Department in the Westland district.

#### PUBLIC BUILDINGS.

##### AUCKLAND DISTRICT.

The Government House and grounds have been kept in a state of repair, and all necessary work in the maintenance of the Departmental buildings in Auckland, Thames, Tauranga, and Gisborne, has been done.

*Courthouses.*—In the Supreme Court, Auckland City, and in the various courthouses in the district, all maintenance-work has been done, and a number of minor improvements and additions made in fittings; also improvements in internal arrangements, and in the grounds, &c.

*Gaols.*—Considerable progress has been made with the erection of the central wing, Mount Eden Gaol, and the building is now well advanced towards completion. A start is being made with the portion of the building intended to provide offices for the staff, &c. A Gaoler's residence has been completed during the year at Mount Eden. Some improvements in the kitchen arrangements have been made at the Whakarewarewa prison, and additions made to the Gaoler's residence at Gisborne.

A new concrete wash-house and drying-closet has been built at Auckland Asylum. The old laundry is being converted into a dormitory. The internal painting of the auxiliary asylum has been finished during the year.

*Mangakawa Sanatorium, Cambridge.*—A contract to make alterations in the old building, erect extra rooms for nurses, kitchen-rooms, male and female shelters, and construct a reservoir has been let, and good progress has been made with the works. A glass drying-shed has been

built; electric lighting has been supplied to all the buildings; two cottages have been built, also a dining-shelter for male patients; a dining-room and some sleeping-rooms for workmen; a shelter and a doctor's office. Additional shelters and other works are in course of construction.

*Police-stations.*—Additional rooms have been built by contract at Ponsonby Police-station. A stable at Waiuku. A constable's residence has been built at Te Awamutu; a sergeant's residence at Waihi; a station at Piriaka; and sundry minor works, additions, alterations, and repairs at other police-stations.

*Post and Telegraph Offices.*—A cottage has been built at Doubtless Bay Cable-station. Tenders have been called for the erection of a new post-office at Mangonui; a contract for repairs to the residence at Dargaville Post-office has been completed; a small building for a post-office has been erected at Pahi. Various small alterations have been made; extra fittings, &c., provided in the Auckland Post-office. A fumigating-shed has been built on the Auckland Railway Wharf. Tenders are being invited for the erection of a new post-office at Tauranga. A clock and chimes have been fitted up in the Gisborne Post-office. Other minor additions, alterations, repairs, and maintenance-works have been done at various places.

*Native Schools.*—A teacher's residence has been built by contract at Kenana; additions have been made to the Oromahoe School. A new school has been built at Kaingahoa, and a contract for the removal of the Tapuaeharuru School has been completed. A school has been built at Te Kaha and a new residence at Te Teko. The residence at Paeroa has been completed. The contracts for the erection of schools at Oruanui and Waitahanui are in progress, also a contract for additions at Ruatoki School. Tenders have been invited for the erection of schools at Waioeka and Mangaoronga. Additions to the Taumarunui School have been completed under contract. All maintenance-work, many minor alterations, and other works have been carried out during the year.

The contract for additions to the Industrial School, Mount Albert, was completed during the year. May-Oatway fire-alarms have been fixed in the building and sundry repairs and improvements carried out.

#### NEW PLYMOUTH, WANGANUI, AND HAWKE'S BAY DISTRICTS.

*Police-stations.*—A contract for alterations, additions, &c., to the station at Waitotara has been finished by day labour, owing to death of contractor. Some small additions and alterations were made at the Stratford Station; also similar work at Hawera. Some work was done at the New Plymouth Station in renewals and repairs, and some small additions and alterations are in progress at the Normanby Station. A new police-station has been built at Mangaweka, and a new stable at Moawhango. A new lock-up is being built at Hunterville, and the old Public Works office is being converted into a police-station.

*Post-offices.*—A new telephone exchange and some other additions have been made to the Stratford Post-office. A new post-office is being built at Eltham. New offices have been finished at Urenui, Raetihi, Hunterville, and Woodville. Some fittings have been provided at Wanganui Post-office, and a clock erected. A clock is also being erected at Feilding Post-office.

Additions to Customhouse, Wanganui, were completed during the year.

A Native hostelry has been built at New Plymouth; it was largely added to during construction, and the extra work is not yet complete.

#### WELLINGTON.

The contract for the erection of a Customhouse in Wellington is in progress; the work has been delayed by scarcity of bricks.

The Magistrate's Court at Wellington was completed during the year; also a Courthouse at Levin.

A police-station has been built at Featherston. A building was purchased and re-erected as a police-station at the Lower Hutt.

Additions and alterations in progress last year at Mount Cook Police-station have been finished.

A contract has been let for the erection of a post-office at Levin.

A contract has been let for additions to the Carterton Post-office.

A contract for additions to the Shannon Post-office is in progress.

*Clocks* have been made by contract for the post-offices at Oamaru, Ashburton, Feilding, and Wellington South.

A contract for the erection of a laboratory for the Mines Department at Wellington is approaching completion.

A building is being erected as a laboratory for the Health Department.

A brick building has been erected at Wallaceville for a laboratory for the Agricultural Department.

The contract for the erection of buildings for an industrial home for boys at Levin is now nearly completed.

A contract for the erection of public buildings at Napier in brick is still in progress. A part has been finished, and is now occupied.

A large amount of work has been done during the year at Mount View Asylum in interior improvements and renovations, &c. The No. 2 auxiliary building at Porirua Asylum was completed in October last, and additions to it are now in progress, consisting of a day-room, kitchen, and some attendants' rooms. A fire-alarm system has been fitted in No. 1 auxiliary building, and many minor works have been carried out during the year.

As usual a large amount of work was done in maintaining the various public buildings in Wellington, and in various minor improvements and alterations from time to time required. A considerable advance has been made in fitting electric light in offices, &c.

## MARLBOROUGH.

A new police-station has been erected at Havelock, and some improvements made in the police-station at Blenheim. Some minor works were carried out at the Departmental Buildings, Blenheim, and some small renewals at the post-offices at Pieton and Renwick, in addition to ordinary maintenance-work as required.

## NELSON.

An auxiliary reservoir to hold 60,000 gallons of water has been completed at the Nelson Asylum. The water is got from springs. Electric fire-alarms have been fitted at the same institution, a workshop and other buildings built.

Some repairs, &c., have been carried out at Wakapuaka Cable-station, and the possibility of storing water for fire-prevention purposes investigated. Some small additions have been made to the post-office at Port Nelson, and to the police-station.

Tenders have been received for the erection of a new drill-shed in Nelson.

All necessary maintenance-work in connection with public buildings has been done.

## WEST COAST DISTRICTS.

*Westport.*—A contract for the erection of Courthouse and offices at Westport has been completed. A constable's residence has been built at Seddonville. Small contracts for alterations to police-station, Denniston; police-station, Lyell; and post-office, Lyell, have been completed. Various small works have been done in connection with other buildings in the district.

*Reefton.*—Some small works in repairs, &c., have been done or are in progress.

*Brunner.*—Considerable repairs to the police-station have been carried out.

*Greymouth.*—Additional offices are being erected at the police-station; also, some minor improvements have been made. Some repairs, painting, &c., have been done on the Postmaster's residence and Courthouse. Tenders for the erection of a new post-office were received, but none accepted.

*Kumara.*—Some small works were carried out at the police-station and Courthouse.

*Hokitika.*—A building has been erected by contract to serve as a Land Board office. A contract for repairs and renewals to drill-shed has been completed. Various works, consisting of repairs, maintenance, &c., have been carried out at the police-station, post and telegraph office, Supreme Court, &c. Plans were provided for erection of a concrete tank for water-supply at the Gaol, and also for an addition to the Asylum buildings.

*Ross.*—Small additions have been made at the post-office, and repairs, &c., at the Court-house.

*Okarito.*—New police quarters have been built.

## CANTERBURY.

*Christchurch.*—Departmental Buildings: Considerable alterations have been made for the Lands and Deeds Registry Office, and various improvements effected in the buildings and grounds.

Small improvements and repairs have been made in the Supreme Court, and Stipendiary Magistrates Court, Christchurch. Also various works involving alterations, renovations, repairs, &c., have been carried out at the Courthouses Kaiapoi, Rakaia, Geraldine, Temuka, and Timaru, and the gaol, Timaru.

*Police-stations.*—Tenders are being invited for repairs, &c., to police-stations at Kaikoura and Amberley. Additions and alterations are being made to the residence at Culverden. Some additions and improvements have been made to the police-station at St. Alban's. The stable injured by fire at Christchurch Police-station has been rebuilt, and a number of improvements in the buildings, &c., made.

The constable's house at Bingsland has been renovated and improvements made.

Some additions and improvements to the Sumner Station have been made.

A brick lock-up has been built at the Lyttelton Station, and several minor additions to the buildings and other improvements made.

A new station is being built at Akaroa.

Various minor works have been carried out at Coalgate, Sheffield, Ashburton, and Geraldine Stations in repairs and renovations. Extensive alterations, additions, renovations, &c., have been carried out at the police-station, Temuka, and some small works at Timaru and Waimate.

*Post and Telegraph Offices.*—Tenders have been received for additions to residence at Waiarau. A new post-office in brick is being erected at Kaiapoi. Some small improvements have been made at Sumner, Geraldine, Temuka, and Lyttelton Post-offices, and similar work and renovations at the post-office, Rolleston. A four-face striking-clock has been fixed in the tower of the Ashburton Post-office. Some extensive improvements, renovations, and alterations have been made in the Timaru Post-office. Some alterations and additions have been made to the Waimate Post-office, and a telephone bureau and bicycle shed provided.

A new Auxiliary Asylum, containing seventy beds, has been completed at Sunnyside; also a boiler-house and an additional building containing dining-room, kitchen, &c., are being built. A farm-manager's house has been built. Extensive alterations and renovations are being made at the North House. New ovens have been built and various other works carried out.

Extensive alterations and renovations to building for Receiving-home for Girls, Christchurch, have been carried out, also various improvements in outbuildings, &c.

Many improvements have been made in the Te Oranga Home, Burwood, and additional furniture and fittings provided. An addition has been built to the cottage hospital. The girls' wing of the Deaf-mutes' Institute at Sumner has been finished, fittings, &c., provided, and the grounds put in order. The water-supply and drainage system at Burnham Industrial School have been completed.

Water-tanks are being supplied for the Native settlement at Little River.

A Native school has been built at Chatham Islands.



## OTAGO DISTRICT.

*Post-offices.*—A contract for extensive alterations to the Dunedin Post-office has been completed, also various other works have been done by petty contract or day labour in the same building. Petty contracts for alterations, additions, improvements, and renovations, have been carried out at Fortrose, Waikaka, Palmerston South, Balclutha, Queenstown, Alexandra, and Invercargill. A contract has been let for the erection in stone of a Postmaster's residence at Clyde.

*Police-stations.*—Petty contracts have been finished for renovating Oamaru Police-station, additions to South Dunedin Station, alterations to North Dunedin Station, and for painting and renovating Queenstown Station. A new stable is being built at Invercargill Police-station.

*Courthouses.*—Repairs have been done at the Oamaru Courthouse, renovations at Milton, and repairs and renovations at Lawrence Courthouses. A room has been fitted up in the Dunedin Law Courts for the use of the Arbitration Court. All the woodwork in these buildings is being oiled by petty contract.

*Gaols.*—Renovations to the Oamaru Gaol have been done by petty contract. Repairs to the Invercargill Gaol have been done by local tradesmen and partly by prison-labour.

Some minor works were carried out at the Customhouse, Dunedin; Industrial School, Caversham; and the Government Life Insurance Buildings, Dunedin.

A residence has been built for an electrician at Seacliff. Some works have been done with the intention of strengthening the foundations of the north wing.

A number of water-tanks have been supplied to Natives on Stewart Island.

In addition to the works enumerated for the various provincial districts of the colony, many minor works of improvement or maintenance have been carried out in each district.

## UTILISATION OF WATER-POWER.

A considerable amount of preliminary survey work in connection with the utilisation of water-power has been done during the year, and some information has been collected otherwise.

Surveys have been made at Wairua Falls, Okere Rapids, and further down the Kaituna River; also at Huka Falls and Aratiatia Rapids on the Waikato. Accurate levels have been obtained from the outlet of Lake Taupo to the bottom of the Aratiatia Rapids. Surveys have been made and data obtained relative to the utilisation of Lake Waikaremoana and the Te Reinga Falls; also preliminary observations have been made to get data regarding the Rangitikei, Waiohine, Tauherenikau, Otaki, Hutt, and some smaller streams.

Surveys for water-race lines, water-conduit tunnels, dam-sites, &c., have been made for a proposal to utilise Lake Coleridge.

A number of trial lines for water-races from Lake Tekapo have been run, and preliminary observations and examinations made as to Lake Heron, Waimakariri, Rangitata, Opihi Rivers, Lakes Pukaki and Ohau, and Waitaki River.

Surveys have been made relative to the Hawea-Wanaka scheme to determine length of conduit, magnitude of dam, &c. Surveys were made to determine height of fall obtainable at the Kawarau Rapids at the outlet of Lake Wakatipu. Data have been got relative to Lakes Te Anau, Manapouri, and Monowai; Waiau River, the Hauroko-Poteriteri scheme, the Taieri and Manuherikia Rivers, and the Teviot and other streams.

Some very valuable and interesting results have been got regarding the quantity of water flowing from the largest of the lakes—Taupo, Waikaremoana, Brunner, Coleridge, Tekapo, Pukaki, Ohau, Hawea, Wanaka, Wakatipu, Te Anau, Manapouri, Monowai, and Hauroto.

The flow from the lakes in the North Island is large, but is much exceeded by that of the lakes in the South Island.

A special departmental report will be submitted, embodying all the reliable information collected to date.

Mr. L. M. Hancock, of San Francisco, California, visited a number of the proposed locations for water-power schemes during October, November, and the early part of December of last year. His report has been received. He was accompanied by officers of the Department during his tour.

## MARINE.

A contract for the manufacture of a cast-iron tower for Cape Campbell Lighthouse has been finished. Part of the ironwork has been landed at the site.

Plans for a wharf at Whitianga, Mercury Bay, have been supplied to the local authorities.

Tenders were called for the removal of rocks in the channel, Onehunga Harbour. Only one was received, but it was too high and nothing further was done. An examination and report was made on the proposal to put a ferry over the Thames at Turua. A survey of a site for a wharf for the cable-steamer "Iris" has been made in Auckland harbour, between the Victoria Wharf and Calliope Dock. Some repairs were done to the Motuihi Wharf. An examination of and report on the Waikato Heads wharf have been made.

New beacons have been erected at Kaipara Heads, also at Havelock.

A contract has been let for removal and re-erection of pilot-station at Manawatu Heads.

A survey has been made and plans prepared for a new wharf at Somes Island.

The lighthouse on Kahurangi Point has been finished, also all necessary buildings and other works. The light was exhibited for the first time on the 30th November, 1903. The tower is of cast iron founded on a concrete cylinder.

A lighthouse has been completed at Jack's Point, near Timaru, with all necessary buildings. This, also, is a cast-iron tower founded on concrete. The light was exhibited for the first time on 1st July last year.

A considerable amount of work was done in connection with plans submitted for approval by local bodies, and much other work.

### ROTORUA DRAINAGE-WORKS.

The reconstruction of the drains in the Rotorua Township is in progress, also the construction of a considerable length of new drains.

### ELECTRIC TRAMWAYS.

A considerable amount of work has been done during the year in tramway-inspection, and in other work connected with the electric tramways being constructed in Auckland, Wellington, Christchurch, and Dunedin.

### DEFENCES.

#### AUCKLAND.

At one fort a directing-station has been built, water-tanks fixed, concrete trenches for electric-light cables made, a concrete floor in the engine-room laid. Some repairs to the wharf have been carried out.

At another fort sewerage-connections have been made to the suburban sewers, the camping-ground improved, and some fencing done; also a new gun-pit has been partly finished.

At a third fort some sewerage-connections were put in, the boundary-fence repaired, and some minor repairs to the works carried out.

Some repairs to a rifle range have been carried out, and a contract let for the erection of a magazine store.

#### WELLINGTON.

An old emplacement has been converted to be used for a breech-loading gun, and a magazine reconstructed.

A submarine-mining station has been finished.

Some work has been done in fixing datum points.

A water-supply has been provided to two forts, and an electric-light line has been partly erected at one fort.

A marine survey of Mahanga Bay has been made.

Repairs to the old part of Shelly Bay wharf are in progress. The road from Miramar to Shelly Bay has been put in a good state of repair.

A piece of ground has been levelled at Mahanga Bay for camping purposes.

A torpedo-boat shed damaged by a storm has been repaired and other minor repairs done.

Additional water-storage has been provided at Trentham rifle range, and the parapet of the butts repaired.

The butts and firing-mounds of the upper range at Polhill Gully have been repaired and new butts and target-hut built at the lower range, and other works done.

The Commandant's offices at Alexandra Military Depot are nearly ready for occupation; the building for artificer's workshop is complete. In the barracks electric lights have been fixed in the billiard-room. The stove-pipes have been renewed, and some other alterations and repairs done. The removal of clay by brickmakers has now advanced so far as to enable the finishing of the parade-ground on the west side of the building to be put in hand. Ground on the north and east of the building has also been partially formed by the removal of clay for brickmaking.

Some stormwater-drains and an asphalt tennis-court have been constructed; gas lighting has been installed in the Buckle Street general instruction-hall, and some repairs to the Buckle Street buildings done, and also to the Kaiwarra magazine.

#### DUNEDIN.

At one fort an artillery store has been built, also a loading-gallery; a new parapet has been built for a gun-pit.

A magazine-roof has been reasphalted, an old wooden platform has been replaced by a concrete-and-iron one, and alterations made in a B.C. Station.

At the third battery a concrete gallery is in course of construction, also the excavation for an engine-room; also, search-light plant has been temporarily erected.

A building is being erected for an artillery workshop.

A contract for additions to barracks is in progress.

The Hon. the Minister for Public Works.

I have, &c.,

W. H. HALES,  
Engineer-in-Chief.

SOUTH ISLAND.

Table with columns for Appropria-tion, Division, Mileage, Section, Main Mileage, Sub-mileage, Total, Surveyed, Under Construction, Under Planning, Date, and years 1874-1904. Rows list various railway lines such as Nelson-Belgrove, Midland Railway, Brunner Springs, Ngahere-Blackball, Westport-Ngakawau, etc.

In these cases the dates given are the dates on which the railways became the property of the Government. This comprises 45m. 48cb. of railways constructed by the Government, and 1m. 90cb. of lines constructed by private company and afterwards purchased by the Government.

Enclosure to Appendix E. TABLE OF LENGTHS OF GOVERNMENT LINES AUTHORIZED, CONSTRUCTED, and SURVEYED up to 31st March, 1904. NORTH ISLAND.

Main table with columns: Appropriation, Division, Mileage, Section, Main Line, Sliding, Total, Surveyed, Under Formation, Under Laying, State of Line, Date, 1873-4, 1874-5, 1875-6, 1876-7, 1877-8, 1878-9, 1879-80, 1880-1, 1881-2, 1882-3, 1883-4, 1884-5, 1885-6, 1886-7, 1887-8, 1888-9, 1889-0, 1890-1, 1891-2, 1892-3, 1893-4, 1894-5, 1895-6, 1896-7, 1897-8, 1898-9, 1899-0, 1900-1, 1901-2, 1902-3, 1903-4, Total.

\* In this case the date given is the date on which the railway was taken over by the Government.
† This comprises 12m. 70ch. of railway constructed by Government, and 8m. 60ch. of line constructed by private company under the District Railways Act and afterwards purchased by the Government.
‡ This comprises 58m. of railway constructed by Government, and 6m. 77ch. of line constructed by private company under the District Railways Act and afterwards purchased by the Government.

Note.—Taurua and Lifford Branches not mentioned above, as the rails have been taken up.

Number of Miles open  
of  
Government Lines.

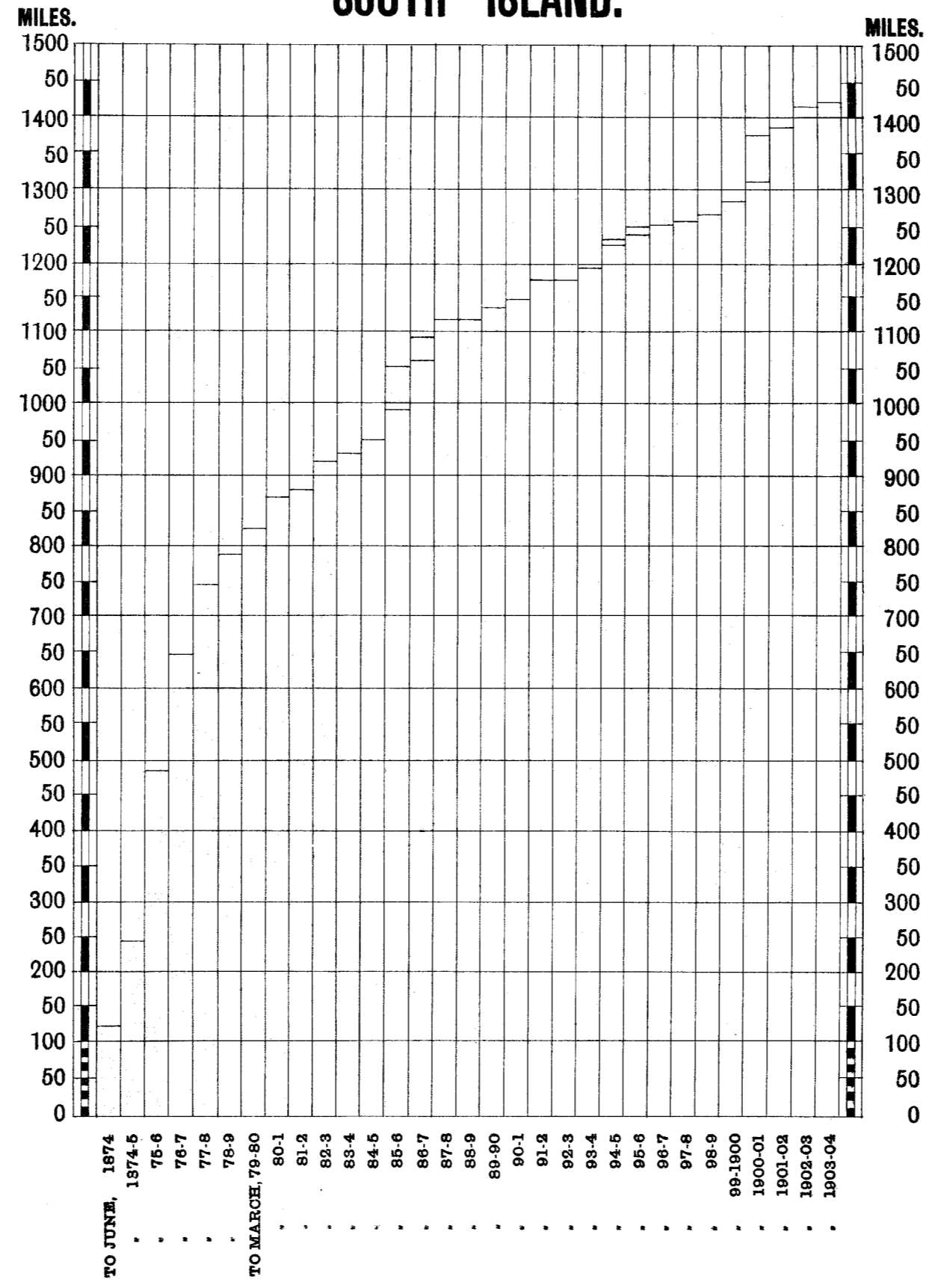
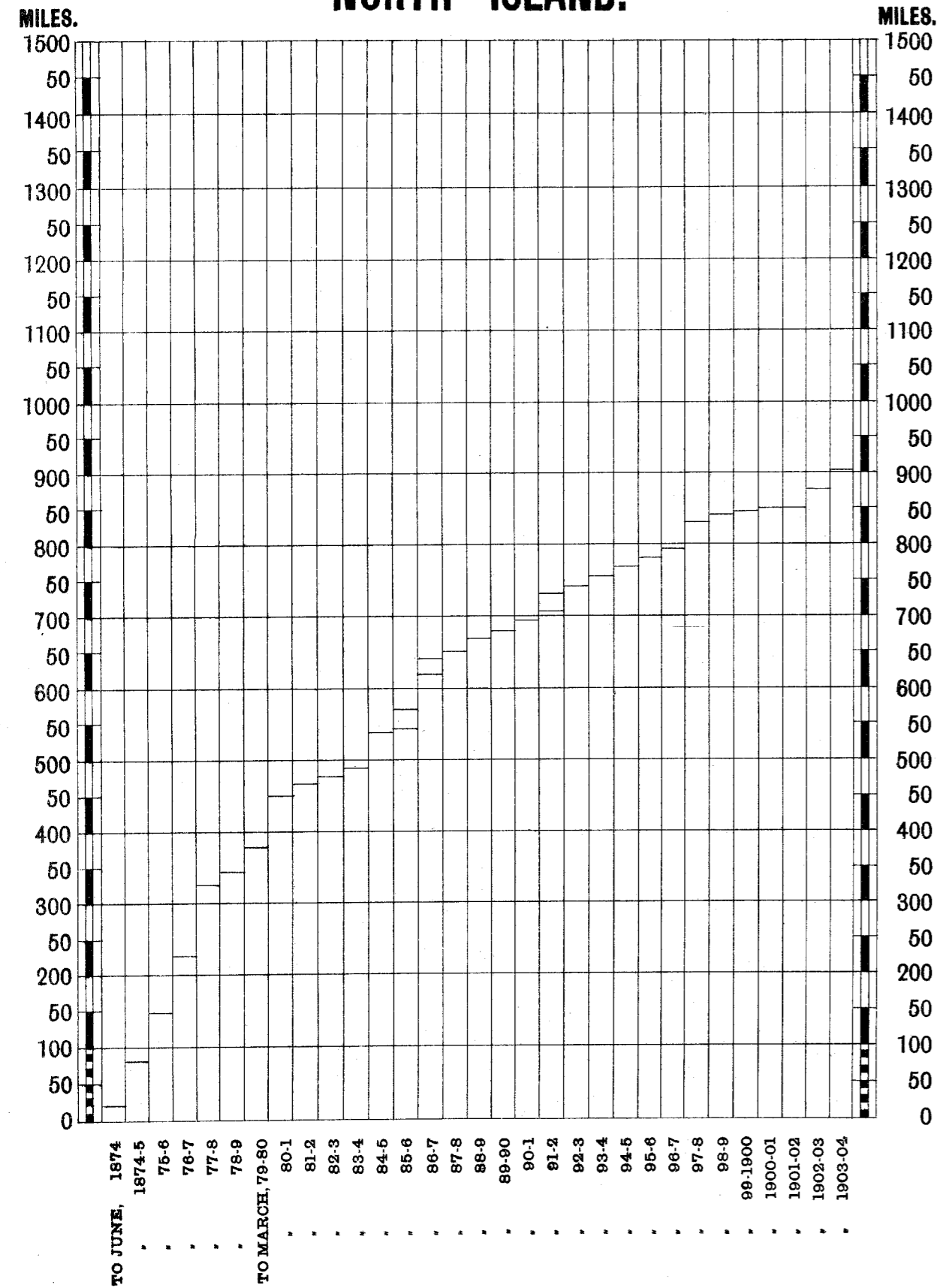
**NORTH ISLAND.**

Number of Miles open  
of  
Government Lines.

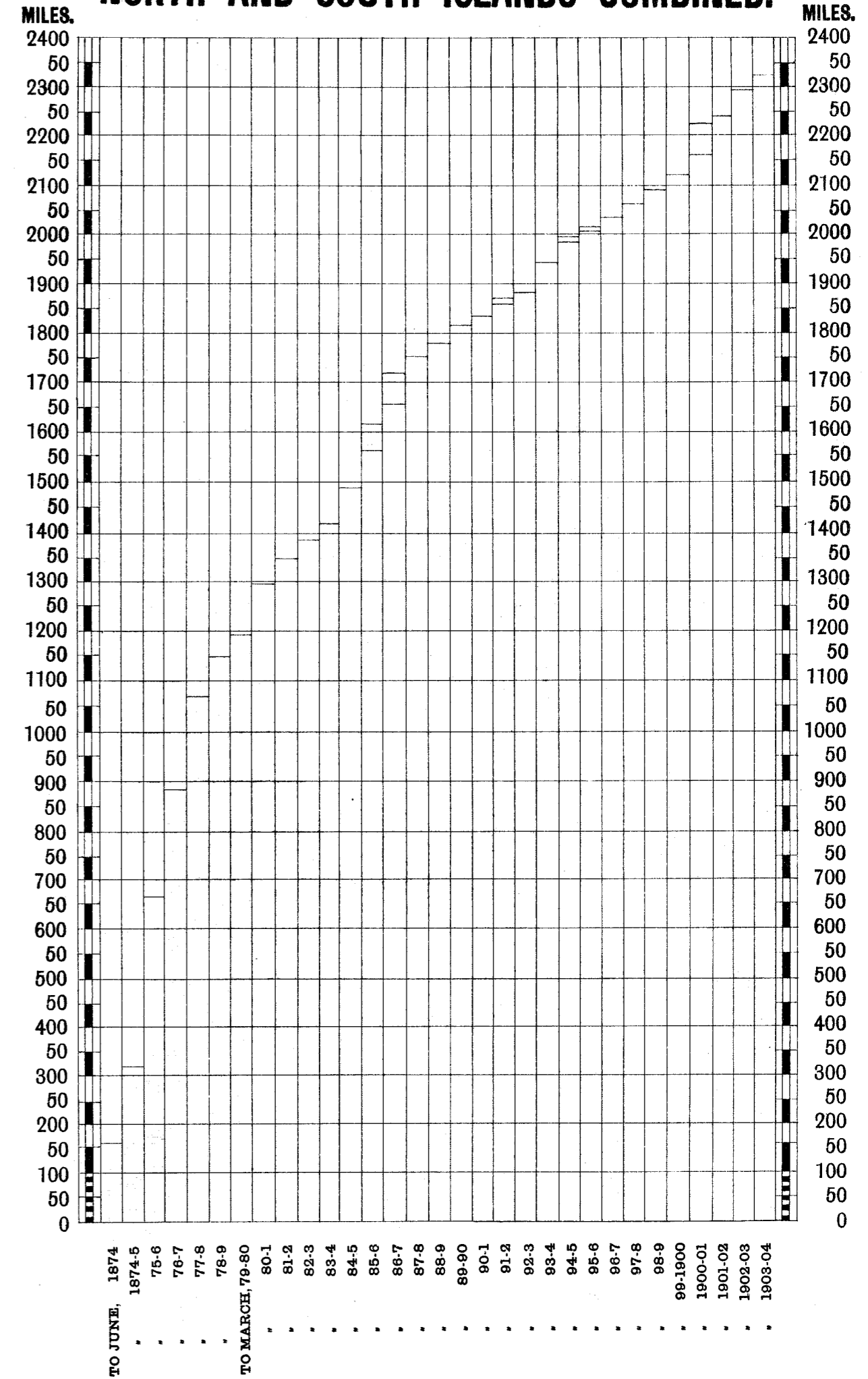
**SOUTH ISLAND.**

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 NORTH ISLAND OF NEW ZEALAND 1904

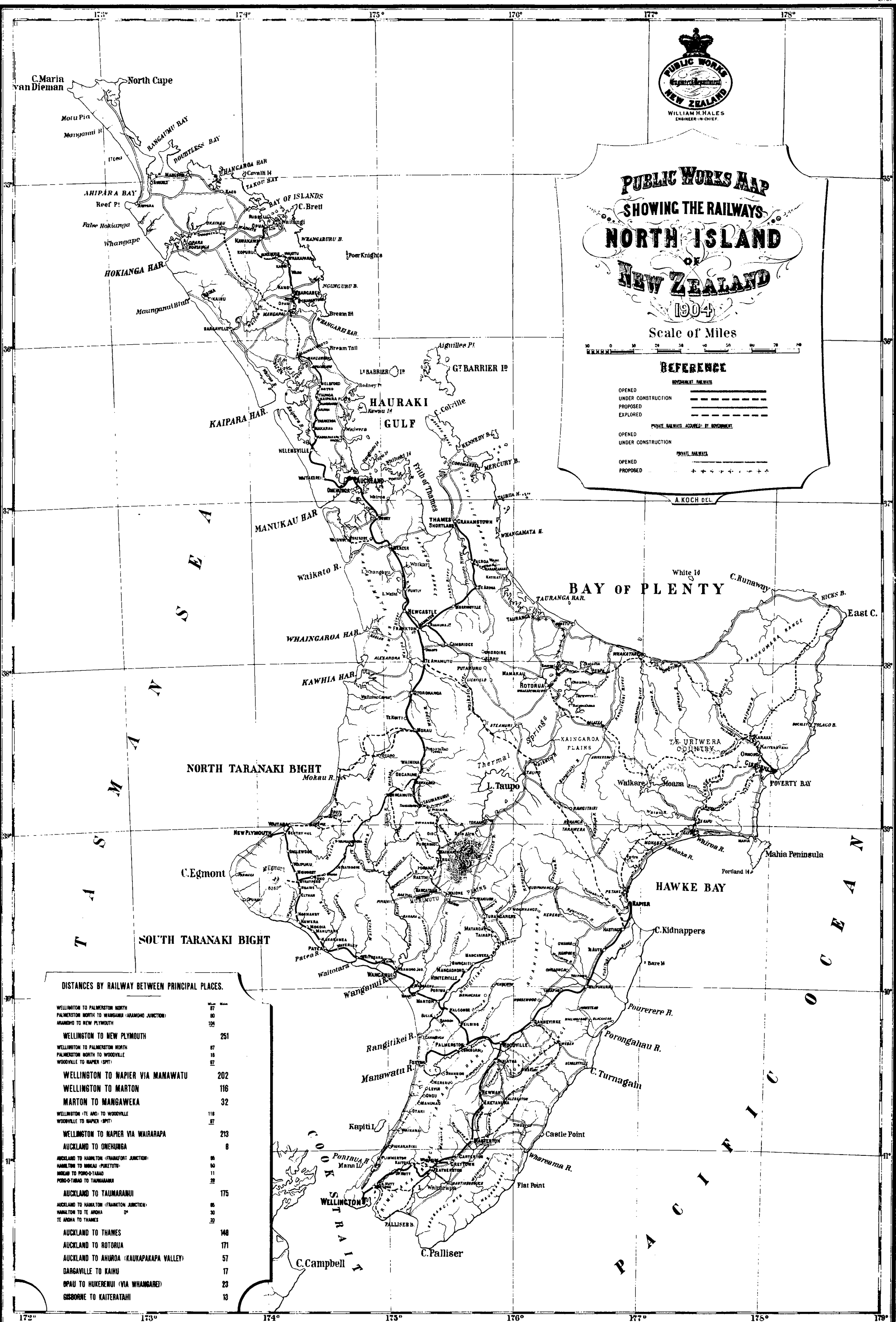
Scale of Miles



### REFERENCE

- GOVERNMENT RAILWAYS**
- OPENED
  - UNDER CONSTRUCTION
  - PROPOSED
  - EXPLORED
- PRIVATE RAILWAYS ACQUIRED BY GOVERNMENT**
- OPENED
  - UNDER CONSTRUCTION
- PRIVATE RAILWAYS**
- OPENED
  - PROPOSED

A KOCH DEL.



### DISTANCES BY RAILWAY BETWEEN PRINCIPAL PLACES.

WELLINGTON TO PALMERSTON NORTH	87
PALMERSTON NORTH TO WANGANUI (ARANGOHU JUNCTION)	80
ARANGOHU TO NEW PLYMOUTH	104
WELLINGTON TO NEW PLYMOUTH	251
WELLINGTON TO PALMERSTON NORTH	87
PALMERSTON NORTH TO WOODVILLE	18
WOODVILLE TO NAPIER (SPT)	92
WELLINGTON TO NAPIER VIA MANAWATU	202
WELLINGTON TO MARTON	116
MARTON TO MANGAWHEKA	32
WELLINGTON (TE ARO) TO WOODVILLE	118
WOODVILLE TO NAPIER (SPT)	92
WELLINGTON TO NAPIER VIA WAIRAPA	213
AUCKLAND TO ORENGUNGA	8
AUCKLAND TO HAMILTON (FRANKTON JUNCTION)	85
HAMILTON TO HOKIAU (PARETOU)	50
HOKIAU TO PONGO-TARAHO	11
PONGO-TARAHO TO TAUMARAKAU	29
AUCKLAND TO TAUMARAKAU	175
AUCKLAND TO HAMILTON (FRANKTON JUNCTION)	85
HAMILTON TO TE AROHA	30
TE AROHA TO THAMES	23
AUCKLAND TO THAMES	148
AUCKLAND TO ROTORUA	171
AUCKLAND TO AHUROA (KAUKAPAKA VALLEY)	57
DARGAVILLE TO KAIMU	17
OPAU TO HUKERENUI (VIA WHANGAREI)	23
GOSBORNE TO KAITEKATAHI	13







**PUBLIC WORKS MAP**  
**SHOWING THE RAILWAYS**  
**SOUTH ISLAND**  
**OF**  
**NEW ZEALAND**  
**1904**

Scale of Miles

**REFERENCE**

GOVERNMENT RAILWAYS

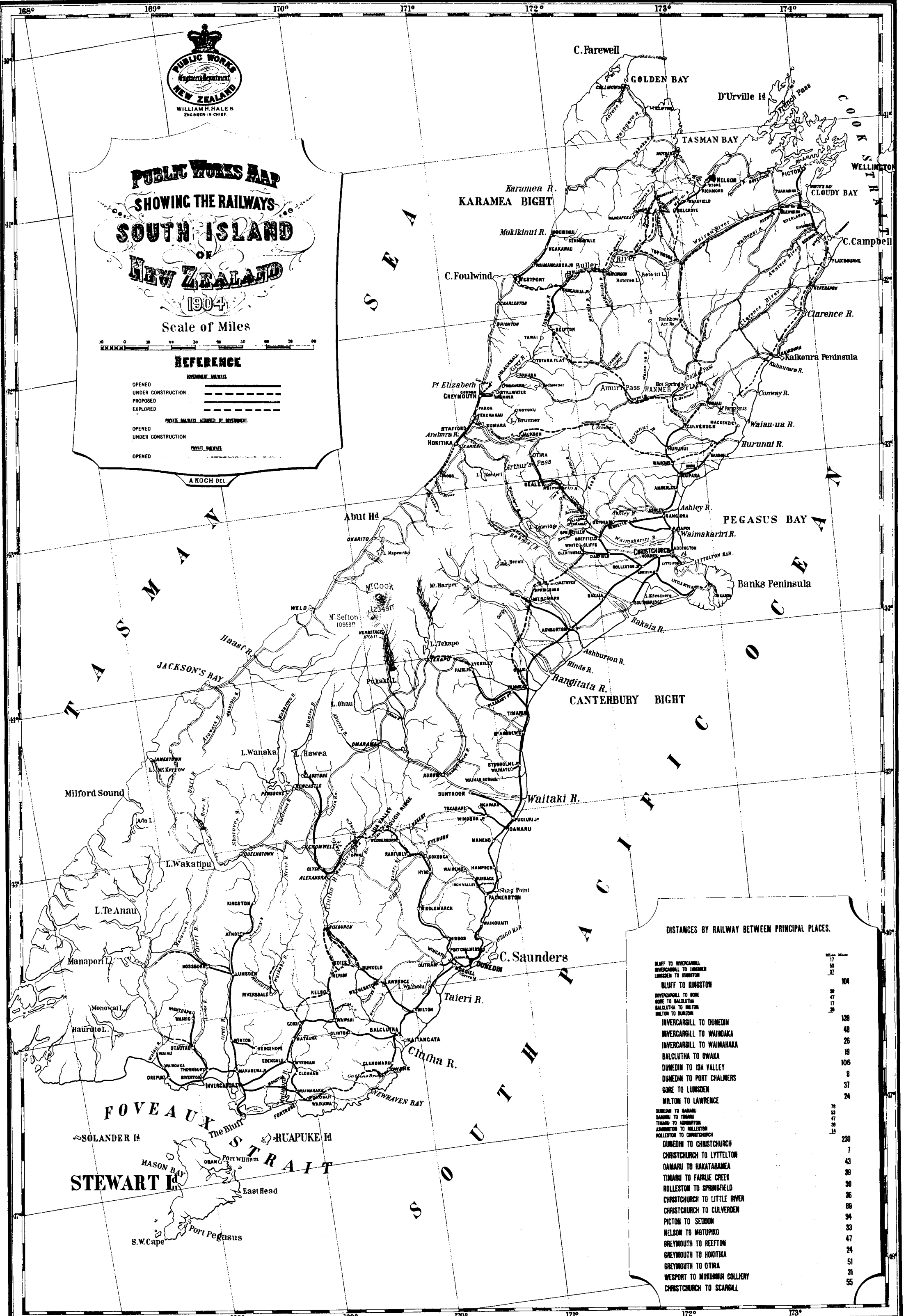
OPENED  
 UNDER CONSTRUCTION  
 PROPOSED  
 EXPLORED

PRIVATE RAILWAYS ACQUIRED BY GOVERNMENT

OPENED  
 UNDER CONSTRUCTION  
 OPENED

PRIVATE RAILWAYS

A KOCH DEL.



**DISTANCES BY RAILWAY BETWEEN PRINCIPAL PLACES.**

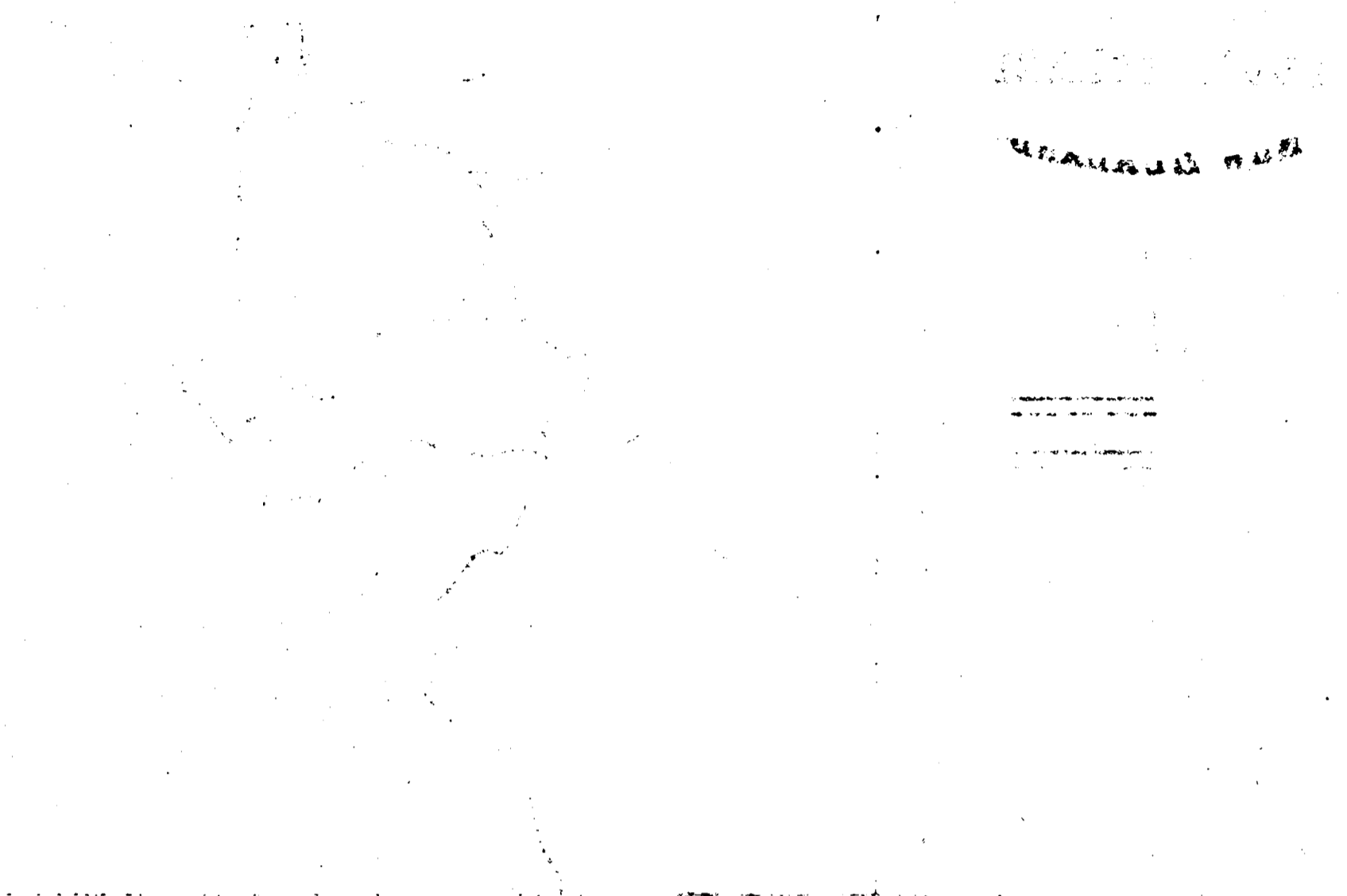
BLUFF TO INVERCARGILL	17
INVERCARGILL TO LUNSDEN	50
LUNSDEN TO DUNEDIN	37
BLUFF TO KINGSTON	104
INVERCARGILL TO DUNE	38
GORE TO BALCLUTHA	47
BALCLUTHA TO DUNEDIN	17
MILTON TO DUNEDIN	39
INVERCARGILL TO DUNEDIN	138
INVERCARGILL TO WAIHAKA	48
INVERCARGILL TO WAIMARUA	26
BALCLUTHA TO OWAKA	19
DUNEDIN TO ISA VALLEY	106
DUNEDIN TO PORT CHALMERS	8
GORE TO LUNSDEN	37
MILTON TO LAWRENCE	24
DUNEDIN TO GABARU	75
DUNEDIN TO TIMARU	52
DUNEDIN TO CHRISTCHURCH	47
ASHBURTON TO HELLINGTON	38
ROLLISTON TO CHRISTCHURCH	14
DUNEDIN TO CHRISTCHURCH	230
CHRISTCHURCH TO LYTTELTON	7
DUNEDIN TO HAKATARAMEA	43
TIMARU TO FAIRLIE CREEK	39
ROLLISTON TO SPRINGFIELD	30
CHRISTCHURCH TO LITTLE RIVER	36
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DEPARTMENT OF THE ARMY  
WASHINGTON, D. C.

OFFICE OF THE CHIEF OF STAFF

ATTENTION: CHIEF OF STAFF

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## A P E N D I X F.

## M I D L A N D R A I L W A Y .

## FINAL REPORT OF MR. VIRGIL G. BOGUE, C.E., ON THE ARTHUR'S PASS PROBLEM.

SIR,—

New York, 14th July, 1904.

In the first report on the Arthur's Pass problem which I had the honour to make to you, under date of the 17th February, 1902, it was recommended that certain surveys be made, and it was remarked that, "In making the surveys the situation should be studied with care, so as to get the best out of it, and in this connection I take the liberty of suggesting that the map of the survey, at least of the part from the summit tunnel to Otira, should be a contour map, on a scale of 100 ft. to an inch. On such map the effect of slight changes of gradient can be tried, and the best possible location determined."

The surveys thus referred to were made by your engineer, Mr. Dobson, also the maps, profiles, and estimates, which, under cover of a short report to you by Mr. P. S. Hay, Superintending Engineer, and a letter of transmittal from the Under-Secretary, Mr. H. J. H. Blow, were sent to me on the 29th September, 1903. They were promptly received, as per my letter of the 31st October following. These were followed by a subsequent letter from the Under-Secretary, enclosing, as per request of my said letter of 31st October, some details of the estimates.

In order that the record may be quite complete, Mr. Hay's report and the several letters and estimates, &c., referred to appear herewith as an appendix, also the maps and profiles have been reduced to smaller scales, and prints thereof are also appended, all being submitted as part of this report.

In supplementary reports which I made to you, the first dated the 16th May, 1902, and the second 27th June, 1903, some data and information were presented which had especial bearing on working-costs of suggested routes, also on tunnel-ventilation and electric traction as applied in long tunnels. These supplementary reports as to working-costs confirmed my original report in its conclusions that, on the whole, and so far as could then be known, line B 1 would be the best.

The surveys, however, have demonstrated the fact that the cost of line B 1 would exceed the amount assumed by me in the sum of £30,000. They have also disclosed the situation respecting line A 4, referred to by Mr. Hay, which was discussed in a tentative way by Messrs. Hay, Dobson, and myself, but without any conclusion at the time, that enough information relative thereto could be presented to make it worthy of mention, in a formal report.

The outcome has fully justified the expenditure of time and money required by the surveys, &c., since we now have in line A 4 a route upon which I am satisfied all can unite as the best that can be had, as will be outlined in the following pages.

## TRAFFIC AND ASSISTANT LOCOMOTIVES.

For the same volume of traffic and train-lengths assumed and used in my former reports, I have estimated the variable elements of the working-costs of these lines, making use of more recent data relating to fuel-consumption per locomotive-mile and the effect of rise and fall and curvature on maintenance-costs. In doing this, I have simplified my former methods where possible.

For the gradients of the several lines discussed in this report, full-rated trains arriving at Otira from the west with a single locomotive will reach the summit with the help of one assistant locomotive of the same class. The assistant locomotive is assumed to be detached at the summit and returned light to Otira, one locomotive being sufficient to haul the west-bound trains up the grade from Bealey to the summit.

With the lines of lesser gradients there will be some surplus of motive power by this arrangement; but, with the method of computing motive-power costs used, this will not materially affect the comparisons.

## GRADE AND TRAIN-RESISTANCE.

The resistance due to gradient—20 lb. per ton of 2,000 lb. per each per-cent. of grade—is added to the train-resistance, which for the speed assumed of ten miles per hour on maximum grades, or twelve miles per hour on lesser grades, is taken at 6.58 lb. per long ton, as in previous reports, this figure not varying materially between speeds of seven and a half and fifteen miles per hour. For slower speeds the train-resistance increases slightly, and also increases constantly at higher speeds, its minimum occurring at a speed of about twelve miles per hour.

## RESISTANCE DUE TO CURVATURE.

Most of the curvature of the several lines occurs between Otira and the summit, but its distribution as between one side of the summit and the other is not given in the data. In order to get a uniform comparison fair to all lines, it is assumed that all of the curve-resistance would take place between Otira and the summit.

The curvature given in Mr. Hay's report is therefore reduced to an equivalent grade on straight track, extending over a distance equal to the percentage of line curved, at the rate of four-one-hundredths of a foot per degree of curve.

For each line and weight of train, Tables II to IX, inclusive, give the length in miles of each rate of grade, the speed used for each grade, the total resistance due to grade, friction, &c., and the total resistance due to curvature, also the total resistance of the west-bound train from Bealey to the summit.

The length in miles for each rate of grade multiplied by the total resistance for that grade and speed, gives the mile-pounds, which is a term that can readily be reduced to foot-pounds or horse-power.

#### TRACTIVE POWER.

The tractive power of the Class B locomotive assumed has been computed by the method of my second supplementary report, further investigation having confirmed me in the view, that for the assumed speeds, there is no more satisfactory or accurate way of determining this important factor.

#### COST OF OPERATION AND MAINTENANCE.

The elements of cost of operation and maintenance are as follows: Maintenance of way; ventilation of summit tunnel; fuel-consumption; wages of locomotive-men; locomotive repairs, renewals, and supplies; car repairs and renewals; wages of trainmen; general expense. We will take these up in their order.

##### *Maintenance of Way.*

In Table XIII. will be found the working-expenses of the New Zealand Railways, classified and distributed in items corresponding to those of the American Interstate Commerce Commission. This table is an aid in computing the effect of rise and fall and of curvature upon various items of maintenance of way, some of which are much more affected thereby than others, while some are not affected at all. The same table shows the per cent. of increase of each item of maintenance-cost affected, and the per cent. of increase due to 528 degrees of curvature and a rise and fall of 26.4 ft. The per cent. affected is taken from "Railroad Construction, Theory and Practice" by Professor Walter Loring Webb, of the University of Pennsylvania, a revision of Wellington's work on this subject in the light of the large amount of valuable data collected and published by the American Interstate Commerce Commission.

The approximate rise and fall and curvature per mile of the New Zealand Railways, for the year 1901, are known, or have been computed, also the average cost of maintenance of way per train-mile. With these data and the values deduced in Table XIII., the cost of maintenance of way per train-mile for each of the alternate Arthur's Pass lines has been computed by proportion, the results being shown in Table XIV.

In Table XIV. has also been introduced the effect of the assistant locomotives on the cost of maintenance of way. The assistant locomotive, according to Webb (page 488), affects repairs to roadway 12½ per cent., and renewals of rails and ties each 50 per cent. per locomotive-mile. This affects the total maintenance of way (6.56 per cent. of the total operating-cost per mile), 18.15 per cent. per locomotive-mile. The helper locomotive runs from Otira to the summit only and return. Therefore, the increased cost of maintenance of way per train-mile over the entire distance between Otira and Bealey will be twice the distance from Otira to summit, multiplied by 18.15, divided by the distance from Otira to Bealey. The resulting percentage for each line is given in column headed, "Percentage Increase due to Assistant Locomotives" (Table XIV).

With the costs of maintenance of way per train-mile from the last column of Table XIV., and the number of train-miles per annum outside of tunnel, the total annual costs in pounds sterling corresponding thereto are found for each of the routes as given in Table XV. The total annual costs in pounds sterling of maintenance of way in tunnel is found as shown by Table XVI. Adding the costs outside to those inside of summit tunnel, we have the total annual cost of maintenance of way in pounds sterling, given in Table XVII., for each line.

##### *Ventilation of Summit Tunnel.*

It is assumed that the summit tunnel of either of the routes would require artificial ventilation on account of its length. With the length of summit tunnel from Table I. and the area of cross-section designed for the Arthur's Pass tunnel of 200 square feet, the formulæ for the Saccardo system of ventilation given in my second supplementary report, which system is in successful use in Saint Gothard tunnel and in several others, including the precedents noted in said report, will give the essential elements as shown in Table XXIV.

From the last column of Table XXIV. it appears that the tunnel of each route would require practically the same mechanical plant and power to give the required velocity and air-current, provided the ratio of the area of nozzle to the area of tunnel cross-section is properly proportioned. The size of blowers and the horse-power of engine and boiler would be the same as used in my second supplementary report—namely, 200-horse power. The cost of operating such a plant can be safely taken at one-half that for a Class B locomotive for the train-mileage made in the tunnel, except that the wages and general expense would be wholly the same as for a Class B locomotive.

The cost of installing the ventilation plant in the case of either of the projected summit tunnels would be fully covered by the provision made in each case by your engineers, as given in the details which have been sent to me.

##### *Fuel-consumption.*

Authorities do not agree closely on fuel-consumption. Ideas vary according to experience and research. The quality of coal has important bearing, a larger consumption of some coals being required than of others.

In the computations of my former reports, 5 lb. of coal was assumed per effective horse-power-hour. This is a figure which is as near correct as can be ascertained for average American practice, but on heavy grades, where a locomotive is working most of the time, with nearly full stroke cut off, it is too low. This is a matter which I have investigated at much length, and am now satisfied that, for conditions such as will be found between Otira and the summit, 6 lb. of coal per effective horse-power-hour should be assumed for these computations. This figure I have recently

used in connection with an important line in Colorado, and am now using in a report on the merits of certain routes across the Sierra Nevada Mountains, in California and Nevada, for a transcontinental line.

We can now compute the fuel-consumption required by each route, directly from the total resistance pertaining thereto, thus eliminating many details which entered into the computations of my previous reports, as follows:—

Multiplying the total resistance in pounds by the distance in feet through which it operates, will give the foot-pounds of effective work done in moving the train. For each hour, this would be the resistance in pounds multiplied by 5,280 and by the speed in miles per hour. Dividing the latter product by 33,000 (foot-pounds) and by 60 (minutes) gives the effective horse-power expended. This quotient multiplied by the running-time in hours and by 6 lb. of coal per effective horse-power hour gives the total coal consumed in pounds. Expressing this in an equation, we have—

$$\frac{R \times 5280 \times S \times H \times 6}{33000 \times 60} = \text{coal consumed in pounds, where } R \text{ is the total resistance in pounds.}$$

The speed  $S$  is equal to the distance in miles  $M$  divided by the running-time  $H$  in hours:  $S = \frac{M}{H}$ . Substituting this value of  $S$  in the above equation the term  $H$  cancels out and we have—

$$\frac{R \times 5280 \times M \times 6}{33000 \times 60} = \text{coal consumed in pounds.}$$

Dividing by 2,240 to reduce the results to tons and multiplying by the cost of coal (in this case £0.65) will give the cost of coal in pounds sterling:—

$$\frac{R \times M \times 5280 \times 6 \times .65}{33000 \times 60 \times 2240} = \frac{RM}{215384.6} = \text{cost of fuel in pounds sterling.}$$

Then, dividing the total resistance in mile-pounds of Tables II. to IX. inclusive by 215,384.6 gives the cost of fuel for a round-trip train in pounds sterling.

Table X. gives the number of train and locomotive miles in summit tunnel and outside of summit tunnel and the total between Otira and Bealey for one round-trip train, and Table XI. shows the average daily mileage of assistant locomotives for each line with 500, 700, 1,000, 340, 477, and 681 trains per annum in each direction, the train-mileage being assumed as equally distributed over 312 working-days.

The costs of fuel per round-trip trains, as given in Tables II. to IX. inclusive, are then multiplied by the total number of round-trip trains per annum, giving the total annual cost of fuel for locomotives of each route and number of trains per annum. These results are shown in Table XII.

#### *Wages of Locomotive-men.*

These are based upon the rates established in New Zealand as measured by the locomotive-mile (see New Zealand Railways Report for 1901), the cost per locomotive-mile being 4.18d., assumed to be the same for any locomotive on either route.

#### *Locomotive Repairs, Renewals, and Supplies.*

Taking the costs per locomotive-mile of locomotive repairs, renewals, and supplies for Class B locomotives from the New Zealand Railways Report of 1901, page 62, which are the average of 125,524 engine-miles, we have the distribution shown in the first column of Table XX. The rates per locomotive-mile for an 85-ton locomotive would be greater. According to Wellington and Webb, the items should increase about one-half as fast as the increase in weight, that is, if the total weight of the locomotive is doubled, the cost of renewals and repairs and supplies would increase about 50 per cent.

Therefore, if  $R$  is the cost of one of these items for class B locomotive, the cost for an 85-ton locomotive will be—

$$R^1 = R \left(1 + \frac{85 - 65}{2 \times 65}\right) = R \times \frac{75}{65} = 1.154 R.$$

Table XVIII. shows the effect of rise and fall and curvature on the cost of repairs and renewals and supplies per locomotive-mile, obtained in the same manner and with the same reasoning as was used in finding the effect of these physical characteristics on costs of maintenance of way and equipment. These rates per locomotive-mile from Table XVIII. are shown in Table XX. for Class B locomotive, and for the 85-ton locomotive the rates for the Class B locomotive are multiplied by 1.154 (see above equation), giving the results shown in Table XX.

With the number of locomotive-miles per round-trip train from Table X., and the rates from Table XX., we obtain the costs for one round-trip train as shown in Table XXI. Multiplying the costs per round-trip train by the number of trains per annum gives the total annual charge for locomotive repairs, renewals, and supplies, see Table XXI.

Following the same method as used in my first and second supplementary reports, a day's work for an assistant locomotive is assumed to be eighty miles, and the difference between eighty miles and the actual average daily mileage is called the potential mileage, and is an item of the total cost of motive power. The cost for this potential mileage will be taken as before at the total cost of wages per locomotive-mile plus 10 per cent. of the cost of all the other items. For the Class B locomotive this amounts to 5.15d., and for the 85-ton locomotive 5.30d. Multiplying these rates by 80 miles, less the actual mileage of assistant locomotives per day for each line and number of

trains per annum, from Table XI., and by 312 full working days in a year, gives the annual cost of assistant locomotives standing still in pounds sterling. These results are shown in Table XXII.

Adding together the annual cost of fuel from Table XII., of wages, renewals, and repairs, and supplies from Table XXI., and the cost of assistant locomotives standing still from Table XXII., gives the total annual cost of motive power in pounds sterling of Table XXIII.

#### *Wages of Trainmen; General Expense.*

Each of these items would be nearly the same for either of the alternative routes, and can be safely omitted from the comparison, although the item of train-wages, on the basis of a train-mile distribution, would affect the B lines somewhat adversely, because of their greater length, as compared with the A lines.

#### *Car Repairs and Renewals.*

This has been obtained from the returns of the New Zealand railways, with a percentage of increase due to rise and fall and curvature, in the same manner as in my first supplementary report, correction being made to agree with recent data, now at hand. With the rate per train-mile from the last column of Table XVIII., and the total number of train-miles per annum, for each case, the total yearly cost of renewals and repairs of cars is found as given in Table XIX.

If the trains brought up to Bealey are rated for and hauled by an 85-ton locomotive, 340, 477, and 681 trains per annum would handle the same business as 500, 700, and 1,000 trains per annum with Class B locomotive. The total number of car-miles and of ton-miles would therefore remain the same, while the train and locomotive miles per annum would be less, and the weight of the trains and locomotives would be proportionally greater. It is therefore assumed that the maintenance-costs would be essentially the same for the same volume of traffic with either locomotive. There are no data at hand from which the exact effect on maintenance-charges of handling the same tonnage in heavier and fewer trains can be determined, but it is evident that there are factors which would balance each other—that is, some items would be larger for the heavier trains and others would be larger for the lighter trains. The net result cannot vary enough to materially affect this comparison.

#### *Comparison of Working-costs.*

Adding together the annual cost of motive power from Table XXIII., the cost of maintenance of way from Table XVII., the cost of renewals and repairs of cars from Table XIX., and the cost of tunnel-ventilation from Table XXV., we have the total of all the variable elements in the cost of working these alternate lines as shown in Table XXVI.

It will be seen from this table that the cost of working the several lines considered does not differ greatly. The extreme difference between Line B 3, the highest, and Line A 4, the lowest, is only £148·65 sterling per annum for 500 trains each way per year. For 1,000 trains each way per year the difference is £298·6 sterling.

Adding interest at  $3\frac{1}{2}$  per cent. per annum on the cost of construction given in Table I., we have the sum of all the variable elements in the total annual charges in pounds sterling. These results are shown in Table XXVII. They distinctly indicate that Line A 4 is the best.

Line B 1, which is the one mentioned in my first report as likely to be the best of those considered therein, follows line A 4, ranking as a close second in the order of merit. If the railway was to be built purely as a commercial enterprise it would doubtless pay to give more favourable consideration to line B 1, because, on account of its shorter summit tunnel, the railway could be completed and begin to earn money at an earlier date than in the case of either of the other routes. But it would not be good policy, nor pay the Government in the long-run, to build any but the best line, especially as such line is estimated to cost the least.

Line A 4 is an ideal route, considering all the points of the physical situation. It keeps clear of the hill-sides and of all possibility of interruption by slides, or danger from falling rocks, is short, and is almost, although not wholly, free from curvature. In fact, a better route is not feasible, and I am glad to recommend it to you.

No attempt is made herein to estimate the extra cost of maintenance of way of either route, due to slides or wash from slopes, &c., this item being a matter of pure conjecture. It is not at all improbable, however, that this would, during some years, so increase the aggregate working-cost of line B 1 that it would exceed that of line A 4 in the sum of £1,000 to £1,200 sterling, as estimated by the superintending engineer.

I take pleasure in saying that the Government engineers have shown ability in their work in these premises, and in developing the data sent me.

#### TEMPORARY LINE.

In my reports I have mentioned the Shay locomotive as a practicable machine for the operation of steep gradients. It is slow in speed, but very positive and safe in its action. It can, however, easily make eight miles per hour, and does do so every day in the year on the Mount Tamalpais Scenic Railway in California.

The following data relating to this railway will be of interest to you.

#### *The Railway.*

The railway is of standard gauge, and was built in 1896 under the engineering direction of Mr. George M. Dodge, of San Rafael, California.

The line is a trifle less than eight miles and a quarter in length, with a total curvature of about 15,000 degrees, and a total ascent of about 2,500 ft.

The track is laid with 56 lb. steel rails for seven miles of the distance, on the remainder 35 lb. rails being in use, the intention of the company being to replace these soon with the heavier variety. A level form of ballast is in use, exposing the entire upper surface of the ties, but extending beyond the ends. Water lubrication is practised on the sharpest curves, oil having proved dangerous, causing derailment.

Creeping of the rails has been successfully arrested by spiking 10 ft. sections of 2 in. iron pipe on four ties, with one end of the pipe braced against an angle bar: four thousand of these pipes are in use.

The maximum speed of trains is eight miles per hour. Safety of operation is helped by the numerous curves, which serve as a check to trains in making the descent.

#### Equipment.

The principal equipment of the road consists of four Shay locomotives and eight cars. The locomotives were built by the Shay Locomotive-works of Lima, Ohio. They are 30 tons net weight, and easily haul three loaded cars, the cars having a capacity of eighty passengers each.

The steam is applied through three vertical cylinders to a shaft having universal joints which has bevel-gearing connections with the wheels, allowing the locomotive to make the sharpest curves of 70 ft. radius.

Crude oil is used for fuel. It is obtained from Bakersfield, Cal., the cost being 80 cents per barrel in the locomotive, this against coal at \$9 per ton, four barrels of oil being about equal to a ton of coal. The chief profit of the road lies in this fuel-saving. A round trip requires about 120 gallons of oil with one car, and 150 gallons with three cars.

The cars were built by W. L. Holman and Co., 210-212 Fremont Street, San Francisco. They are of seven short tons weight, with seats extending the entire width, and have canopy tops, with curtains for bad weather.

From five to ten round-trip trains are run over the Mount Tamalpais Scenic Railroad every day. They carry a large number of passengers with safety and success. There is no difficulty in keeping the train under full control, accidents being unheard-of.

#### Application to Arthur's Pass.

It is my opinion that a survey at Arthur's Pass would prove that a temporary line like that at Mount Tamalpais would be feasible at reasonable cost. A free use of curvature should be made in order to avoid tunnels or other expensive features of construction and to avoid moving ground so far as practicable. It would also, perhaps, be advisable to use one or two short switchbacks to keep the line as near the stream as may be considered desirable, in order to take advantage of easier slopes than those presented at greater heights, and to cheapen the cost.

Such a line would be very useful during construction of the summit tunnel. It could be connected with the permanent line at either end and cars could be run through, establishing a regular traffic. If built, it might be found desirable to retain it as a permanent feature of the railway to enable passengers and tourists to view the beautiful scenery of Otira Gorge and Arthur's Pass. I strongly recommend that the survey mentioned be made.

The Hon. William Hall-Jones, Minister for Public Works,  
Wellington, New Zealand.

I have, &c.,  
V. G. BOGUE

### APPENDIX A.—TABLES ACCOMPANYING FINAL REPORT.

TABLE I.

Name of Line.	Physical Characteristics of alternative Lines.											Estimated Cost of Construction.
	Length of East Approach.	Maximum Grade of East Approach.	Length of West Approach.	Maximum Grade of West Approach.	Total Length of Line.	Percentage curved.	Total Curvature.	Rise and Fall.	Level of Summit.	Length of Summit Tunnel.	Grade of Summit Tunnel.	
A	M. ch. 0 45	1 in 40	M. ch. 8 8	1 in 37	M. ch. 8 53	13	Degrees. 357	Ft. 1,189	Ft. 2,398	M. ch. 6 0	1 in 37	\$ 567,000
A 1	1 7.5	*1 in 40	7 54	1 in 30	8 61.5	19.5	809	1,285	2,446	4 73	1 in 36	517,000
A 2	1 4	*1 in 40	7 55.5	1 in 30	8 59.5	16.5	593	1,273	2,440	4 79	1 in 33	525,000
A 3	1 1.5	*1 in 40	7 56	1 in 30	8 57.5	13	419	1,273	2,440	5 45	1 in 33	537,000
A 4	1 6.5	*1 in 40	7 55	1 in 30	8 61.5	8	177	1,277	2,442	5 24	1 in 33	510,000
B 1	2 2.5	1 in 40	8 6.5	1 in 30	10 9	26.5	1,160	1,463	2,535	3 32	1 in 33	512,000
B 2	2 2.5	1 in 40	7 63.5	1 in 30	9 66	34	1,407	1,463	2,535	3 32	1 in 33	539,000
B 3	2 2.5	1 in 40	8 21	1 in 30	10 23.5	29	1,315	1,463	2,535	3 32	1 in 33	543,000

Grade level at Otira common point .. .. . Ft.  
1,255  
Grade level at Bealey common point .. .. . Ft.  
2,352

\*This does not agree with profile, which gives 1 in 44.

TABLE II.—FUEL-CONSUMPTION, LINE B 3.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
0.025	2.27	12	21,350	534	30,150	754
0.200	3.33	10	30,150	6,030	42,700	8,540
0.210	3.03	12	27,650	5,810	39,100	8,210
0.187	0.50	12	6,620	1,275	9,350	1,750
0.106	1.91	12	18,350	1,945	25,600	2,715
0.194	1.91	12	18,350	3,560	25,600	4,970
0.003	3.33	10	30,150	90.5	42,700	128
0.518	3.33	10	30,150	15,625	42,700	22,130
1.107	3.03	12	27,650	30,600	39,100	43,300
0.200	1.64	12	16,100	3,220	22,750	4,550
0.062	3.33	10	30,150	1,870	42,700	2,570
0.689	3.03	12	27,650	19,050	39,100	26,950
0.249	2.88	12	26,450	6,590	37,350	9,300
0.542	3.33	10	30,150	16,350	42,700	23,150
3.740	3.03	12	27,650	103,500	39,100	146,200
0.239	2.88	12	26,450	6,320	37,350	8,930
(2.985)	0.33	8.5-12	*5,200	15,530	*7,350	21,930
	Total R.M., Otira to summit ...			237,899.5	...	336,077
0.187	Summit level	12	2,450	458	3,460	647
(0.187)	Summit level	12	1,365	255.5	1,935	362
	R.M. both ways on summit level			713.5	...	1,009
0.200	Level	12	1,365	273	1,935	387
0.700	2.50	12	12,965	9,070	18,400	12,880
0.274	2.27	12	11,865	3,250	16,880	4,620
0.025	1.97	12	10,515	263	14,900	373
0.612	1.67	12	9,115	5,575	12,920	7,910
0.025	1.14	12	6,645	166	9,450	236
	R.M., Bealey to summit ...			18,597	...	26,406
10.294	(Total length of line.)					
	Total R.M. uphill ...			(256,496)	...	(362,483)
	Equivalent R.M. downhill (10 per cent.)			25,650	...	36,248
	Total equivalent R.M., one round trip ...			282,859	...	399,740
Cost of fuel = R.M. ÷ 215,384.6 = £1.312 per round trip.					Cost of fuel = R.M. ÷ 215,384.6 = £1.855 per round trip.	

\* Resistance due to curvature.

NOTE.—The steepest equivalent grade is 3.49 per cent., which at eight miles and a half per hour gives resistance 31,450. The tractive power is 31,550 for the light trains, and correspondingly greater for the heavier trains and locomotives.



TABLE III.—FUEL-CONSUMPTION, LINE B 1.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
0·728		Same as B 3		15,594	Same as B 3	21,969
0·830	3·33	10	30,150	25,050	42,700	35,450
1·010	3·03	12	27,650	27,920	39,100	39,500
5·521		Same as B 3		153,680	Same as B 3	217,100
(2·68)	0·33	8·5-12	*5,200	13,920	*7,350	19,700
Total R.M., Otira to summit ...				236,164	...	333,719
0·187	R.M., same as B 3 on summit level			713·5	Same as B 3	1,009
1·836	R.M., Bealey to summit, same as B 3			18,597	Same as B 3	26,406
10·112	(Total length of line.)					
Total R.M. uphill ...				(254,761)	...	(360,125)
Equivalent R.M. downhill (10 per cent.) ...				25,476	...	36,012
Total equivalent R.M., one round trip ...				280,950	...	397,146
Cost of fuel = R.M. ÷ 215,384·6 = £1·308 per round trip.					Cost of fuel = R.M. ÷ 215,384·6 = £1·842 per round trip.	

\* Resistance due to curvature.

TABLE IV.—FUEL-CONSUMPTION, LINE A.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
6·640	2·70	12	24,950	165,700	35,200	233,400
0·262	2·57	12	23,850	6,250	33,700	8,830
0·162	2·51	12	23,350	3,780	33,000	5,350
0·752	2·47	12	23,000	17,300	32,500	24,450
0·275	2·46	12	22,950	6,310	32,400	8,920
(1·126)	0·24	8·5-12	*4,450	5,010	*6,280	7,070
Total R.M., Otira to Summit ...				204,350	...	288,020
0·194	Summit level.	12	2,450	475	3,460	671
0·194	Summit level.	12	1,365	265	1,935	376
R.M., both ways on Summit level				740	...	1,047
0·312	2·42	12	12,565	3,920	17,850	5,565
0·363	1·67	12	9,115	574	12,920	814
R.M., Bealey to Summit ...				4,494	...	6,379
Total R.M. uphill ...				(208,844)	...	(294,399)
Equivalent R.M. downhill (10 per cent.) ...				20,884	...	29,440
Total equivalent R.M., one round trip ...				230,468	...	324,886
Cost of fuel = R.M. ÷ 215,384·6 = £1·07 per round trip.					Cost of fuel = R.M. ÷ 215,384·6 = £1·503 per round trip.	

\* Resistance due to curvature.

TABLE V.—FUEL-CONSUMPTION, LINE B 2.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
2.250		Same as A 1		66,530	Same as A 1	94,010
0.235	3.33	10	30,150	7,080	42,700	10,050
0.203	3.18	11	28,950	5,875	40,900	8,300
0.549	2.88	12	26,450	14,520	37,350	20,500
0.043	3.03	12	27,650	1,190	39,100	1,681
4.521		Same as B 3		126,170	Same as B 3	178,280
(3.34)	0.32	8.5-12	*5,110	17,050	*7,230	24,150
	Total R.M., Otira to summit ...			238,415	...	336,971
0.187	R.M., same as B 3 on summit level			713.5	Same as B 3	1,009
1.336	R.M., Bealey to summit, same as B 3			18,597	Same as B 3	26,406
9.824	(Total length of line.)					
Total, R.M. uphill ...				(257,012)	...	(363,377)
Equivalent R.M. downhill (10 per cent.) ...				25,701	...	36,338
Total equivalent R.M., one round trip ...				283,426	...	400,724
Cost of fuel = R.M. ÷ 215,384.6 = £1.315 per round trip.					Cost of fuel = R.M. ÷ 215,384.6 = £1.856 per round trip.	

\* Resistance due to curvature.

TABLE VI.—FUEL-CONSUMPTION, LINE A 1.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
1.296	3.33	10	30,150	39,100	42,700	55,300
0.864	3.18	11	28,950	25,050	40,900	35,350
0.090	2.88	12	26,450	2,380	37,350	3,360
0.108	3.33	10	30,150	3,260	42,700	4,610
0.306	3.18	11	28,950	8,850	40,900	12,510
0.063	2.88	12	26,450	1,667	37,350	2,350
4.963	2.77	12	25,550	127,000	36,050	178,900
(1.610)	0.38	8.5-12	*5,610	9,020	*7,930	12,770
	Total R.M., Otira to summit ...			216,327	...	305,150
0.163	Summit level	12	2,450	399	3,460	564
(0.163)	Summit level	12	1,365	222	1,935	315
	R.M., both ways on summit level			621	...	879

\* Resistance due to curvature.

TABLE VI.—FUEL-CONSUMPTION LINE A 1—*continued*.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
0·047	2·27	12	11,865	557	16,880	794
0·372	2·27	12	11,865	4,400	16,880	6,280
0·496	1·67	12	9,115	4,519	12,920	6,410
	R.M., Bealey to Summit ...			9,476	..	18,484
8·768	(Total length of line.)					
Total R.M. uphill	...	...	...	(225,803)	...	(318,634)
Equivalent R.M. downhill (10 per cent.)	...	...	...	22,580	...	31,863
Total equivalent R.M., one round trip	...	...	...	249,004	...	351,376
Cost of fuel = R.M. ÷ 215,384·6 = £1·155 per round trip.				Cost of fuel = R.M. ÷ 215,384·6 = £1·63 per round trip.		

TABLE VII.—FUEL-CONSUMPTION, LINE A 2.

Miles.	500, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
0·975	Same as B 3			20,755	Same as B 3	29,202
0·460	3·33	10	30,150	13,880	42,700	19,650
5·964	3·03	12	27,650	165,000	39,100	233,500
0·205	2·88	12	26,450	5,420	37,350	7,650
0·090	0·43	12	6,030	543	8,540	768
(1·443)	0·31	8·5-12	*5,030	7,170	*7,120	10,280
	Total R.M., Otira to Summit ...			212,768	...	301,050
0·182	Summit level	12	2,450	446	3,460	630
(0·182)	Summit level	12	1,365	249	1,935	352
	R.M., both ways on summit level			695	...	982
0·868	R.M., Bealey to summit, same as A 1			8,919	Same as A 1	12,690
8·744	(Total length of line.)					
Total R.M. uphill	...	...	...	(221,687)	...	(313,740)
Equivalent R.M. downhill (10 per cent.)	...	...	...	22,169	...	31,374
Total equivalent R.M., one round trip	...	...	...	244,551	...	346,096
Cost of fuel = R.M. ÷ 215,384·6 = £1·135 per round trip.				Cost of fuel = R.M. ÷ 215,384·6 = £1·605 per round trip.		

\* Resistance due to curvature.

TABLE VIII.—FUEL-CONSUMPTION, LINE A 3.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
1.85		Same as A 2		46,585	Same as A 2	63,078
5.78	3.03	12	27,650	168,000	29,100	226,000
0.07	2.88	12	26,450	1,853	37,350	2,615
(1.133)	0.28	8.5-12	*4,780	5,420	*6,750	7,650
	Total R.M., Otira to summit ...			213,858	...	299,343
0.150	Summit-level	12	2,450	368	3,460	519
0.150	Summit-level	12	1,365	205	1,935	291
	R.M. both ways on summit level			573	...	810
0.868	R.M., Bealey to summit, same as A 1			8,919	Same as A 1	12,690
8.718	(Total length of line.)					
Total R.M. uphill ...				(222,777)	...	(312,033)
Equivalent R.M. downhill (10 per cent.) ...				22,778	...	31,203
Total equivalent R.M. one round trip ...				246,128	...	344,046
Cost of fuel = R.M. ÷ 215,384.6 = £1.42 per round trip.					Cost of fuel = R.M. ÷ 215,384.6 = £1.596 per round trip.	

\* Resistance due to curvature.

TABLE IX.—FUEL-CONSUMPTION, LINE A 4.

Miles.	500-, 700-, 1,000-train Traffic.				340-, 477-, 681-train Traffic.	
	Grade, Per Cent.	Speed.	Resistance, One Train.	Mile-pounds = R.M.	Resistance, One Train.	Mile-pounds = R.M.
0.925		Same as B 3		192,445	Same as B 3	27,067
0.663	3.33	10	30,150	20,000	42,700	28,300
5.651	3.03	12	27,650	156,500	39,100	221,000
0.456	2.50	12	23,250	10,600	32,850	14,980
(0.701)	0.19	8.5-12	*4,030	2,825	*5,690	3,990
	Total R.M., Otira to summit ...			209,169.5	...	295,337
0.194	Summit level	12	2,450	470	3,460	671
(0.194)	Summit level	12	1,365	262	1,935	375
	R.M., both ways on summit level			732	...	1,046
0.011	2.27	12	11,865	130	16,880	186
0.868	Same as A 1			8,919	Same as A 1	12,690
0.879	R.M., Bealey to summit ...			9,049	...	12,876
8.768	(Total length of line.)					
Total R.M. uphill ...				(218,218)	...	(308,213)
Equivalent R.M. downhill (10 per cent.) ...				21,822	...	30,821
Total equivalent R.M., one round trip ...				240,772	...	340,080
Cost of fuel = R.M. ÷ 215,384.6 = £1.119 per round trip.					Cost of fuel = R.M. ÷ 215,384.6 = £1.579 per round trip.	

\* Resistance due to curvature.

TABLE X.—TRAIN AND LOCOMOTIVE MILES BETWEEN COMMON POINTS AT OTIRA AND BEALEY, ONE TRAIN EACH WAY.

Line.	Direction bound.	Length of Run.			Number of Locomotives.	Locomotive miles.	Train-miles.		
		In Tunnel.	Out.	Total.			In Tunnel.	Out.	Total.
A	East ...	6.0	2.091	8.091	1*	16.182	12	5.32	17.32
	East ...	6.0	2.66	8.66	1)	17.32			
	West ...	6.0	2.66	8.66	1)				
	Total ...	...	...	...	...	33.502			
A 1	East ...	4.913	2.777	7.69	1*	15.380	9.826	7.710	17.536
	East ...	4.913	3.855	8.768	1)	17.536			
	West ...	4.913	3.855	8.768	1)				
	Total ...	...	...	...	...	32.916			
A 2	East ...	4.988	2.706	7.694	1*	15.388	9.976	7.512	17.488
	East ...	4.988	3.756	8.744	1)	17.488			
	West ...	4.988	3.756	8.744	1)				
	Total ...	...	...	...	...	32.876			
A 3	East ...	5.563	2.137	7.70	1*	15.400	11.126	6.312	17.438
	East ...	5.563	3.156	8.719	1)	17.438			
	West ...	5.563	3.156	8.719	1)				
	Total ...	...	...	...	...	32.838			
A 4	East ...	5.30	2.395	7.695	1*	15.390	10.600	6.936	17.536
	East ...	5.30	3.468	8.768	1)	17.536			
	West ...	5.30	3.468	8.768	1)				
	Total ...	...	...	...	...	32.926			
B 1	East ...	3.40	4.689	8.089	1*	16.178	6.800	13.424	20.224
	East ...	3.40	6.712	10.112	1)	20.224			
	West ...	3.40	6.712	10.112	1)				
	Total ...	...	...	...	...	36.402			
B 2	East ...	3.40	4.401	7.801	1*	15.602	6.800	12.848	19.648
	East ...	3.40	6.424	9.824	1)	19.648			
	West ...	3.40	6.424	9.824	1)				
	Total ...	...	...	...	...	35.250			
B 3	East ...	3.40	4.871	8.271	1*	16.542	6.800	13.788	20.588
	East ...	3.40	6.894	10.294	1)	20.588			
	West ...	3.40	6.894	10.294	1)				
	Total ...	...	...	...	...	37.130			

\*Helper from Otira to summit and return.

TABLE XI.—AVERAGE DAILY MILEAGE OF ASSISTANT LOCOMOTIVES.  
312 Working-days (per Annum).

Annual Trains each Way.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
500	25.95	24.65	24.66	24.68	24.66	25.92	25.00	26.51
700	36.33	34.50	34.52	34.55	34.52	36.29	35.00	37.11
1,000	51.89	49.28	49.32	49.35	49.32	51.85	50.00	53.01
340	17.65	16.76	16.77	16.78	16.77	17.63	17.00	18.03
477	24.75	23.51	23.53	23.54	23.53	24.73	23.85	25.29
681	35.34	33.56	33.58	33.61	33.58	35.30	34.05	36.10

TABLE XII.—COST OF FUEL PER ANNUM, IN POUNDS STERLING.

Trains each Way per Annum.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
1	1.07	1.155	1.135	1.142	1.119	1.308	1.315	1.312
500	535	577.5	567.5	571	559.5	654	657.5	656
700	749	808.5	794.5	799.4	783.3	915.6	920.5	918.4
1,000	1,070	1,155	1,135	1,142	1,119	1,308	1,315	1,312
1	1.508	1.63	1.605	1.596	1.579	1.842	1.856	1.855
340	512.5	554	546	542	536.5	626	631	630.5
477	719	777	766	761	753	879	885	884.5
681	1,026	1,110	1,092	1,086	1,075	1,254	1,262	1,261

TABLE XIII.—APPROXIMATE DISTRIBUTION OF MAINTENANCE OF NEW ZEALAND RAILWAYS, 1901.

Item.	Total Amount.	Normal Average.	Cost per Train-mile.	Increase due to 528 Degrees Curvature and 26.4 ft. Rise and Fall.						
				Per Cent. of Item.		Cost per Mile per Cent.				
				Curvature.	Rise and Fall.	Curvature.*	Rise and Fall.*			
<b>MAINTENANCE OF WAY AND WORKS.</b>										
	£	Per Cent.	d.							
Repairs of roadway .. .. .	209,073	18.040	10.85	25	5	4.510	0.902			
Renewals of rails .. .. .	(85,100)	3.025	1.82	300	10	9.075	0.303			
Renewals of ties .. .. .	(64,610)	5.575	3.35	50	5	2.788	0.279			
Bridges, drains, and culverts .. .. .	43,400.1	3.745	2.25	..	..	..	..			
Fences, road-crossings, signs, and cattle-guards	13,337.4	1.150	0.65	..	..	..	..			
Buildings and fixtures .. .. .	33,772.7	2.910	1.75	..	..	..	..			
Docks and wharves .. .. .	8,446.3	0.725	0.43	..	..	..	..			
Miscellaneous .. .. .	7,833.8	0.675	0.40	..	..	..	..			
General .. .. .	3,326.7	0.285	0.17	..	..	..	..			
Total .. .. .	418,900.0	36.13	21.67	..	..	16.373	1.484			
<b>MAINTENANCE OF EQUIPMENT.</b>										
Renewals and repairs to locomotives .. .. .	82,702.2	7.135	4.30	100	4	7.135	0.285			
Renewals and repairs to cars .. .. .	82,093.5	7.085	4.20	100	4	7.085	0.283			
Shop machinery and tools .. .. .	7,505.2	0.650	0.40	50	..	0.325	..			
General .. .. .	1,432	0.125	0.10	..	..	..	..			
Miscellaneous .. .. .	9,438	0.815	0.50	..	..	..	..			
Total .. .. .	183,170.9	15.81	9.50	..	..	14.545	0.568			
<b>CONDUCTING TRANSPORTATION.</b>										
Engine and roundhouse men .. .. .	109,659.1	9.459	5.70	..	..	..	..			
Fuel for locomotives .. .. .	(90,415)	7.810	4.70	55	65	..	..			
Water for locomotives .. .. .	(2,921.9)	0.252	0.15	55	65	..	..			
Oil, tallow, &c. .. .. .	6,252.3	0.540	0.33	55	65	..	..			
Wages .. .. .	258,266.3	22.280	13.44	..	..	..	..			
Stores .. .. .	22,517.9	1.943	1.77	..	..	..	..			
Miscellaneous .. .. .	15,374.8	1.326	0.81	..	..	..	..			
Total .. .. .	505,407.3	43.61	26.30	..	..	..	..			
<b>GENERAL EXPENSES.</b>										
Wages, head offices .. .. .	17,200.2	1.485	0.87	..	..	..	..			
Wages, departmental .. .. .	34,389.7	2.905	1.80	..	..	..	..			
Total .. .. .	51,589.9	4.45	2.67	..	..	..	..			
<b>RECAPITULATION OF EXPENSES.</b>										
Maintenance of way and supplies .. .. .	418,900	36.13	21.67	..	..	..	..			
Maintenance of equipment .. .. .	183,170.9	15.81	9.50	..	..	..	..			
Conducting transportation .. .. .	505,407.3	43.61	26.30	..	..	..	..			
General expense .. .. .	51,589.9	4.45	2.67	..	..	..	..			
Grand total .. .. .	1,159,068.1	100.00	60.14	..	..	..	..			
Less credit recoveries .. .. .	31,220.6	..	58.58	..	..	..	..			
	1,127,847.5									

\* Per cent. of total train-mile cost.

TABLE XIV.—RATES FOR MAINTENANCE OF WAY.

Line.	Rise and Fall and Curvature per Mile.		Per Cent. of Increase due to			1 Per Cent. of Increase.	Rate per Train-mile.
	Rise and Fall, in Feet.	Degrees Curvature.	Rise and Fall.	Curvature.	Assistant Locomotive.		
<i>Outside Tunnel.</i>							
New Zealand Railways	12	36	1·87	3·09	...	1·0496	d. 21·67
A ...	62·4	138·2	9·54	11·89	28·50	1·4993	30·95
A 1 ...	75	210	11·67	18·03	25·25	1·5495	31·98
A 2 ...	63·3	158	9·85	13·56	26·13	1·4954	30·87
A 3 ...	60·7	132·7	9·45	11·40	24·60	1·4545	30·02
A 4 ...	61·8	51	9·63	4·38	25·10	1·3911	28·72
B 1 ...	68·5	173	10·66	14·85	25·35	1·5086	31·15
B 2 ...	71·5	219	11·13	18·80	24·89	1·5482	31·96
B 3 ...	66·7	191	10·38	16·40	25·65	1·5243	31·46
<i>In Tunnel.</i>							
A ...	71·4	...	22·23	...	72·60	2·9483	60·86
A 1 ...	73·4	...	22·86	...	72·60	2·9546	60·99
A 2 ...	80	...	24·91	...	72·60	2·9751	61·42
A 3 ...	80	...	24·91	...	72·60	2·9751	61·42
A 4 ...	80	...	24·91	...	72·60	2·9751	61·42
B 1 ...	80	...	24·91	...	72·60	2·9751	61·42
B 2 ...	80	...	24·91	...	72·60	2·9751	61·42
B 3 ...	80	...	24·91	...	72·60	2·9751	61·42

NOTE.—In tunnels, the effect of rise and fall, and assistant engine as well as the cost of maintenance on straight, level track is taken as double the cost outside. Rise and fall is taken to be a rise with its corresponding fall: thus 26·4 ft. up and 26·4 ft. down equals 26·4 ft. rise and fall. (See Wellington and Webb.)

TABLE XV.—ANNUAL COST, IN POUNDS STERLING, OF MAINTENANCE OF WAY (OUTSIDE TUNNEL).

Trains each Way per Annum.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
1	0·686	1·028	0·968	0·789	0·828	1·742	1·712	1·807
500	343	514	484	394·5	414	871	856	903·5
700	480·2	719·6	677·6	552·3	579·6	1,219·4	1,198·4	1,264·9
1,000	686	1,028	968	789	828	1,742	1,712	1,807

340, same as for 500.  
477, " 700.  
681, " 1,000.

TABLE XVI.—ANNUAL COST, IN POUNDS STERLING, OF MAINTENANCE OF WAY (IN TUNNEL).

Trains each Way per Annum.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
1	3·045	2·496	2·55	2·85	2·715	1·741	1·741	1·741
500	1,522·5	1,248	1,275	1,425	1,357·5	870·5	870·5	870·5
700	2,131·5	1,747·2	1,785	1,995	1,900·5	1,218·7	1,218·7	1,218·7
1,000	3,045	2,496	2,550	2,850	2,715	1,741	1,741	1,741

340, same as for 500.  
477, " 700.  
681, " 1,000.

TABLE XVII.—TOTAL ANNUAL COST OF MAINTENANCE OF WAY, IN POUNDS STERLING.

Trains each Way per Annum.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
1	3·731	3·524	3·518	3·639	3·543	3·483	3·453	3·548
500	1,865·5	1,762	1,759	1,819·5	1,771·5	1,741·5	1,726·5	1,774
700	2,611·7	2,466·8	2,462·6	2,547·3	2,480·1	2,438·1	2,417·1	2,483·6
1,000	3,731	3,524	3,518	3,639	3,543	3,483	3,453	3,548
340	1,865·5	1,762	1,759	1,819·5	1,771·5	1,741·5	1,726·5	1,774
477	2,611·7	2,466·8	2,462·6	2,547·3	2,480·1	2,438·1	2,417·1	2,483·6
681	3,731	3,524	3,518	3,639	3,543	3,483	3,453	3,548

TABLE XVIII.—RATES FOR MAINTENANCE AND SUPPLIES OF EQUIPMENT.

Line.	Rise and Fall and Curvature per Mile.		Per Cent. of Increase Cost per Mile for Supplies due to		Per Cent. Increase Cost per Mile for Repairs to Locomotives and Cars.		Locomotive Supplies.		Renewals and Repairs.		
							1 Per Cent. Increase.	Rate per Locomotive-mile Class "B"	1 Per Cent. Increase.	Locomotives: Rate per Locomotive-mile, Class "B"	Cars: Rate per Train-mile.
	Feet.	Degrees.	Rise and Fall.	Curvature.	Rise and Fall.	Curvature.					
N.Z. Railways	12	36	29·55	3·75	1·82	6·83	1·333	d.	1·087	d.	d.
A	68·6	41·2	169	4·29	10·40	7·81	2·733	0·512	1·182	2·35	4·58
A 1	73·3	91·9	181·60	9·57	11·10	17·41	2·912	0·546	1·285	2·56	4·99
A 2	72·8	67·8	179·40	7·06	11·04	12·85	2·865	0·537	1·239	2·46	4·82
A 3	73	48·1	179·90	5·01	11·06	9·11	2·849	0·534	1·202	2·39	4·67
A 4	72·8	20·2	179·40	2·05	11·04	3·83	2·815	0·528	1·149	2·28	4·46
B 1	72	114·7	177·30	11·95	10·91	21·74	2·893	0·543	1·327	2·63	5·16
B 2	74·5	143·2	183·50	14·92	11·29	27·15	2·934	0·560	1·384	2·75	5·38
B 3	71·1	127·7	175	13·30	10·77	24·20	2·833	0·541	1·350	2·68	5·25

TABLE XIX.—COST OF CAR RENEWALS AND REPAIRS, IN POUNDS STERLING, PER ANNUM.

Trains each Way per Annum.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
1	0·332	0·365	0·351	0·340	0·326	0·435	0·441	0·450
500	166·0	182·5	175·5	170	163	217·5	220·5	225
700	232·4	255·5	245·7	238	228·2	304·5	308·7	315
1000	332	365	351	340	326	435	441	450

340, same as for 500  
 477, " 700  
 681, " 1,000 } As the car-miles would be equal.

TABLE XX.—COST OF WAGES, RENEWALS, REPAIRS, AND SUPPLIES, PER LOCOMOTIVE-MILE, IN PENCE.

Item.	New Zealand Railways.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
Class "B" supplies	...	0·25	0·512	0·546	0·537	0·534	0·528	0·543	0·560
Repairs	...	2·16	2·35	2·56	2·46	2·39	2·28	2·63	2·75
Wages	...	4·18	4·18	4·18	4·18	4·18	4·18	4·18	4·18
85-ton supplies	...	0·288	0·591	0·630	0·620	0·616	0·609	0·626	0·646
Repairs	...	2·49	2·71	2·95	2·84	2·76	2·63	3·03	3·17



TABLE XXI.—RUNNING-COST OF LOCOMOTIVES PER ANNUM, IN POUNDS STERLING.

Number of Trains each Way.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
<b>CLASS B LOCOMOTIVE.</b>								
<i>Wages of Locomotive-men.</i>								
1	0·584	0·574	0·573	0·572	0·574	0·634	0·614	0·647
500	292	287	286·5	286	287	317	307	323·5
700	408·8	401·8	401·1	400·40	401·8	443·8	429·8	452·9
1,000	584	574	573	572	574	634	614	647
<i>Renewals and Repairs.</i>								
1	0·328	0·351	0·337	0·327	0·312	0·399	0·404	0·415
500	164	175·5	168·5	163·5	156	199·50	202	207·5
700	229·6	245·7	235·9	228·9	218·4	279·30	282·8	290·5
1,000	328	251	337	327	312	399	404	415
<i>Supplies.</i>								
1	0·0715	0·0749	0·0736	0·731	0·0724	0·0823	0·0822	0·0837
500	35·75	37·45	36·80	36·55	36·20	41·15	41·10	41·85
700	50·05	52·43	51·52	51·17	50·68	57·61	57·54	58·59
1,000	71·50	74·90	73·60	73·10	72·40	82·30	82·20	83·70
<b>85-TON LOCOMOTIVE.</b>								
<i>Wages of Locomotive-men.</i>								
1	0·584	0·574	0·573	0·572	0·574	0·634	0·614	0·647
340	198·5	195·2	194·8	194·5	195·2	215·5	209	220
477	278·5	273·9	273·5	273	273·9	302·5	293	308·5
681	397·5	390·5	390	389·5	390·5	431·8	418	440·5
<i>Renewals and Repairs.</i>								
1	0·379	0·405	0·389	0·378	0·361	0·460	0·466	0·478
340	128·8	137·7	132·2	128·5	122·8	156·4	158·4	162·5
477	180·9	193	185·5	180·2	172·2	219·3	222·2	228
681	258	275·5	264·8	257·2	245·5	313	317·5	325·4
<i>Supplies.</i>								
1	0·0825	0·0864	0·0849	0·0843	0·0836	0·0950	0·0949	0·0966
340	28·05	29·39	28·90	28·65	28·45	32·30	32·25	32·88
477	39·32	41·20	40·50	40·20	39·85	45·30	45·25	46·10
681	56·17	58·80	57·75	57·40	56·90	64·70	64·60	65·80

TABLE XXII.—COST OF ASSISTANT LOCOMOTIVE STANDING, IN POUNDS STERLING, PER ANNUM.

Trains each Way per Annum.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
500	361	370	370	370	370	361	367	357
700	292	304·5	304·3	304	304·3	292·5	301	287
1,000	188	205·5	205·2	205	205·2	188·3	200·8	181
340	429	436	435·5	435	435·5	430	431	427
477	380·5	389	388·5	388·5	388·5	380·5	387	377
681	307·5	319·5	319	318·5	319	308	316·5	302·5

TABLE XXIII.—TOTAL COST OF MOTIVE-POWER, IN POUNDS STERLING, PER ANNUM.

Trains each Way per Annum.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
500	1,387·8	1,447·5	1,429·3	1,427·1	1,408·7	1,573	1,574·6	1,585·9
700	1,729·5	1,812·9	1,787·3	1,783·9	1,758·5	1,988·8	1,991·6	2,007·8
1,000	2,241·5	2,360·4	2,323·8	2,319·1	2,282·6	2,611·6	2,616	2,638·7
340	1,296·9	1,352·3	1,337·4	1,328·7	1,318·5	1,460·2	1,464·7	1,472·9
477	1,598·2	1,674·1	1,654	1,642·9	1,627·5	1,826·6	1,832·5	1,844·1
681	2,045·2	2,154·3	2,123·6	2,108·6	2,086·9	2,371·5	2,378·6	2,395·2

TABLE XXIV.—ELEMENTS FOR SACCARDO TUNNEL VENTILATING APPARATUS.

Line.	Length of Tunnel.	Area of Tunnel, Cross-section.	V.,* in Feet per Minute.	R.	S., † in Feet per Minute.	Area of Outlet.	Discharge per Minute.
	Ft.						Cubic Feet.
A ...	31,680	200	1,500	9.7511	14,627	17.09	250,000
A 1 ...	25,941	200	1,500	8.834	13,251	18.86	250,000
A 2 ...	26,337	200	1,500	8.9003	13,351	18.73	250,000
A 3 ...	29,373	200	1,500	9.3932	14,090	17.743	250,000
A 4 ...	27,777	200	1,500	9.1710	13,756	18.195	250,000
B 1 ...	17,952	200	1,500	7.3699	11,055	22.61	250,000
B 2 ...	17,952	200	1,500	7.3699	11,055	22.61	250,000
B 3 ...	27,952	200	1,500	7.3699	11,055	22.61	250,000

\* V = Velocity of air-current in tunnel.  
† S = Velocity at outlet of nozzle.

TABLE XXV.—COST OF WORKING VENTILATING APPARATUS FOR SUMMIT TUNNELS.

Line.	Tunnel-length.		Trains per Annum in each Direction.											
			340.		477.		500.		681.		700.		1,000.	
			Train-miles.	Cost.	Train-miles.	Cost.	Train-miles.	Cost.	Train-miles.	Cost.	Train-miles.	Cost.	Train-miles.	Cost.
A	6.0 Miles.	Time running ..	4,080	287.4	5,724	403.1	6,000	422.5	8,172	575.4	8,400	591.6	12,000	845.1
		Time standing ..	20,920	444.5	19,276	410.0	19,000	404.0	16,828	357.6	16,600	353	13,000	276.2
		Cost of working ..	..	731.9	..	813.1	..	826.5	..	933.0	..	944.6	..	1,121.3
A 1	4.913	Time running ..	3,341	235.2	4,687	330.1	4,913	345.5	6,692	471	6,878	484	9,826	692
		Time standing ..	21,659	460	20,313	431.9	20,087	427	18,308	389	18,122	384.5	15,174	323
		Cost of working ..	..	695.2	..	762	..	772.5	..	860	..	868.5	..	1,015
A 2	4.988	Time running ..	3,392	238.5	4,759	335	4,988	351	6,794	478.5	6,983	492	9,976	702
		Time standing ..	21,608	459	20,241	430	20,012	425	18,206	387	18,017	383	15,024	319
		Cost of working ..	..	697.5	..	765	..	776	..	865.5	..	875	..	1,021
A 3	5.563	Time running ..	3,783	266.4	5,307	373.5	5,563	392	7,577	533	7,788	548	11,126	785
		Time standing ..	21,217	451	19,693	418.5	19,437	413	17,423	370	17,212	365.5	13,874	295
		Cost of working ..	..	714.4	..	792.0	..	805	..	903	..	913.5	..	1,080
A 4	5.30	Time running ..	3,604	253.5	5,056	355	5,300	373	7,218	507	7,420	522	10,600	746
		Time standing ..	21,396	454.5	19,944	4324	19,700	418.5	17,782	378	17,580	374	14,400	306
		Cost of working ..	..	708.0	..	779	..	791.5	..	885	..	896	..	1,052
B 1, B 2,	3.40	Time running ..	2,310	162.7	3,240	228.2	3,400	239.5	4,640	326.5	4,760	335	6,800	479
		Time standing ..	22,690	482.0	21,760	462	21,600	459	20,360	433.0	20,240	430	18,200	386.5
B 3		Cost of working ..	..	644.7	..	690.2	..	698.5	..	759.5	..	765	..	865.5

TABLE XXVI.—COMPARATIVE ANNUAL COST OF WORKING, IN POUNDS STERLING.

Item.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
500 TRAINS EACH WAY.								
Motive power ..	1387.75	1447.45	1429.3	1427.05	1408.7	1573	1574.6	1585.85
Renewals and repairs to cars ..	166	182.5	175.5	170	163	217.5	220.5	225
Maintenance of way ..	1865.5	1762	1759	1819.5	1771.5	1741.5	1726.5	1774
Ventilation of summit tunnel ..	826.5	772.5	776	805	791.5	698.5	698.5	698.5
Total ..	4245.75	4164.45	4139.8	4221.55	4134.7	4230.5	4220.1	4283.35
700 TRAINS EACH WAY.								
Motive power ..	1729.45	1812.93	1787.32	1783.87	1758.48	1988.81	1991.64	2007.79
Renewals and repairs to cars ..	232.4	255.5	245.7	238	228.2	304.5	308.7	315
Maintenance of way ..	2611.7	2466.8	2462.6	2547.3	2480.1	2438.1	2417.1	2483.6
Ventilation of summit tunnel ..	944.6	868.5	875	913.5	896	765	765	765
Total ..	5518.15	5403.73	5370.62	5482.67	5362.78	5496.41	5482.44	5571.39

TABLE XXVI.—COMPARATIVE ANNUAL COST OF WORKING, IN POUNDS STERLING—*continued*.

Item.	Line A.	Line A 1.	Line A 2.	Line A 3.	Line A 4.	Line B 1.	Line B 2.	Line B 3.
1,000 TRAINS EACH WAY.								
Motive power .. ..	2241·5	2360·4	2323·8	2319·1	2282·6	2611·6	2616	2638·7
Renewals and repairs to cars ..	332	365	351	340	326	435	441	450
Maintenance of way ..	3731	3524	3518	3639	3543	3483	3453	3548
Ventilation of summit tunnel ..	1121·3	1015	1021	1080	1052	865·5	865·5	865·5
Total .. ..	7425·8	7264·4	7213·8	7378·1	7203·6	7395·1	7375·5	7502·2
340 TRAINS EACH WAY.								
Motive power .. ..	1296·85	1352·29	1337·4	1328·65	1318·45	1460·2	1464·65	1472·88
Renewals and repairs to cars ..	166	182·5	175·5	170	163	217·5	220·5	225
Maintenance of way ..	1865·5	1762	1759	1819·5	1771·5	1741·5	1726·5	1774
Ventilation of summit tunnel ..	731·9	695·2	697·5	717·4	708	644·7	644·7	644·7
Total .. ..	4060·25	3991·99	3969·4	4035·55	3960·95	4063·9	4056·35	4116·58
477 TRAINS EACH WAY.								
Motive power .. ..	1598·22	1674·1	1654	1642·9	1627·45	1826·6	1832·45	1844·1
Renewals and repairs to cars ..	232·4	255·5	245·7	238	228·2	304·5	308·7	315
Maintenance of way ..	2611·7	2466·8	2462·6	2547·3	2480·1	2438·1	2417·1	2433·6
Ventilation of summit tunnel ..	813·1	762	765	792	779	690·2	690·2	690·2
Total .. ..	5255·42	5158·4	5127·3	5220·2	5114·75	5259·4	5248·45	5332·9
681 TRAINS EACH WAY.								
Motive power .. ..	2045·17	2154·3	2123·55	2108·6	2086·9	2371·5	2378·6	2395·2
Renewals and repairs to cars ..	332	365	351	340	326	435	441	450
Maintenance of way ..	3731	3524	3518	3639	3483	3483	3453	3548
Ventilation of summit tunnel ..	933	860	865·5	903	885	759·5	759·5	759·5
Total .. ..	7041·17	6903·3	6858·05	6990·6	6840·9	7049·0	7032·1	7152·7

TABLE XXVII.—TOTAL ANNUAL CHARGES, IN POUNDS STERLING.

Line.	Estimated Cost of Construction.	Interest at $3\frac{1}{2}$ Per Cent. on Cost of Construction.	500 Trains each Way per Annum.	700 Trains each Way per Annum.	1,000 Trains each Way per Annum.	340 Trains each Way per Annum.	477 Trains each Way per Annum.	681 Trains each Way per Annum.
A	567,000	19,845	24,091	25,363	27,271	23,905	25,100	26,886
A 1	517,000	18,095	22,259	23,499	25,359	22,087	23,253	24,998
A 2	525,000	18,375	22,515	23,746	25,589	22,344	23,502	25,233
A 3	537,000	18,795	23,017	24,278	26,173	22,831	24,015	25,786
A 4	510,000	17,850	21,985	23,213	25,054	21,811	22,965	24,591
B 1	512,000	17,920	22,151	23,416	25,315	21,984	23,179	24,969
B 2	539,000	18,865	23,085	24,347	26,241	22,921	24,113	25,897
B 3	543,000	19,005	23,288	24,576	26,507	23,122	24,338	26,158

APPENDIX B.—LETTER OF THE UNDER-SECRETARY, H. J. H. BLOW, OF THE 29TH SEPTEMBER, 1903; AND ACCOMPANYING LETTERS AND PAPERS.

Public Works Department, Wellington, N.Z., 29th September, 1903.

*Midland Railway: Arthur's Pass Section.*

SIR,—

To enable you to complete your final report on the Arthur's Pass problem, I have now the honour, by direction of the Minister for Public Works, to hand you herewith—

1. Copy of minute by the Superintending Engineer of this Department on the various routes proposed.
2. Short descriptions of the alternative lines.
3. Schedule of plans (forwarded under separate cover).
4. Detailed description and characteristics of alternative lines.
5. Table summarising characteristics of alternative lines.

The figures given have been carefully worked out by Mr. Dobson, and will, the Minister thinks, be sufficient to enable you to arrive at a definite conclusion as to the best route to recommend for adoption.

The Hon. Mr. Hall-Jones will be glad to have your final report at your earliest possible convenience.

I have, &c.,

H. J. H. Blow, Under-Secretary.

V. G. Bogue, Esq., C.E., 15, William Street, New York City, U.S.A.

Wellington, 28th September, 1903.

## Memorandum for the Hon. the Minister for Public Works.

HEREWITH are Mr. Dobson's plans, descriptions of lines, and estimates of the various routes, so far as they have been compiled or surveyed, for the proposed railway-line over Arthur's Pass, for transmission to Mr. V. G. Bogue.

Line A is the six-mile tunnel line.

Line A 1 is a modification of the A line on a steeper grade. It runs up the gorge for about three quarters of a mile above the road. I think the estimate for this line is too low; also it runs for too great a distance on steep hillsides to be worth considering.

Line A 2 runs up the gorge below the road. This line, I think, could be improved, and the cost, perhaps, slightly lowered. The fan of Westley's Creek prevents the best line being got. There are several possible variations of this route, but as even then it would not be so good as the A 4 line, these have not been worked out. This line crosses the Otira above Barrack Creek, to give a road and railway bridge.

Line A 3 is a part of the A 2 line, with a tunnel on 1-in-33 grade starting at the same point at the Otira end as the six-mile tunnel.

Line A 4 is likely to be the cheapest of any of the lines so far proposed (except the Abt. line). It is quite clear of the hillsides, which is a great consideration in a country where rocks are constantly rolling down the hillsides in frosty weather. There is one cutting below the Rolleston, through an old moraine, flat on top. This can be made quite safe. The large banks on the left bank of the Rolleston and Otira would be made from tunnel-spoil. The grade is 1 in 30, and there is one  $7\frac{1}{2}$ -chain curve shown on the plans, but this would be altered to 15 chains if the line were adopted. This line is shorter than B 1 line by 1 mile  $27\frac{1}{2}$  chains. The summit-height is 93 ft. lower, the curves are of less radius, and the total curvature is much less; and I do not think it would cost so much. The working-expenses would be much less; when extra patrolling and extra maintenance are allowed for, I should say £1,200 to £1,500 a year less than on the B 1 line.

Mr. Bogue's B line had to be abandoned, as there was not cover enough for the tunnel in the Otira River bed just above the Otira entrance. Three variations of the B line have been worked out. Of these B 1 is the cheapest. According to the quantities and prices taken, its estimated cost stands at £512,000, but in view of the cost of the line at the Springfield end as compared with the Middle Island estimates, on which these are based, I put it at £528,000 at least.

Line B 2 was taken across the Rolleston three times to ascertain the cost of avoiding in this way the running ground opposite Dyer's. Its probable cost puts it out of consideration as compared with the A or A 4 line, and the same may be said of the B 3 line.

The steeper lines suggested by Mr. Bogue were not surveyed, as time was limited, and it is not likely that the Government would adopt the Shay locomotive to work any of these lines, in view of the discontent continually expressed by the public about the Fell line over the Rimutaka.

With any of the B lines there is also the contingency that if any accident happened, or the public become alarmed by rocks rolling on the line, as they certainly would, a demand would be made for tunnels at the dangerous places. If what happened at Purakanui Cliffs and in the Manawatu Gorge recurred at Otira, supposing B 1 line were made, probably £70,000 or £80,000 would be required for short tunnels. On the steep grades these would be objectionable.

The choice will, I think, finally be between the A and A 4 line.

P. S. HAY,  
Superintending Engineer.

## MIDLAND RAILWAY: ARTHUR'S PASS.—ALTERNATIVE LINES.—SHORT DESCRIPTION.

1. Line A (red): Original six-mile tunnel.
2. Line A 1: Crossing Otira at Goat Creek, and going above road to tunnel at lower road-bridge.
3. Line A 2: Crossing Otira at Dyer's, and going below road to tunnel at lower road-bridge.
4. Line A 3: Common to A 2 to summit-tunnel mouth of Line A, with tunnel 1 in 33.
5. Line A 4: Moye's Creek route.
6. Line B 1: Mr. Bogue's original B 1.
7. Line B 3: Three crossings of Rolleston River,
8. Line B 2: Common most of the way to A 1 and B 3, with spiral on Rolleston Spur.

## MIDLAND RAILWAY: ARTHUR'S PASS.—LIST OF DRAWINGS OF ALTERNATIVE LINES.

Contour-plan showing country between Otira Railway-station and roadman's hut, in Otira Gorge. Scale  $1\frac{1}{2}$  chains to an inch. Two sheets.

Plan showing country from Park's Creek on Otira side to common point (41 m. 70 ch. from Springfield) in Bealey Valley. One sheet.

Longitudinal Sections (scales, 3 chains horizontal, and 30 ft. vertical, to an inch) as follows: Line A, 4 sheets; line A 1, 4 sheets; line A 2, 3 sheets; line A 3, 1 sheet; line A 4, 2 sheets; line B 1, 2 sheets; line B 2, 1 sheet; line B 3, 7 sheets: total, 24 sheets.

Total: 3 sheets of plans, and 24 sheets of longitudinal sections—27 sheets.

## MIDLAND RAILWAY: ARTHUR'S PASS SECTION.—DESCRIPTION OF ALTERNATIVE LINES.

*Line A.*

This line crosses the Otira River not far above the railway-station, and follows up the right bank, and goes into tunnel about 20 chains above the mouth of the gorge, and comes out on the left bank of the Bealey River, and follows that side down to a peg marked 41 m. 70 ch. from Springfield, which is the common termination of the several alternative lines.

The following are the characteristics of Line A :—

Length of west approach	...	...	...	...	8 m. 8 ch.
Length of east approach	...	...	...	...	45 ch.
Total length of line	...	...	...	...	8 m. 53 ch.
Maximum grade, west approach	...	...	...	...	1 in 37.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 37.
Minimum radius of curves	...	...	...	...	12 ch.
Total degrees of curvature	...	...	...	...	357 degrees.
Percentage of line curved	...	...	...	...	13.
Length of summit tunnel	...	...	...	...	6 m.
Total length of tunnels outside summit tunnels	...	...	...	...	160 yards.
Total length of bridging	...	...	...	...	820 ft.
Grade-height at summit	...	...	...	...	2,398.
Estimated cost of construction	...	...	...	...	£567,000.

#### Line A 1.

This line crosses Otira River just below Goat Creek, and follows the right bank up to a point in the gorge about opposite the lower road-bridge, where it goes into tunnel, and comes out on the left bank of the Bealey River at a point about 30 chains below the Punchbowl Creek, and thence follows the left bank of the Bealey, partly in embankment in the river-bed, and partly cutting through rock-points, until it reaches the common point.

Characteristics of line A 1 :—

Length of west approach	...	...	...	...	7 m. 54 ch.
Length of east approach	...	...	...	...	1 m. 7.5 ch.
Total length of line...	...	...	...	...	8 m. 61.5 ch.
Maximum grade, west approach	...	...	...	...	1 in 30.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 36.
Total length of tunnels outside summit tunnel	...	...	...	...	439 yards.
Minimum radius of curves	...	...	...	...	7½ ch.
Total degrees of curvature	...	...	...	...	809 degrees.
Percentage of line curved	...	...	...	...	19½.
Length of summit tunnel	...	...	...	...	8,646 yards.
Total length of bridging	...	...	...	...	1,120 ft.
Grade-height at summit	...	...	...	...	2,446.
Estimated cost of construction	...	...	...	...	£517,000.

#### Line B 3.

This line follows the left bank of the Otira River until it passes the junction with the Rolleston, and crossing the latter not far above the wire footbridge runs up the centre of the river-bed to the rocky point at the end of the spur between the Otira and the Rolleston. From this point it follows the right-hand bank of the Rolleston to a point above Rose Creek, where it crosses the river, coming out on the left bank just above the junction of Holt's Creek. It recrosses the Rolleston about 10 chains further up, and then continues along the hillside on the right bank of the river and through the dividing spur in a tunnel, and then follows up the steep hillside on the left bank of the Otira until it reaches a point just below Cape Horn, where it crosses with a high bridge and keeps the right bank up to Starvation Point, where it again crosses just above Park's Creek and enters summit tunnel, and comes out on the left side of the Bealey River about 14 chains below the road-bridge. It crosses the Bealey there and follows right side down to a crossing just above Rough Creek, and from there follows the left bank to the common point, the last half-mile being common in grade and alignment with line A 1.

Characteristics of line B 3 :—

Length of west approach	...	...	...	...	8 m. 21 ch.
Length of east approach	...	...	...	...	2 m. 2.5 ch.
Total length of line	...	...	...	...	10 m. 23.5 ch.
Maximum grade, west approach	...	...	...	...	1 in 30.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 33.
Minimum radius of curve	...	...	...	...	7½ ch.
Total degree of curvature	...	...	...	...	1,315 degrees.
Percentage of line curved	...	...	...	...	29.
Length of summit tunnel	...	...	...	...	5,990 yards.
Total length of tunnels outside summit tunnel	...	...	...	...	638 yards.
Total length of bridging	...	...	...	...	2,791 ft.
Grade-level of summit	...	...	...	...	2,535.
Estimated cost of construction	...	...	...	...	£543,000.

*Line B 2.*

This is common to line A 1 from Otira Station to Hot Spring Point, where it crosses the Otira with a high bridge, and turning to the left goes through the dividing spur and joins line B 3 about three miles and three-quarters from Otira Station, and forms a loop. This line is about half a mile shorter than line B 3.

## Characteristics of line B 2:—

Length of west approach	...	...	...	...	7 m. 63.5 ch.
Length of east approach	...	...	...	...	2 m. 2.5 ch.
Total length of line	...	...	...	...	9 m. 66 ch.
Maximum grade, west approach	...	...	...	...	1 in 30.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 33.
Minimum radius of curve	...	...	...	...	7½ ch.
Total degrees of curvature	...	...	...	...	1,407 degrees.
Percentage of line curved	...	...	...	...	34.
Length of summit tunnel	...	...	...	...	5,990 yards.
Total length of tunnels outside summit	...	...	...	...	1,296 yards.
Total length of bridging	...	...	...	...	2,376 ft.
Grade-level at summit	...	...	...	...	2,535.
Estimated cost of construction	...	...	...	...	£539,000.

*Line B 1.*

This line is common to line B 3 for about 60 ch. from Otira Station, and thence turns to the right and goes along the right bank of the Rolleston with a grade of 1 in 30 up to Holt's Creek, and, crossing this, rejoins B 3, making a saving in distance of about 15 ch. This line runs for about 60 ch. along the slope of the loose shingle mountain-side opposite Dyer's, but can be located so as to be almost entirely in embankment, to avoid cutting into the loose shingle slides.

## Characteristics of line B 1:—

Length of west approach	...	...	...	...	8 m. 6.5 ch.
Length of east approach	...	...	...	...	2 m. 2.5 ch.
Total length of line	...	...	...	...	10 m. 9 ch.
Maximum grade, west approach	...	...	...	...	1 in 30.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 33.
Minimum radius of curve	...	...	...	...	7½ ch.
Total degrees of curvature	...	...	...	...	1,160 degrees.
Percentage of line curved	...	...	...	...	26½.
Length of summit tunnel	...	...	...	...	5,990 yards.
Total length of tunnels outside summit	...	...	...	...	638 yards.
Total length of bridging	...	...	...	...	2,240 ft.
Grade-level at summit	...	...	...	...	2,535.
Estimated cost of construction	...	...	...	...	£512,000.

*Line A 2.*

This line is common to B 3 for about one mile from Otira Station, and then turns to the left and crosses the Otira River near the present footbridge, and continues across Dyer's Flat to the hillside, and follows the right bank of the Otira River up to a point between Westley's Creek and the lower road-bridge, where summit tunnel begins. This line is on about the road-level for a mile, and as there is but little room for both road and railway, it might be found advisable to take the road on the opposite bank and remove the bridge down to a point a quarter of a mile above the mouth of the gorge. The end of the summit tunnel on the Bealey side is about the same place as the end of the tunnel on line A 1, and the two lines are practically common on the Bealey side of the range.

## Characteristics of line A 2:—

Length of west approach	...	...	...	...	7 m. 55.5 ch.
Length of east approach	...	...	...	...	1 m. 4 ch.
Total length of line	...	...	...	...	8 m. 59.5 ch.
Maximum grade, west approach	...	...	...	...	1 in 30.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 33.
Minimum radius of curve	...	...	...	...	7½ ch.
Total degrees of curvature	...	...	...	...	593 degrees.
Percentage of line curved	...	...	...	...	16½.
Length of summit tunnel	...	...	...	...	8,780 yards.
Total length of tunnels outside summit	...	...	...	...	200 yards.
Total length of bridging	...	...	...	...	990 ft.
Grade-level at summit	...	...	...	...	2,440.
Estimated cost of construction	...	...	...	...	£525,000.

*Line A 3.*

This line is common to line A 2 from Otira Station to the mouth of the gorge, and the summit tunnel commences at the same place as on line A, and the Bealey end of the tunnel is three or four chains further down the Bealey than the tunnel-end on line A 1, with which line it is common on the Bealey side of the range.

## Characteristics of line A 3 :—

Length of west approach	...	...	...	...	7 m. 56 ch.
Length of east approach	...	...	...	...	1 m. 1.5 ch.
Total length of line	...	...	...	...	8 m. 57.5 ch.
Maximum grade, west approach	...	...	...	...	1 in 30.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 33.
Minimum radius of curve	...	...	...	...	7½ ch.
Total degrees of curvature	...	...	...	...	419 degrees.
Percentage of line curved	...	...	...	...	13.
Length of summit tunnel	...	...	...	...	9,790 yards.
Total length of tunnels outside summit tunnel	...	...	...	...	143 yards.
Total length of bridging	...	...	...	...	884 ft.
Grade-level at summit	...	...	...	...	2,440.
Estimated cost of construction	...	...	...	...	£537,000.

*Line A 4.*

This line is common to A 2 from Otira Station to about 74 ch., and from there it continues up the bed of the Rolleston River, keeping a sufficient distance from the foot of the shingle slides to be out of reach of slips and bounding rocks. It crosses the Rolleston on the right bank just below junction with Rose Creek, and enters summit tunnel there. The tunnel-mouth on the Bealey side is in about the same locality as that of line A 1, and the two lines are practically common on the Bealey side of range.

## Characteristics of line A 4 :—

Length of west approach	...	...	...	...	7 m. 55 ch.
Length of east approach	...	...	...	...	1 m. 6.5 ch.
Total length of line	...	...	...	...	8 m. 61.5 ch.
Maximum grade, west approach	...	...	...	...	1 in 30.
Maximum grade, east approach	...	...	...	...	1 in 40.
Grade in summit tunnel	...	...	...	...	1 in 33.
Minimum radius of curve	...	...	...	...	7½ ch.
Total degrees of curvature	...	...	...	...	177 degrees.
Percentage of line curved	...	...	...	...	8.
Length of summit tunnel	...	...	...	...	9,320 yards.
Total length of tunnels outside summit tunnel	...	...	...	...	Nil.
Total length of bridging	...	...	...	...	880 ft.
Grade-level at summit	...	...	...	...	2,442.
Estimated cost of construction	...	...	...	...	£510,000.

Line A is shown on plan in red; line A 1, red dotted; line A 2, neutral tint; line A 3, blue; line A 4, yellow; line B 1, burnt sienna; line B 2, burnt sienna dotted; line B 3, green.

Grade-level at common point, Otira switch = 1,255; grade-level at common point, peg 41 m. 70 ch. = 2,352.

Public Works Department, Wellington, N.Z., 13th January, 1904.

SIR,—

*Midland Railway: Arthur's Pass Section.*

I have the honour to acknowledge the receipt of your letter of the 31st October last, asking to be supplied with the details used in making up the estimates of cost of the various suggested routes for the above section of railway, and in reply have pleasure in enclosing you the information asked for. The estimates for tunnelling are founded on rates at Springfield end, *plus* extras for length of tunnel. The costs for grading are somewhat lower than in the Middle Island estimates for Midland Railway, which in their turn appear to be too low for the actual cost of works as now finished. This adversely affects the comparison between the B lines and the A and A 4 lines, as the B lines would have a greater first cost than shown on these sheets.

I have, &c.,

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

Virgil G. Bogue, Esq., C.E., No. 15, William Street, New York, U.S.A.

		<i>Line A.</i>	£
Summit tunnel, length 6 miles—			
Excavation	...	...	179,000
Lining	...	...	168,600
Fuel and wages, power-station	...	...	30,000
Service roads to tunnel	...	...	13,000
Ventilation constructed	...	...	8,000
Haulage of material in and to tunnel	...	...	14,000
Drainpipes	...	...	20,000
Permanent-way	...	...	12,000
Power-station, plant, and buildings	...	...	56,470
Permanent ventilation	...	...	10,000
Oil plant	...	...	5,000
Total, summit tunnel			516,070
Bush	...	...	460
Rock, 22,500 cubic yards at 5s. 6d.	...	...	6,187
Shingle, 36,000 cubic yards at 1s. 8d.	...	...	3,000
Side cutting, 86,000 cubic yards at 1s. 3d.	...	...	5,375
Tunnel-spoil to bank, 176,000 cubic yards at 6d.	...	...	4,400
Short tunnel	...	...	5,300
Bridge at Otira	...	...	10,000
Bridge, Barrack Creek	...	...	2,500
Bridge, Graham's Creek	...	...	500
Culverts	...	...	1,900
River-protection	...	...	5,200
Permanent-way	...	...	5,100
Road-diversion	...	...	150
Total, line A			£566,142

		<i>Line A 1.</i>	£
Summit tunnel, length 4 miles 73 chains—			
Excavation	...	...	146,550
Lining	...	...	137,970
Fuel and wages, power-station	...	...	24,550
Service roads to tunnel	...	...	10,610
Ventilation constructed	...	...	6,550
Haulage of material in and to tunnel	...	...	11,460
Drainpipes	...	...	16,380
Permanent-way	...	...	9,730
Power-station, plant, and buildings	...	...	48,000
Permanent ventilation	...	...	8,200
Oil plant	...	...	5,000
Total, summit tunnel			425,000
Bush	...	...	780
Rock cutting, 70,170 cubic yards at 5s. 6d.	...	...	19,297
Shingle cutting, 36,000 cubic yards at 1s. 8d.	...	...	3,000
Rock, &c., to spoil, 46,710 cubic yards at 4s. 6d.	...	...	10,507
Cuttings to spoil, 26,100 cubic yards at 1s.	...	...	1,305
Bank from side cutting and tunnel-spoil to bank, 255,300 cubic yards	...	...	12,687
Retaining-walls, 600 cubic yards at £2 10s.	...	...	1,500
River-protection	...	...	3,200
Otira Bridge	...	...	10,000
Barrack Creek Bridge	...	...	3,000
Hot Spring Bridge	...	...	500
Westley's Creek Bridge	...	...	1,000
Graham's Creek Bridge	...	...	500
Culverts	...	...	3,050
Tunnels	...	...	14,500
Permanent-way	...	...	7,315
Total, line A 1			£517,141

		<i>Line A 2.</i>	£
Summit tunnel, length 4 miles 79 chains—			
Excavation	...	...	149,200
Lining	...	...	140,150
Fuel and wages, power-station	...	...	24,940
Service roads to tunnel	...	...	10,800
Ventilation constructed	...	...	6,650
Haulage of material in and to tunnel	...	...	11,640
Drainpipes	...	...	16,630
Permanent-way	...	...	9,980
Power-station, plant, and buildings	...	...	48,000
Permanent ventilation	...	...	8,300
Oil plant	...	...	5,000
Total, summit tunnel			431,290



## Line A 2—continued.

	£
Bush	200
Rock, 79,700 cubic yards at 5s. 6d.	21,917
Shingle, 18,180 cubic yards at 1s. 8d.	1,515
Rock to spoil, 24,300 cubic yards at 5s.	6,075
Tunnel-spoil to bank, 160,440 cubic yards	5,600
Rock-protection	5,580
Bridge at Goat Creek	5,000
Bridge at Otira	10,000
Bridge at Hot Spring Creek	200
Bridge at Westley's Creek	500
Bridge at Graham's Creek	500
Culverts	1,600
Short tunnels	6,600
Permanent-way	7,200
Retaining-walls, 10,500 cubic yards at £2 10s.	26,250
<b>Total, line A 2</b>	<b>£530,027</b>

## Line A 3.

	£
Summit tunnel, length 5 miles 45 chains—	
Excavation	166,000
Lining	156,300
Fuel and wages, power-station	27,810
Service roads to tunnel	12,050
Ventilation constructed	7,420
Haulage of material in and to tunnel	12,990
Drainpipes	18,550
Permanent-way	11,130
Power-station, plant, and buildings	52,000
Permanent ventilation	9,200
Oil plant	5,000
<b>Total, summit tunnel</b>	<b>478,450</b>
Bush	360
Rock, 20,110 cubic yards at 5s. 6d.	5,530
Shingle, 18,180 cubic yards at 1s. 8d.	1,515
Cutting to spoil, 2,400 cubic yards at 4s. 6d.	540
Side cutting and tunnel-spoil to bank, 158,000 cubic yards	9,100
Cutting to spoil, 19,000 cubic yards at 1s.	950
Retaining-walls, 2,080 cubic yards at £2 10s.	5,200
River-protection	6,680
Bridge at Goat Creek	5,000
Bridge at Otira	10,000
Bridge at Graham's Creek	500
Culverts	2,500
Short tunnel	4,700
Permanent-way	6,000
<b>Total, line A 3</b>	<b>£537,025</b>

## Line A 4.

	£
Summit tunnel, length 5 miles 24 chains—	
Excavation	158,100
Lining	148,930
Fuel and wages, power-station	26,500
Service roads to tunnel	11,480
Ventilation constructed	7,070
Haulage of material in and to tunnel	12,370
Drainpipes	17,680
Permanent-way	10,610
Power-station, plant, and buildings	52,800
Permanent ventilation	9,000
Oil plant	5,000
<b>Total, summit tunnel</b>	<b>459,540</b>
Bush	200
Rock, 14,400 cubic yards at 5s. 6d.	3,960
Shingle, &c., 75,000 cubic yards at 1s. 8d.	6,250
Shingle and boulders, 61,000 cubic yards	7,627
Tunnel-spoil to bank, 73,000 cubic yards at 6d.	1,825
Goat Creek Bridge	5,000

							<i>Line A 4—continued.</i>	£
Rolleston Bridge	...	...	...	...	...	...	10,000	
Graham's Creek Bridge	...	...	...	...	...	...	500	
Culverts	...	...	...	...	...	...	1,500	
River-protection	...	...	...	...	...	...	8,000	
Permanent-way	...	...	...	...	...	...	5,600	
Total, line A 4							...	<u>£510,002</u>

*Line B 1.*

							£	
Summit tunnel, length 3 miles 32 chains—							£	
Excavation	...	...	...	...	...	...	101,430	
Lining	...	...	...	...	...	...	95,540	
Fuel and wages, power-station	...	...	...	...	...	...	17,000	
Service roads to tunnel	...	...	...	...	...	...	7,370	
Ventilation constructed	...	...	...	...	...	...	4,530	
Haulage of material in and to tunnel	...	...	...	...	...	...	9,930	
Drainpipes	...	...	...	...	...	...	11,330	
Permanent-way	...	...	...	...	...	...	6,800	
Power-station, plant, and buildings	...	...	...	...	...	...	40,000	
Permanent ventilation	...	...	...	...	...	...	6,000	
Oil plant	...	...	...	...	...	...	5,000	
Total, summit tunnel							...	304,930
Bush	...	...	...	...	...	...	1,050	
Rock, 180,260 cubic yards at 5s. 6d.	...	...	...	...	...	...	49,571	
Shingle, &c., 358,000 cubic yards at 1s. 8d.	...	...	...	...	...	...	29,833	
Boulders and loose rocks, 82,000 cubic yards at 3s.	...	...	...	...	...	...	12,300	
Short tunnels	...	...	...	...	...	...	22,000	
Retaining-walls, 4,500 cubic yards at £2 10s.	...	...	...	...	...	...	11,250	
Bridge, Goat Creek	...	...	...	...	...	...	5,000	
Bridge, shingle slides	...	...	...	...	...	...	4,500	
Bridge, Holt's Creek	...	...	...	...	...	...	2,500	
Bridge, Rolleston Creek	...	...	...	...	...	...	9,000	
Bridge, Murray's Creek	...	...	...	...	...	...	5,500	
Bridge, Otira (Cape Horn)	...	...	...	...	...	...	14,000	
Bridge, Otira (Starvation Point)	...	...	...	...	...	...	4,400	
Bridge, Bealey River	...	...	...	...	...	...	1,500	
Bridge, McGrath's Creek	...	...	...	...	...	...	3,200	
Bridge, Bealey River	...	...	...	...	...	...	3,900	
Bridge, Graham's Creek	...	...	...	...	...	...	500	
Culverts, inlets, and outfalls	...	...	...	...	...	...	5,500	
River-protection, 80 chains	...	...	...	...	...	...	8,000	
Permanent-way	...	...	...	...	...	...	13,442	
Total, line B 1							...	<u>£511,876</u>

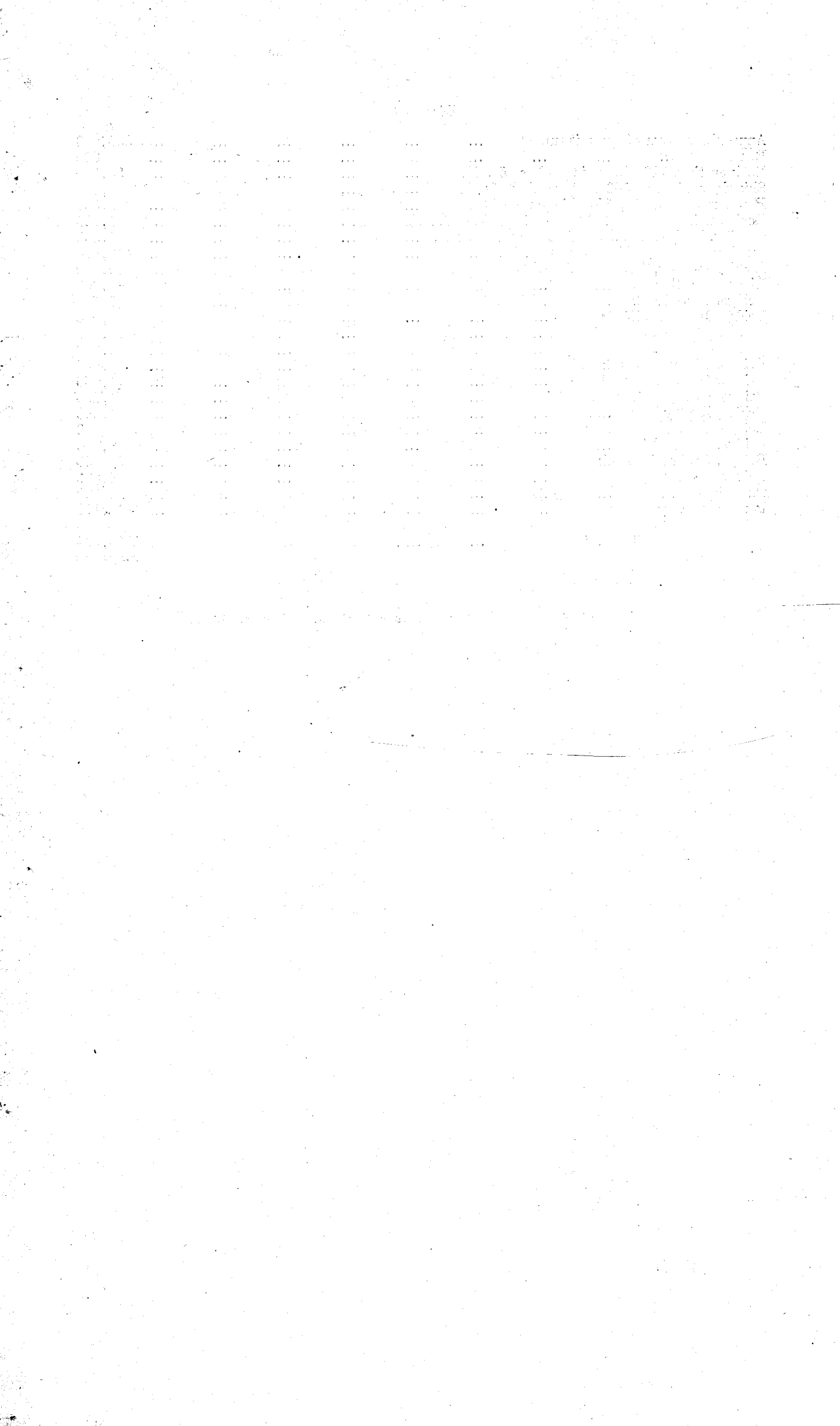
*Line B 2*

							£	
Approximate cost of summit tunnel	...	...	...	...	...	...	304,930	
Bush	...	...	...	...	...	...	800	
Rock cutting, 67,880 cubic yards at 5s. 6d.	...	...	...	...	...	...	18,667	
Shingle, &c., cutting, 46,000 cubic yards at 1s. 8d.	...	...	...	...	...	...	3,833	
Rock cutting to spoil, 209,890 cubic yards at 4s. 6d.	...	...	...	...	...	...	47,225	
Bank borrowed, 303,750 cubic yards at 1s. 6d.	...	...	...	...	...	...	22,781	
Retaining-walls, 3,400 cubic yards at £2 10s.	...	...	...	...	...	...	8,500	
River-protection	...	...	...	...	...	...	2,100	
Bridge, Otira, at Goat Creek	...	...	...	...	...	...	10,000	
Bridge, Barrack Creek	...	...	...	...	...	...	3,000	
Bridge, Hot Spring Creek	...	...	...	...	...	...	14,000	
Bridge, Murray's Creek	...	...	...	...	...	...	5,500	
Bridge, Otira, at Cape Horn	...	...	...	...	...	...	14,000	
Bridge, Otira, at Starvation Point	...	...	...	...	...	...	4,400	
Bridge, Bealey River	...	...	...	...	...	...	1,500	
Bridge, McGrath's Creek	...	...	...	...	...	...	3,200	
Bridge, Bealey River	...	...	...	...	...	...	3,900	
Bridge, Graham's Creek	...	...	...	...	...	...	500	
Culverts	...	...	...	...	...	...	4,000	
Short tunnels	...	...	...	...	...	...	42,400	
Permanent-way	...	...	...	...	...	...	12,200	
Total, line B 2							...	<u>£527,436</u>

*Line B 3.*

	£
Approximate cost of summit tunnel ... ..	304,930
Bush ... ..	800
Rock cutting, 120,600 cubic yards at 5s. 6d. ... ..	33,165
Shingle cutting, 56,500 cubic yards at 1s. 8d. ... ..	4,708
Boulders cutting, 17,110 cubic yards at 3s. ... ..	2,567
Rock cutting to spoil, 186,330 cubic yards at 4s. 9d. ... ..	44,254
Cutting, boulders, &c., 18,670 cubic yards at 3s. ... ..	2,800
Cutting, 160,430 cubic yards at 1s. 8d. ... ..	13,370
Retaining-walls, 4,000 cubic yards at £2 10s. ... ..	10,000
River-protection ... ..	7,600
Bridge, Goat Creek ... ..	5,000
Bridge, Rolleston River ... ..	10,000
" " ... ..	13,000
" " ... ..	9,000
Bridge, Murray's Creek ... ..	5,500
Bridge, Otira, at Cape Horn ... ..	14,000
Bridge, Otira, at Starvation Point ... ..	4,400
Bridge, Bealey River ... ..	1,500
Bridge, McGrath's Creek ... ..	3,200
Bridge, Bealey River ... ..	3,900
Bridge, Graham's Creek ... ..	500
Culverts ... ..	3,000
Tunnels ... ..	20,660
Permanent-way ... ..	13,110
Total, line B 3 ... ..	<u>£530,964</u>

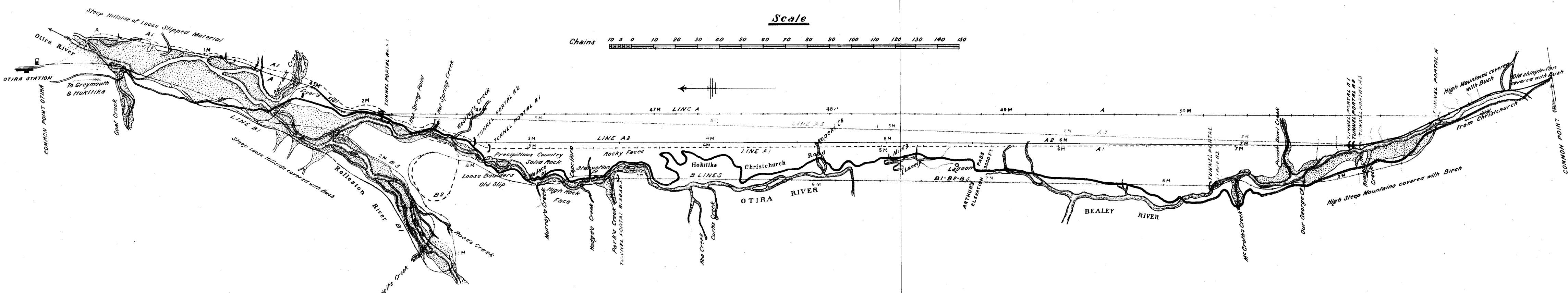
By Authority: JOHN MACKAY, Government Printer, Wellington.—1904.



### N.Z. MIDLAND RAILWAY.

# SKETCH PLAN OF ARTHUR'S PASS.

(ACCOMPANYING REPORT OF V. G. BOGUE, 1904.)



**REFERENCE.**

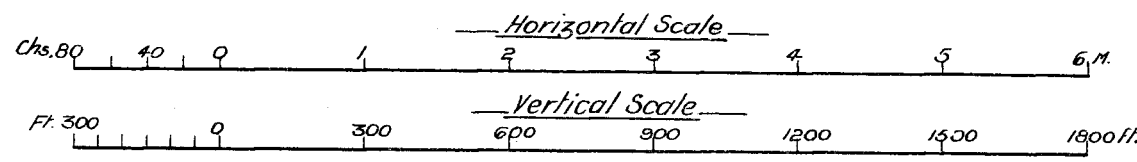
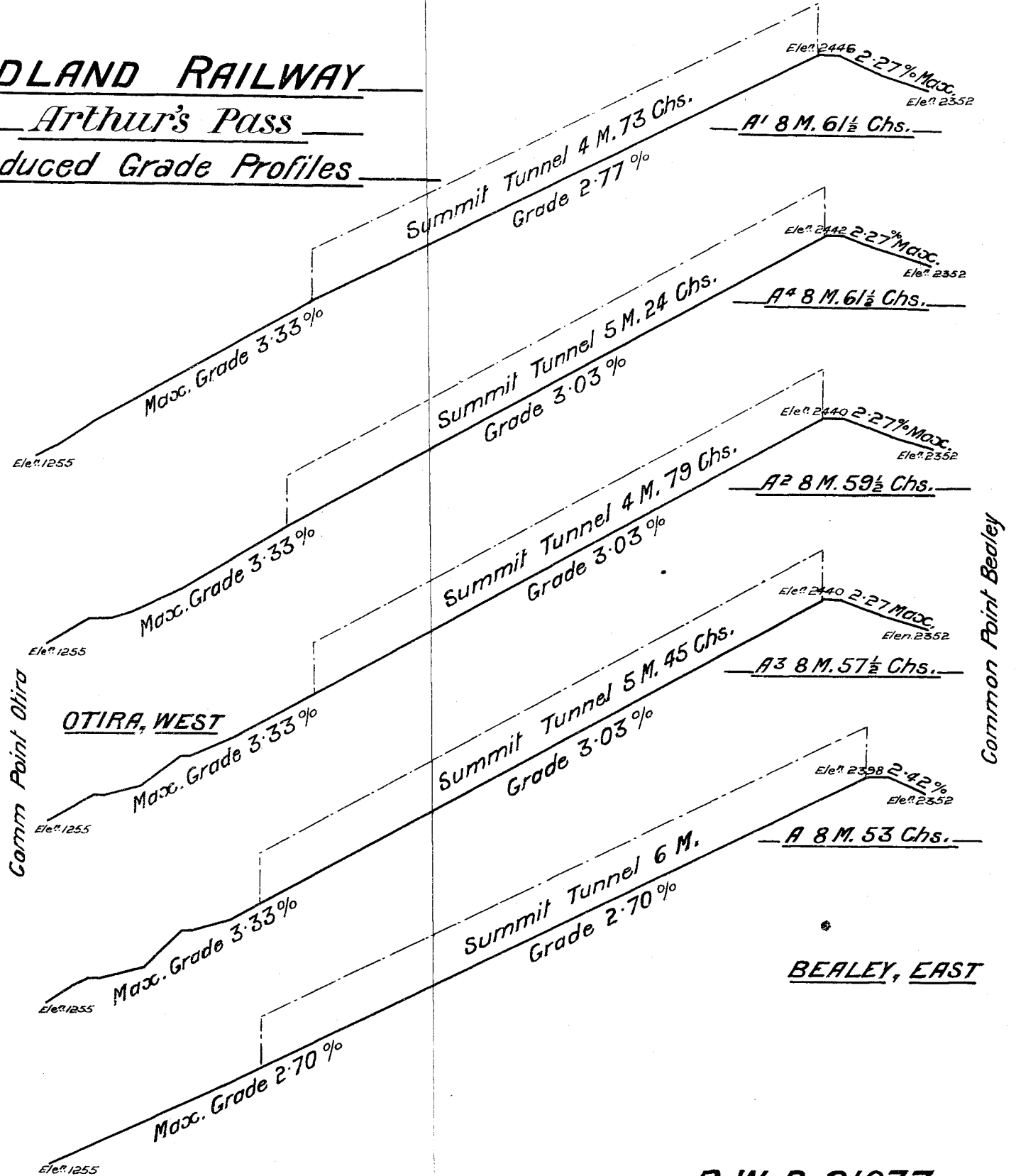
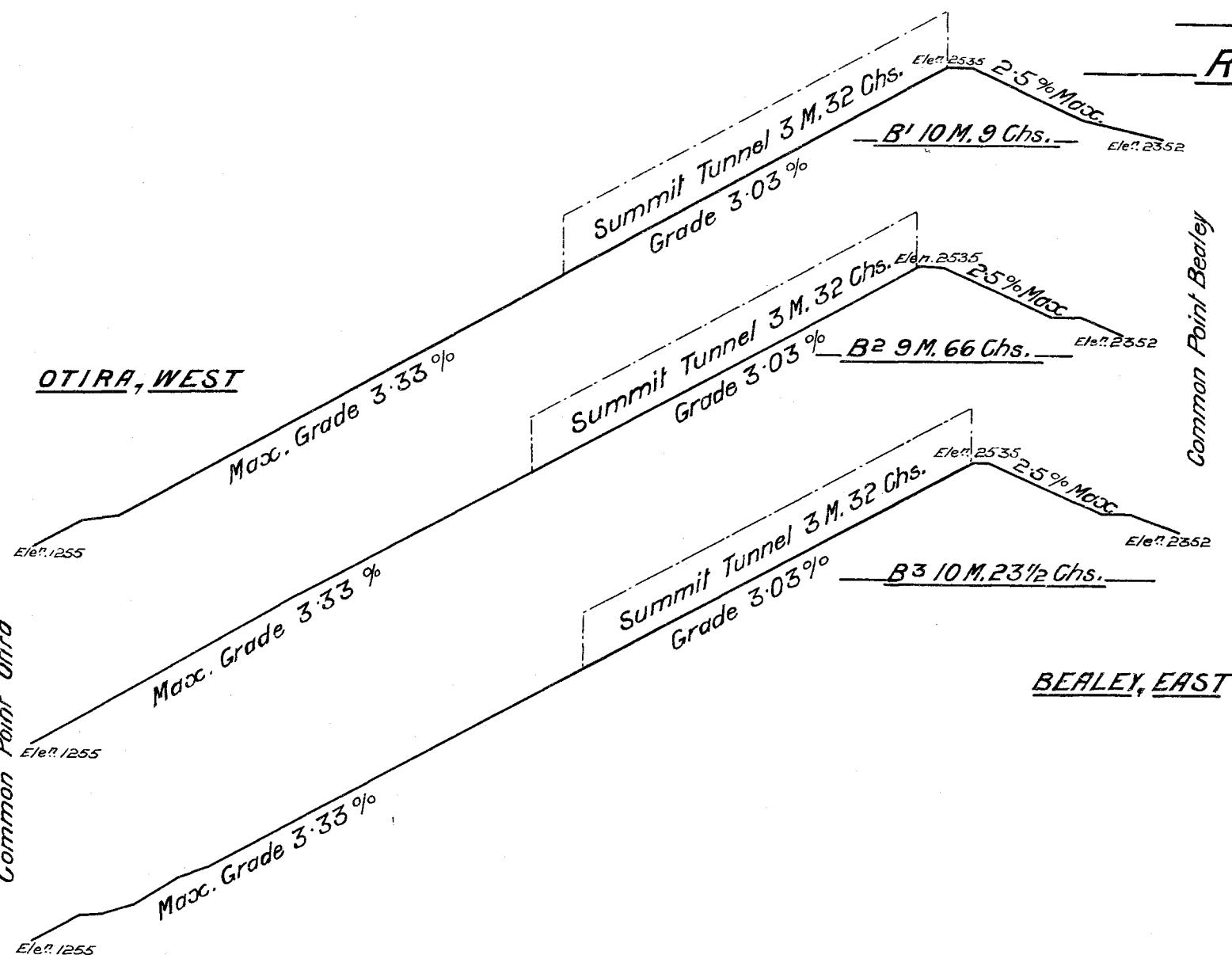
LINE	Length	Unit	From OTIRA to "COMMON POINT," BEALEY side of SUMMIT
A.	8 M. 53	CH.	—————
A1.	8 M. 61.5	CH.	- - - - -
A2.	8 M. 59.5	CH.	—————
A3.	8 M. 57	CH.	—————
B1.	10 M. 8.5	CH.	—————
B2.	9 M. 66.5	CH.	- - - - -
B3.	10 M. 23.5	CH.	—————



# MIDLAND RAILWAY

## Arthur's Pass

### Reduced Grade Profiles





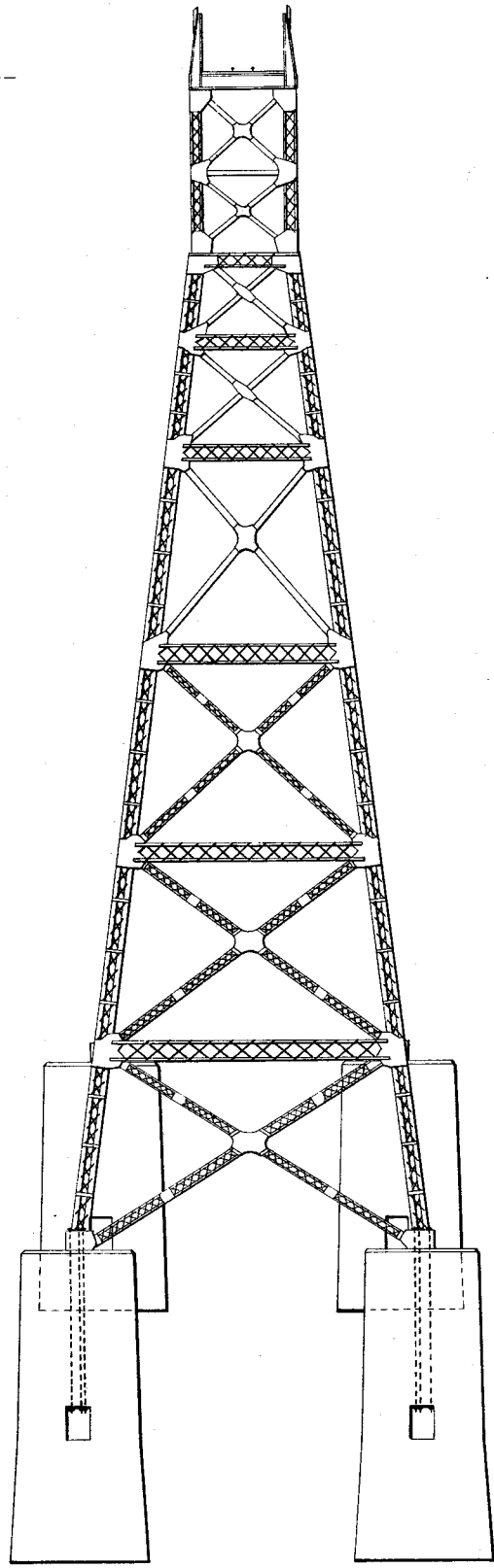
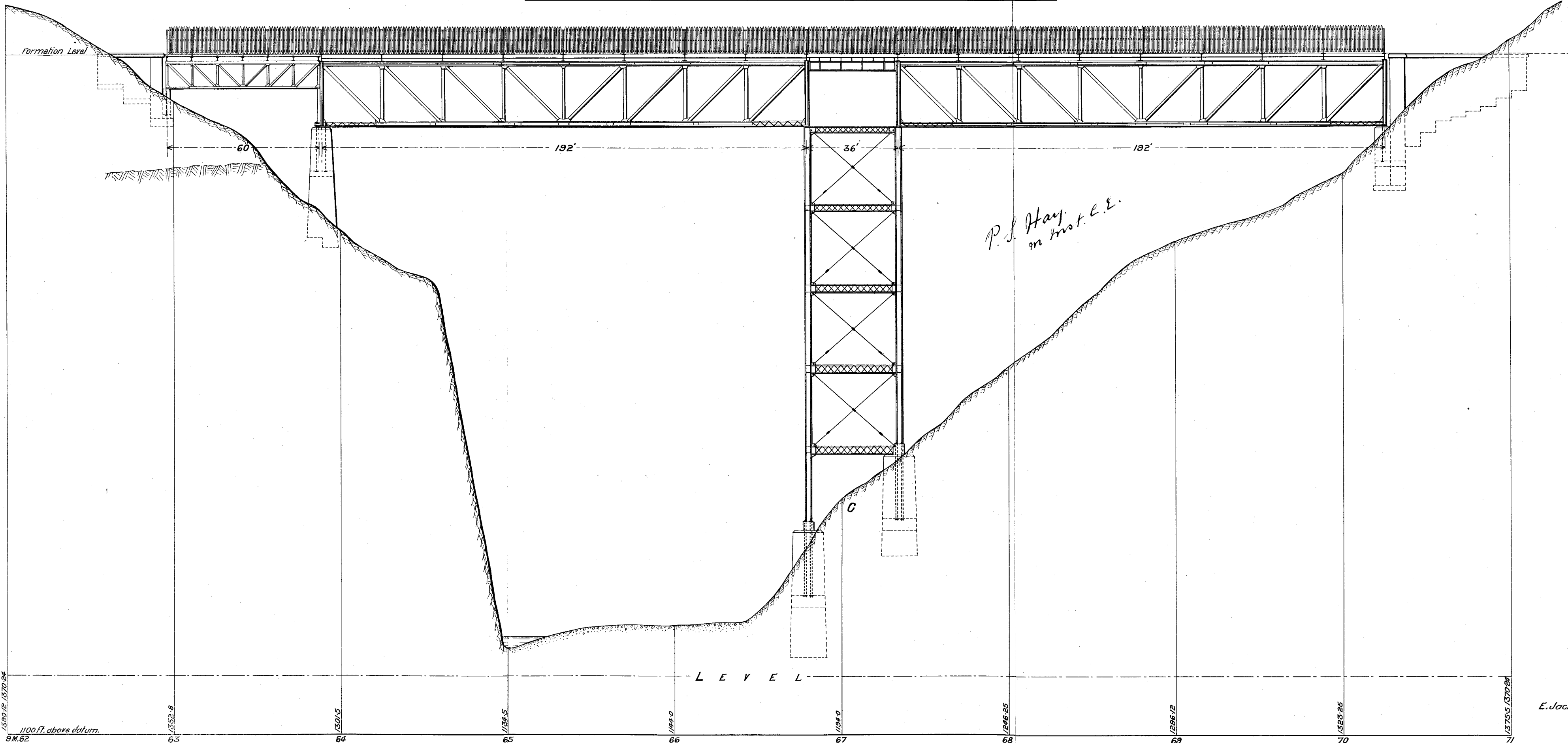


# NEW ZEALAND MIDLAND RAILWAY

## STAIRCASE VIADUCT

Description, One Span 60 ft. Two Spans 192 ft. One Pier 36 ft. Height Creek Bed, Rail Level 237 ft.

Fr. 10 0 50 SCALE 100 200 Fr.



Side View Pier C.

E. Jackson dell.

GENERAL ELEVATION

1390.12 1370.24  
9M.62

1352.8  
63

1301.5  
64

1334.5  
65

1144.0  
66

1194.0  
67

1246.25  
68

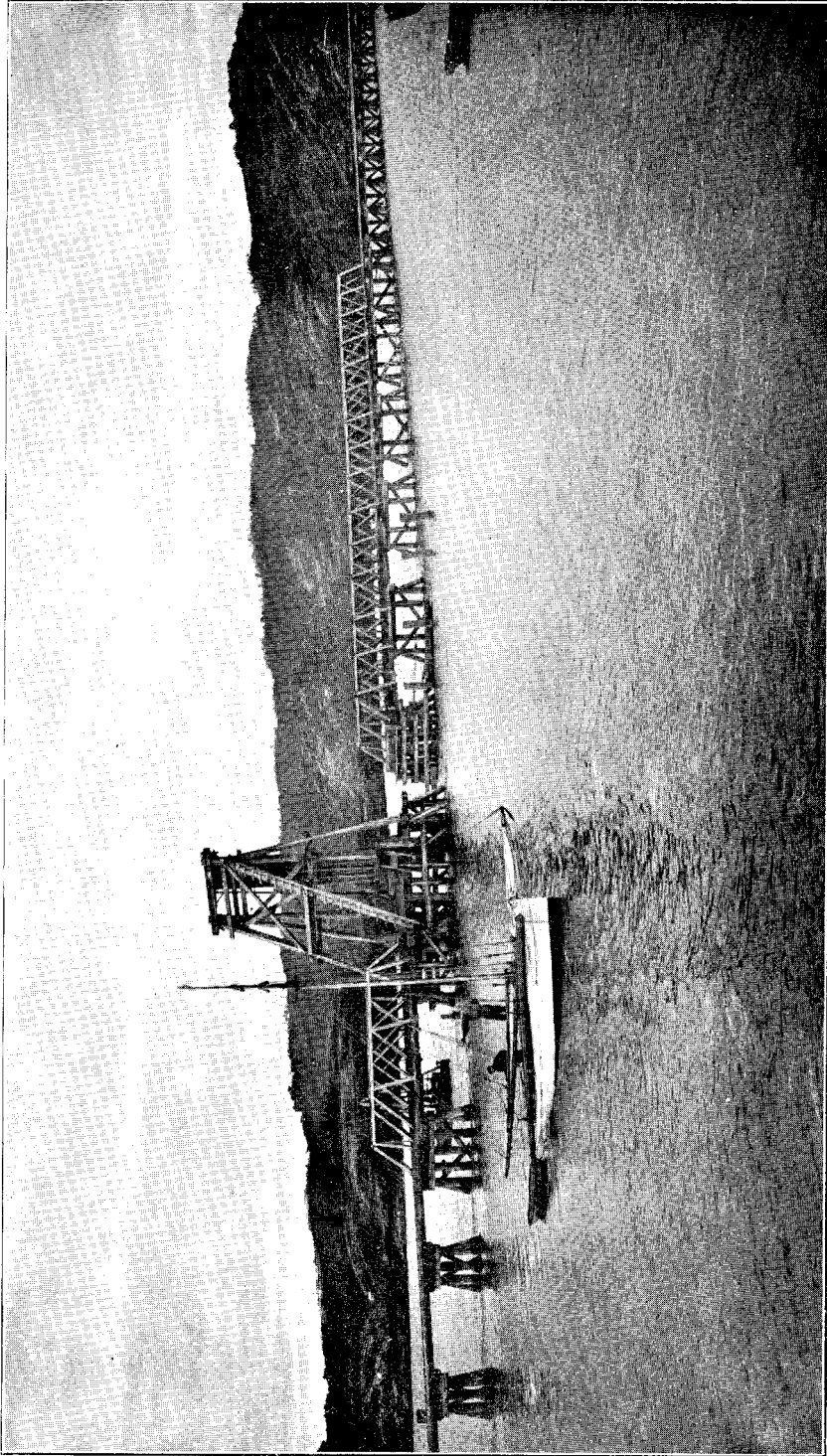
1296.12  
69

1323.25  
70

1375.5 1370.24  
71

1100 ft. above datum.





KAWAKAWA-GRAHAMTOWN RAILWAY, GRAHAMTOWN EXTENSION: BRIDGE OVER WHANGAREI RIVER.  
Thirty-five spans of 20 ft., four of 39 ft., 6 in., two of 40 ft., and one lifting span of 30 ft., all on  
timber pile piers; total length, 983 ft.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

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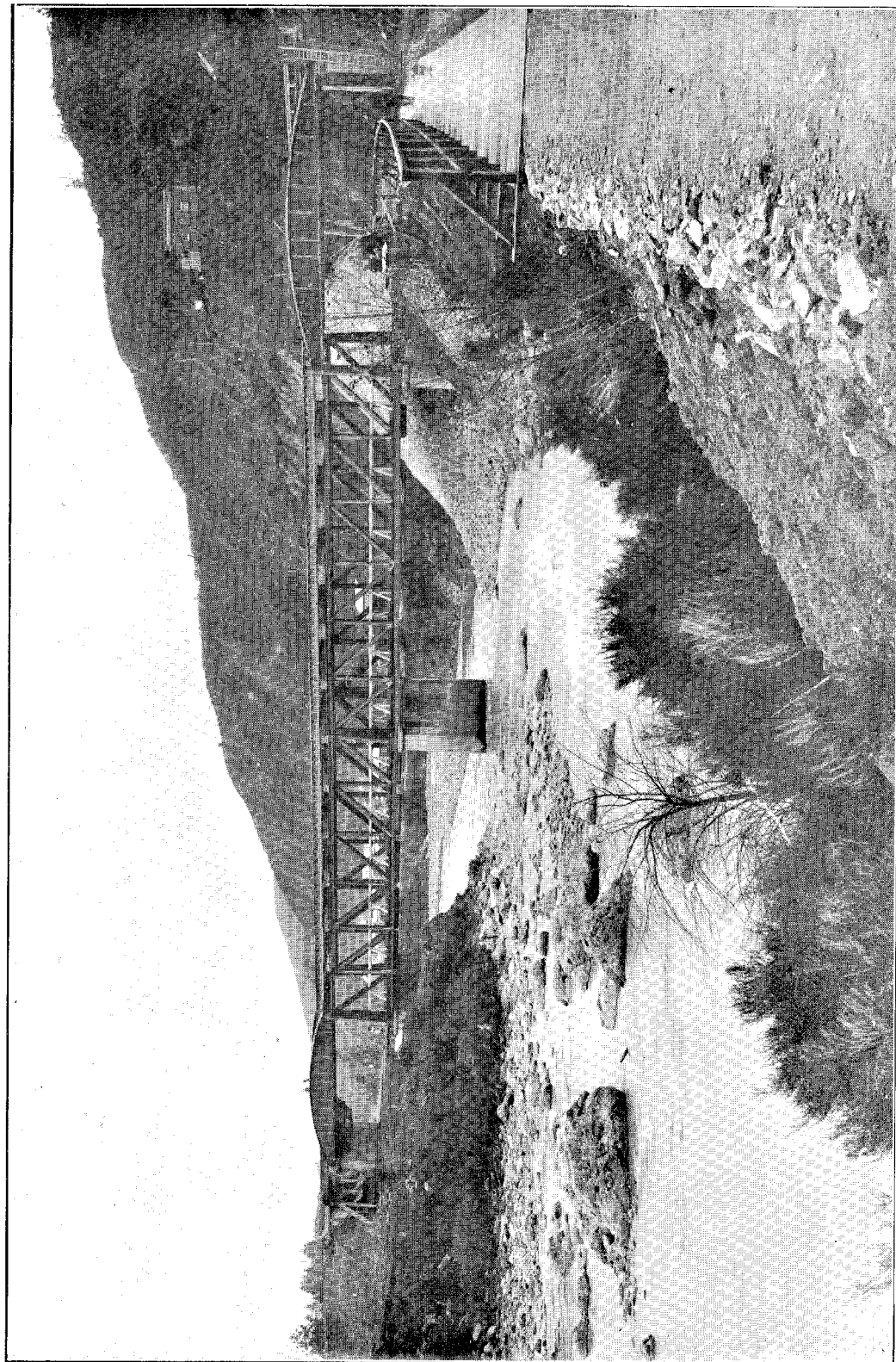
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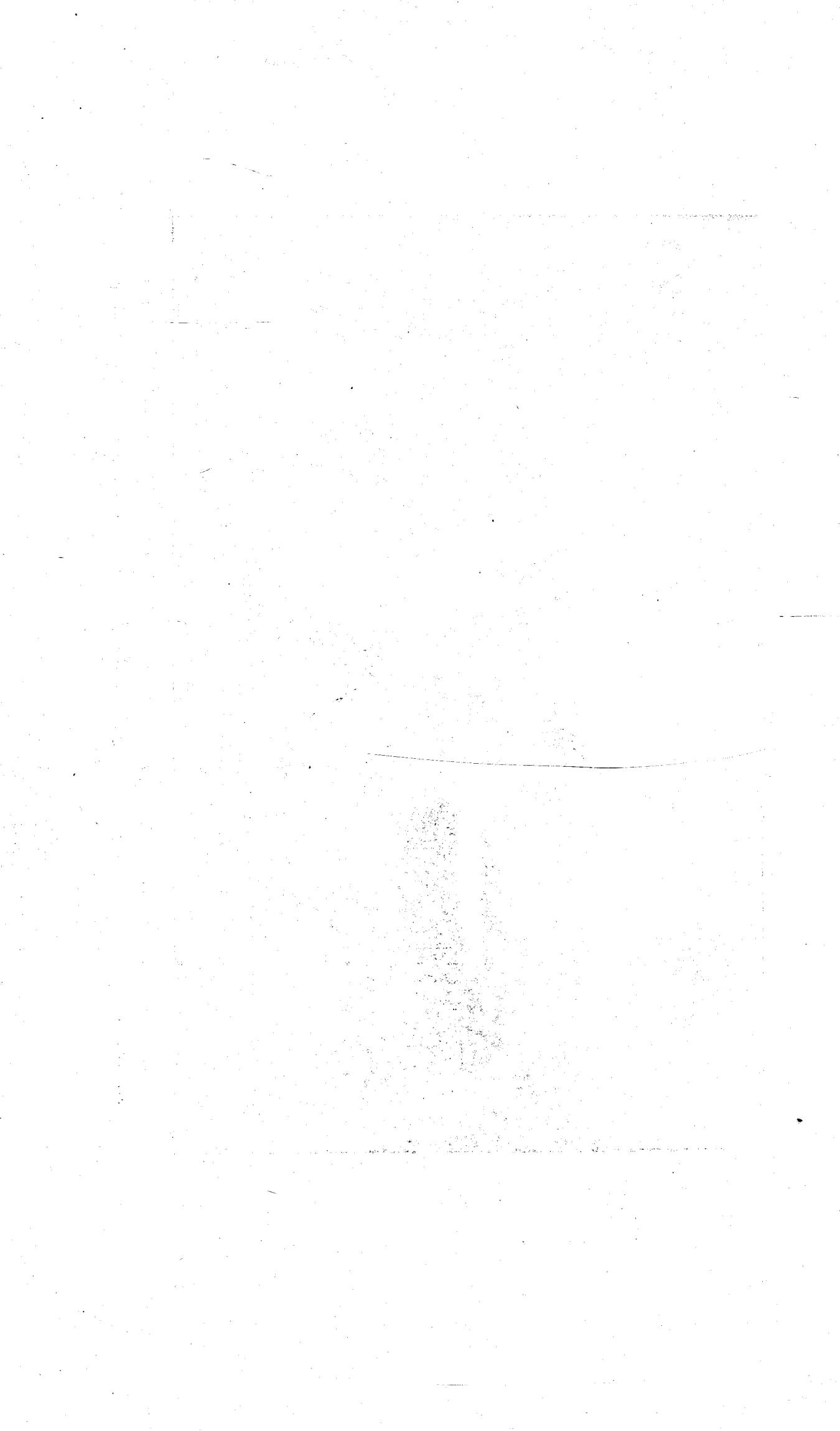
PAEROA-WAIIHI RAILWAY: COMBINED ROAD AND RAILWAY BRIDGE OVER OHINEMURI RIVER, AT KARANGAIAKE.

Two 20 ft. timber spans, two 60 ft. and two 90 ft. steel spans, on timber and concrete piers; total length, 349 ft.

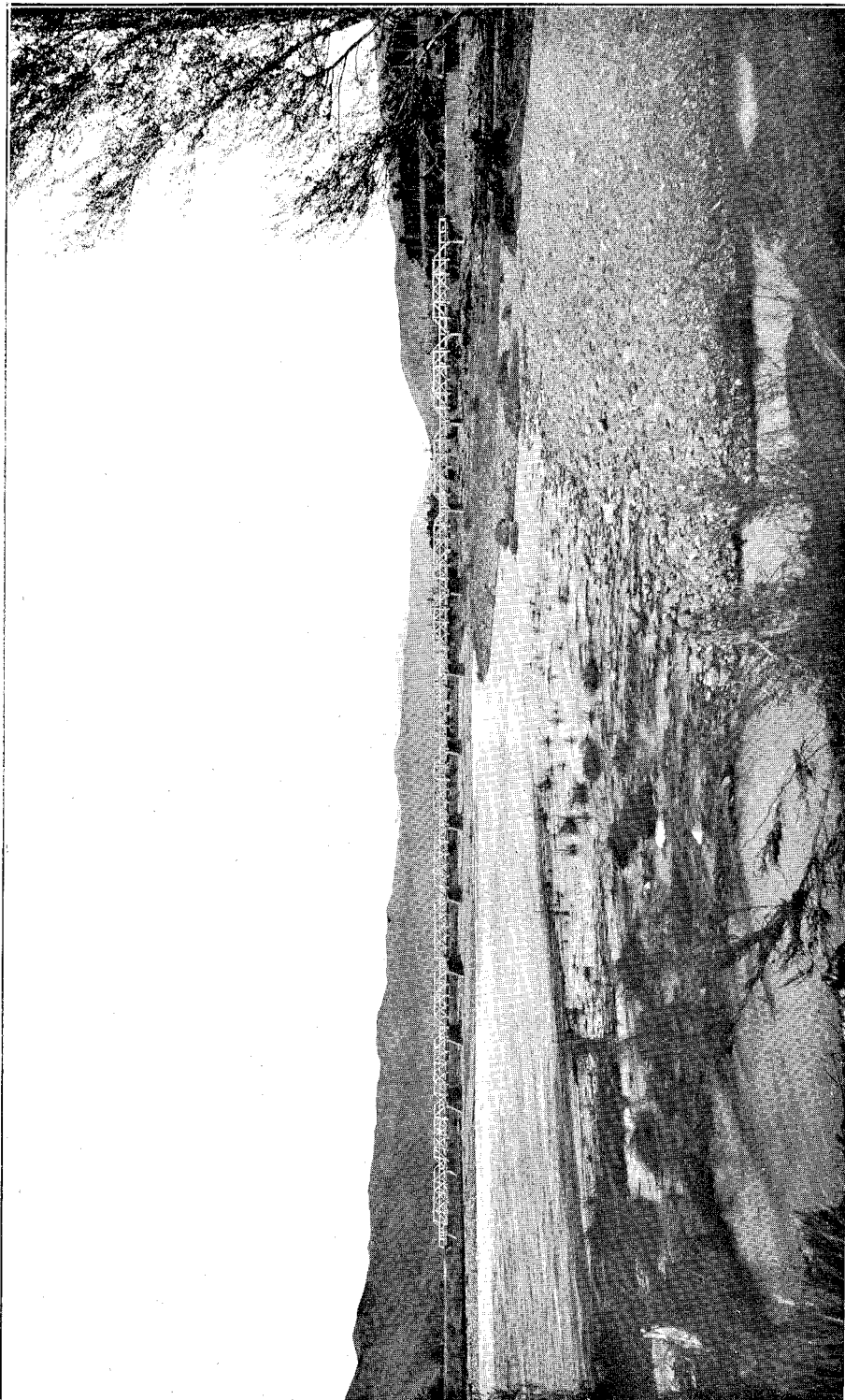




NORTH ISLAND MAIN TRUNK RAILWAY: COMBINED ROAD AND RAILWAY BRIDGE OVER WANGANUI RIVER NEAR TAUMARUNGI.  
Five 20 ft. timber, and three 122 ft. 6 in. steel spans, on timber and braced cylinder piers; total length, 472 ft.

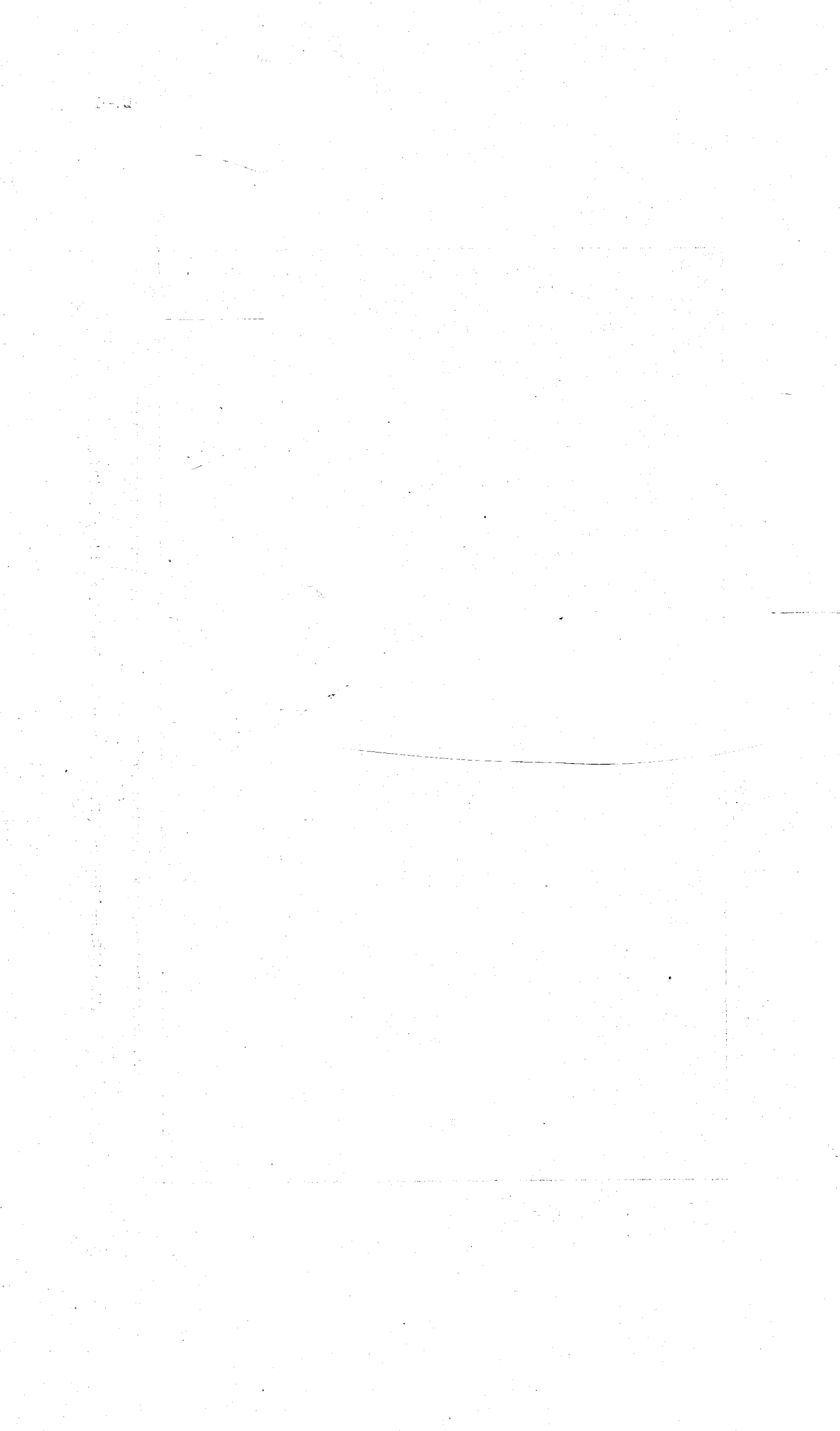


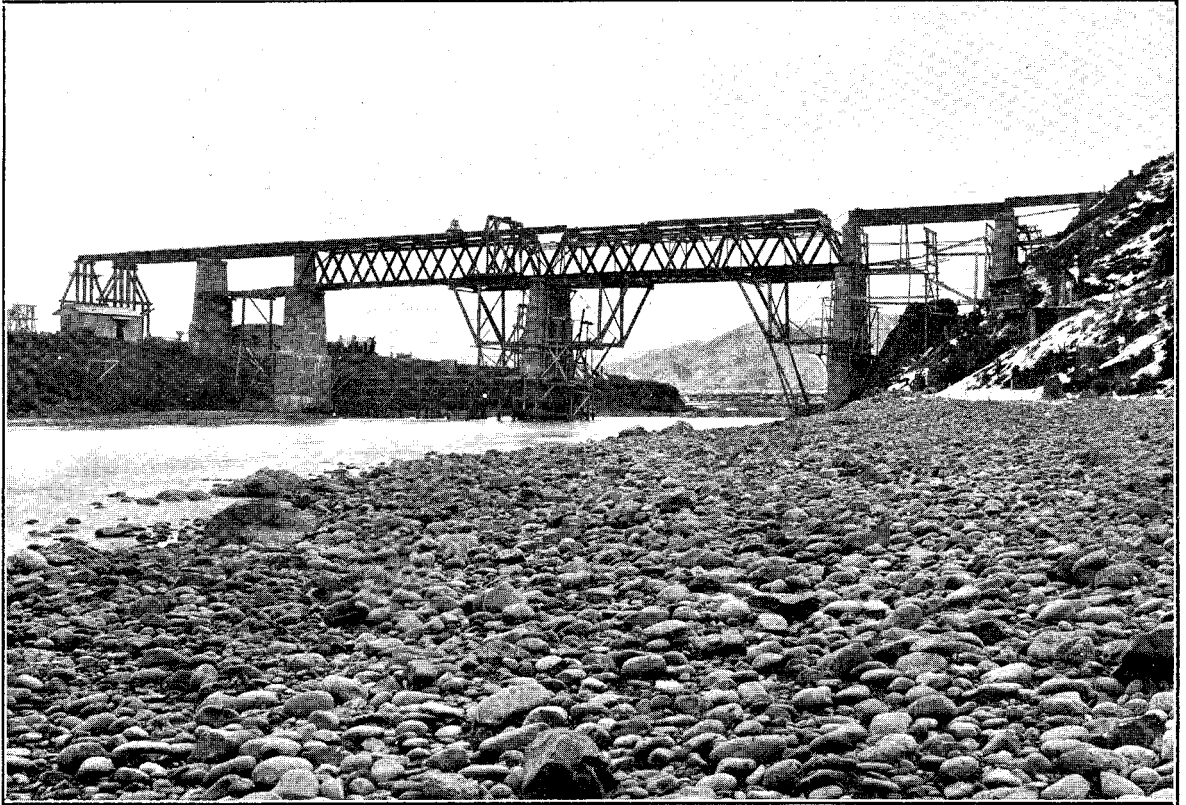




N.Z. MIDLAND RAILWAY, TADMOR SECTION: COMBINED ROAD AND RAILWAY BRIDGE OVER MOTUEKA RIVER  
(LOOKING UP STREAM).

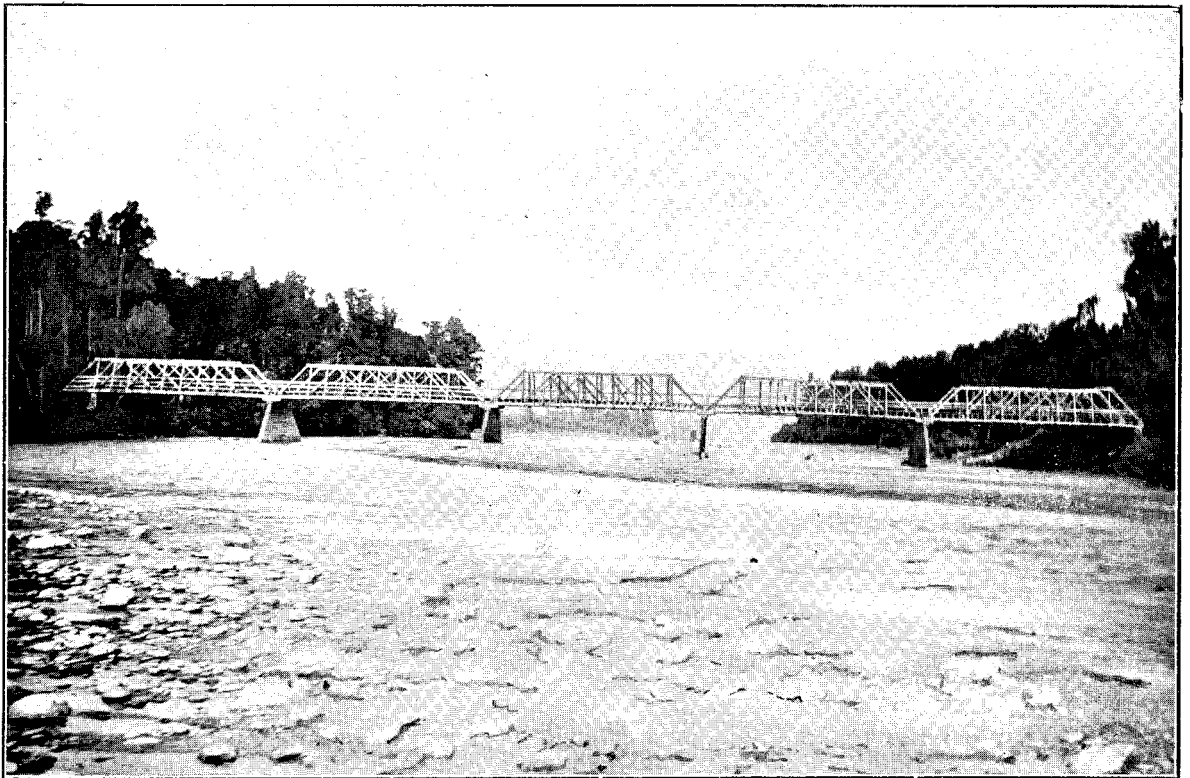
Two 13 ft. and thirteen 60 ft. spans on timber-pile piers; total length, 810 ft.





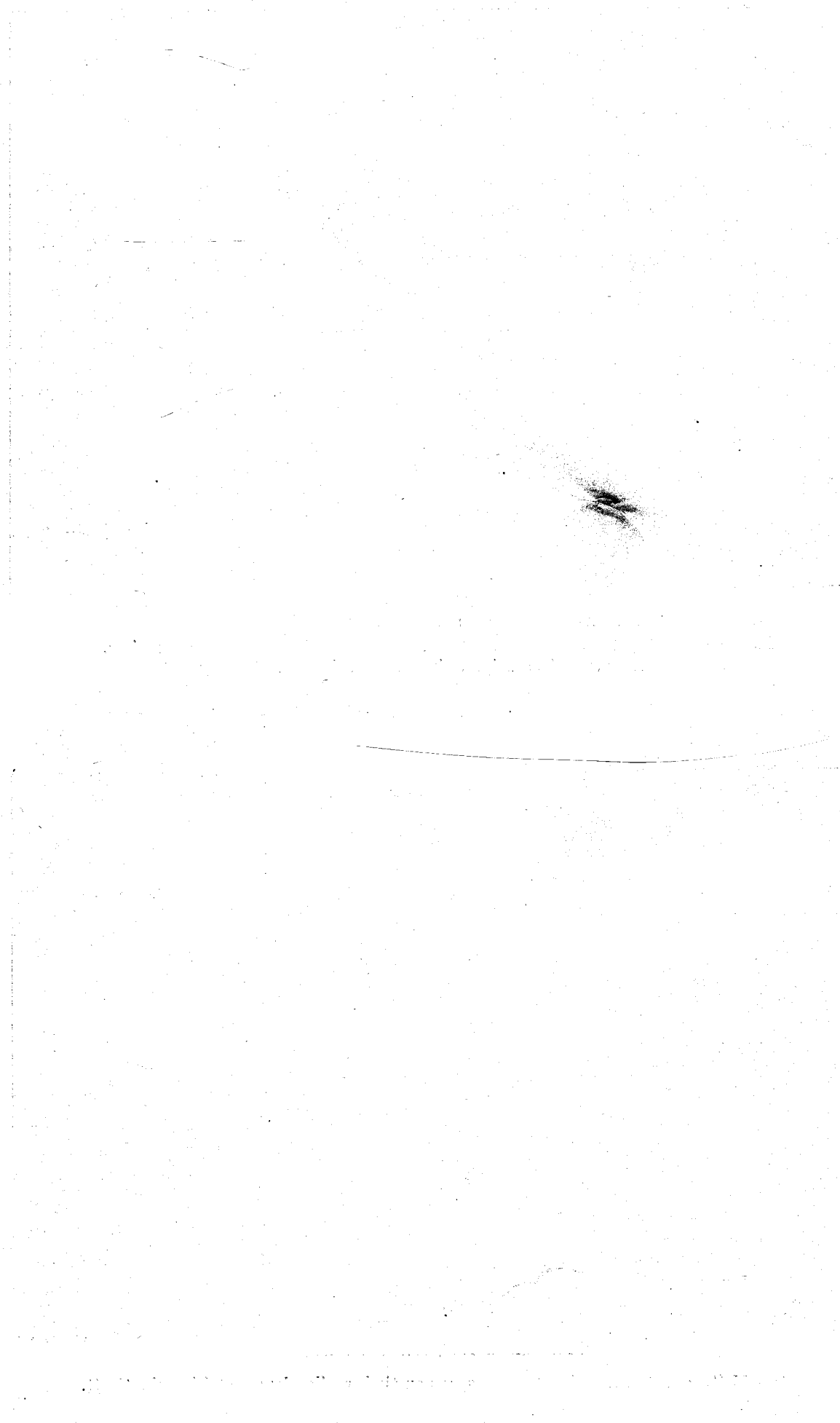
WAIPARA-CHEVIOT RAILWAY: BRIDGE OVER HURUNUI RIVER.

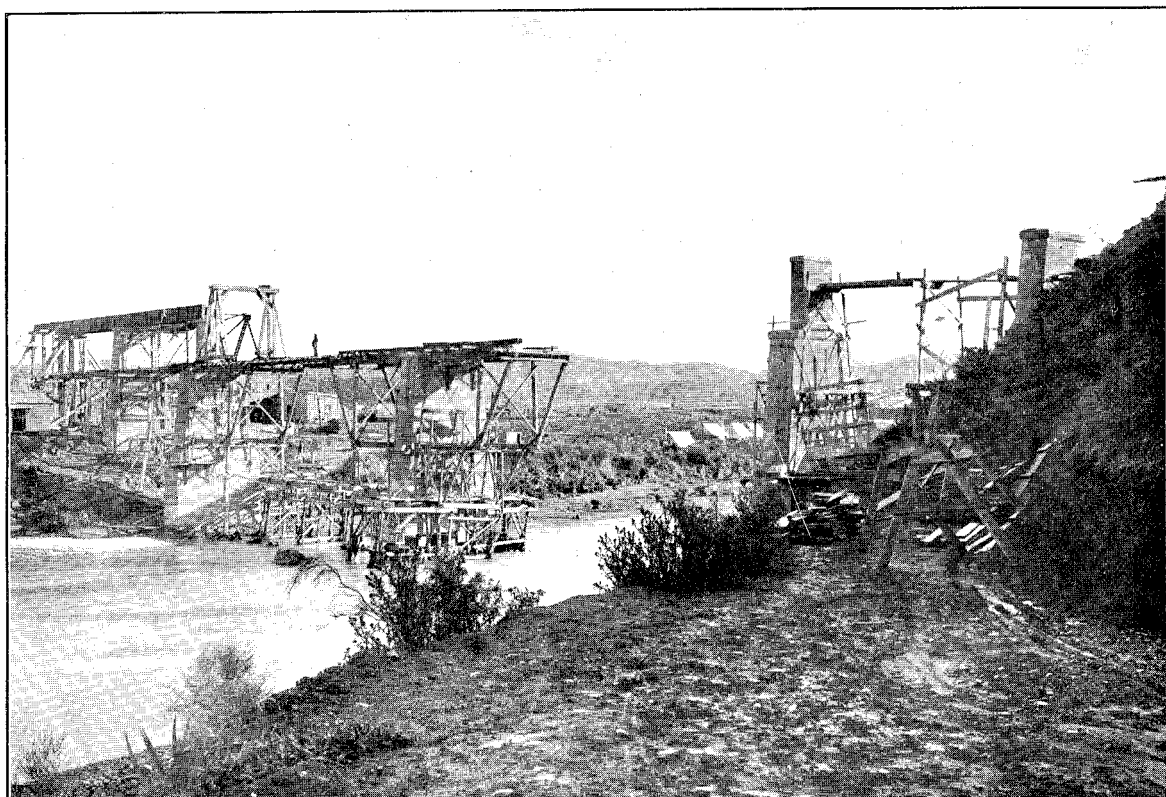
Two 22 ft., three 44 ft., and two 100 ft. steel spans, on timber and concrete piers.  
Length, 380 ft. ; height, riverbed to rail level, 65 ft



ROAD-BRIDGE OVER WAITAHA RIVER.

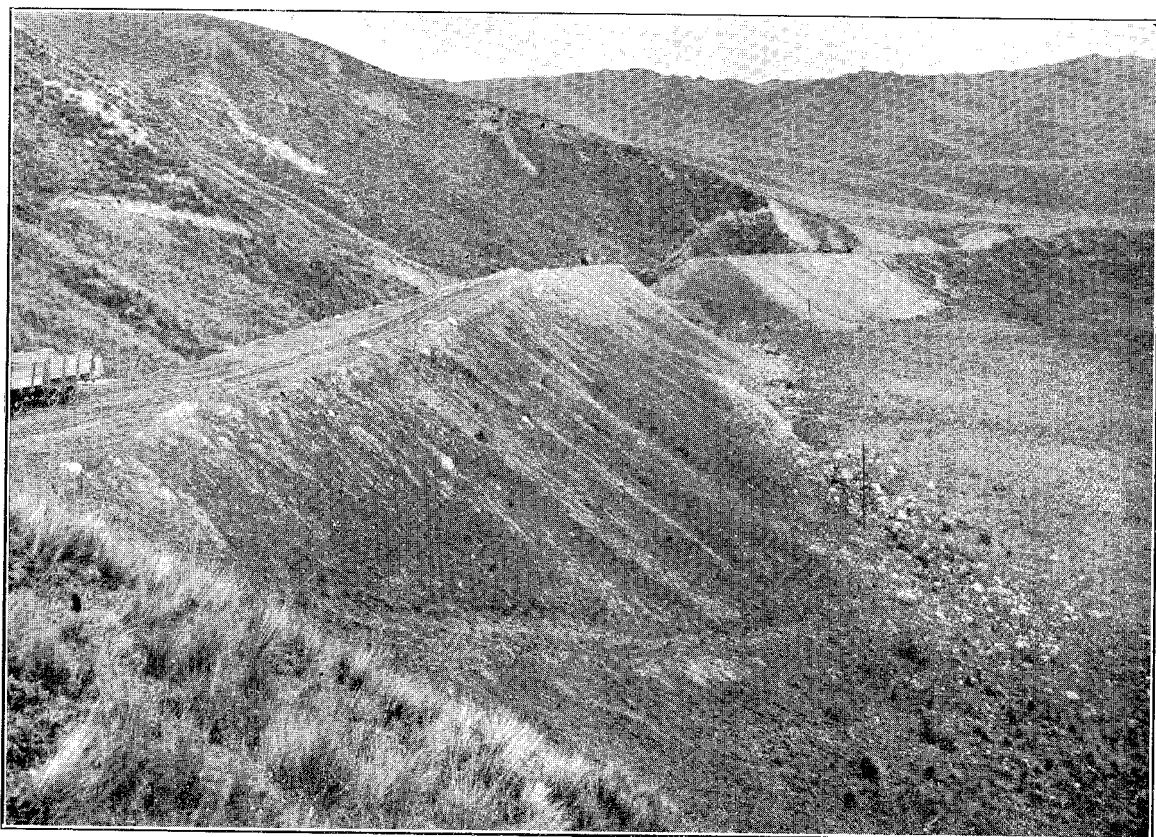
One 11 ft., one 60 ft., and five 80 ft. spans on timber pile piers ; total length, 475 ft.





WAI PARA-CHEVIOT RAILWAY: BRIDGE OVER HURUNUI RIVER.

Two 22 ft., three 44 ft., and two 100 ft. steel spans, on timber and concrete piers.  
Length, 380 ft.; height, riverbed to rail level, 65 ft.



WAI PARA-CHEVIOT RAILWAY: WAIKARE SECTION.

Bank at 20 miles 55 chains--32 ft. in height.

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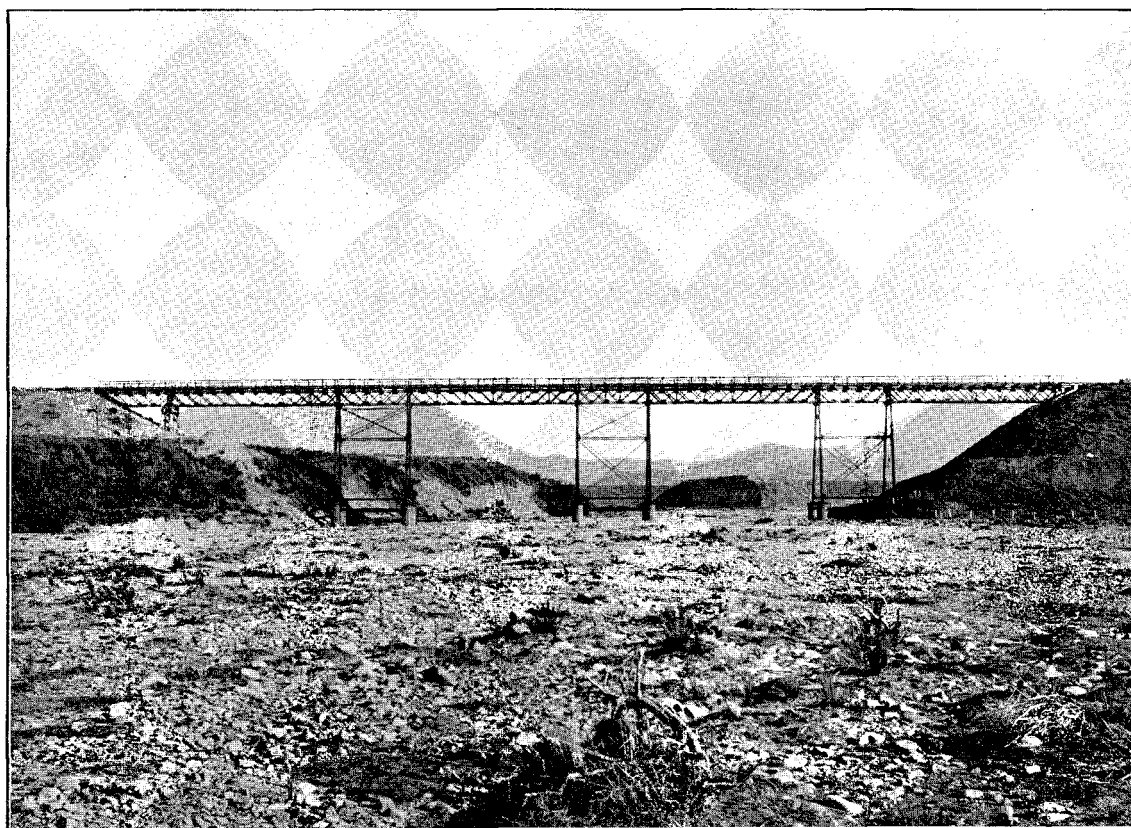
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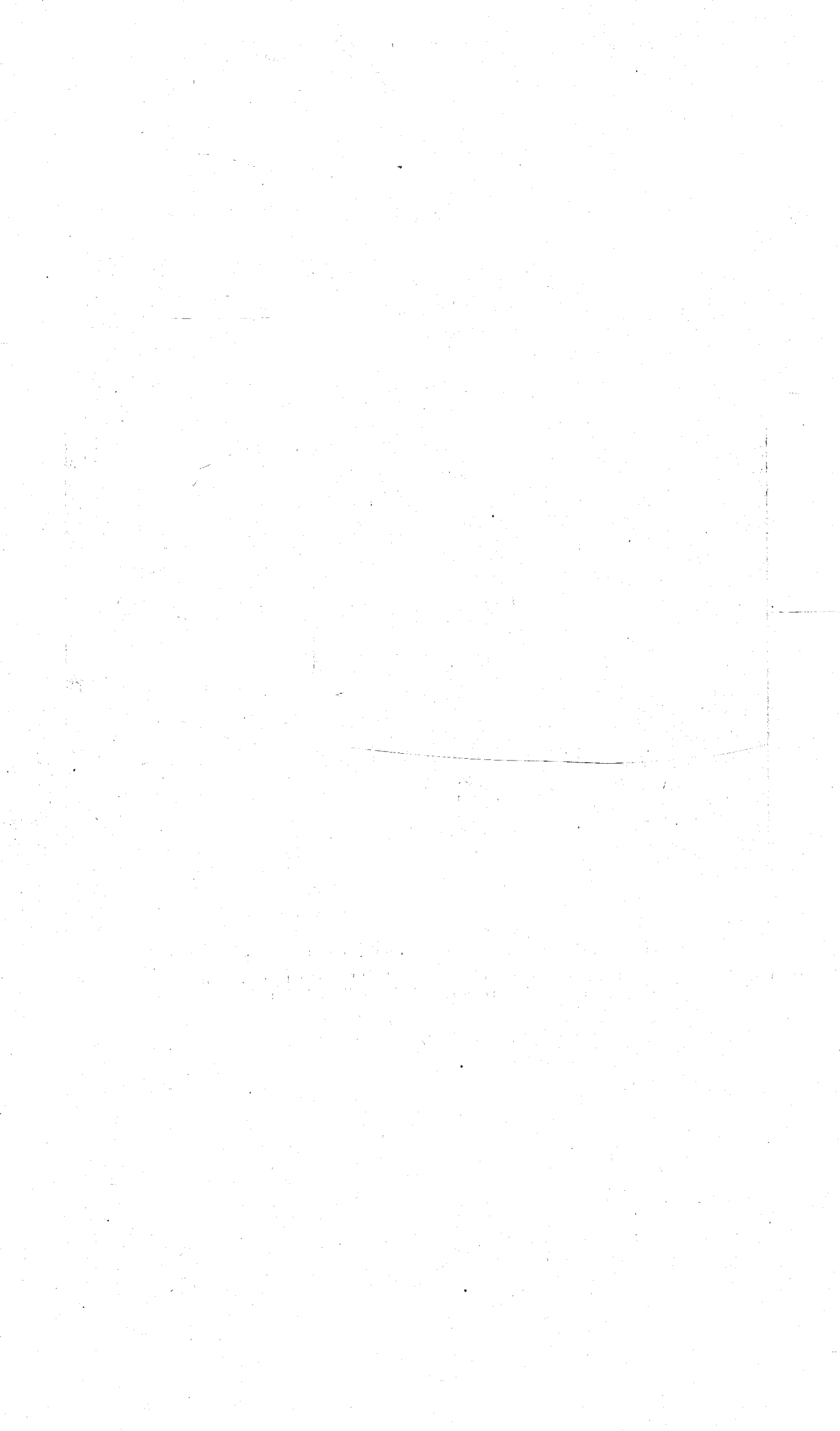
1999

2000

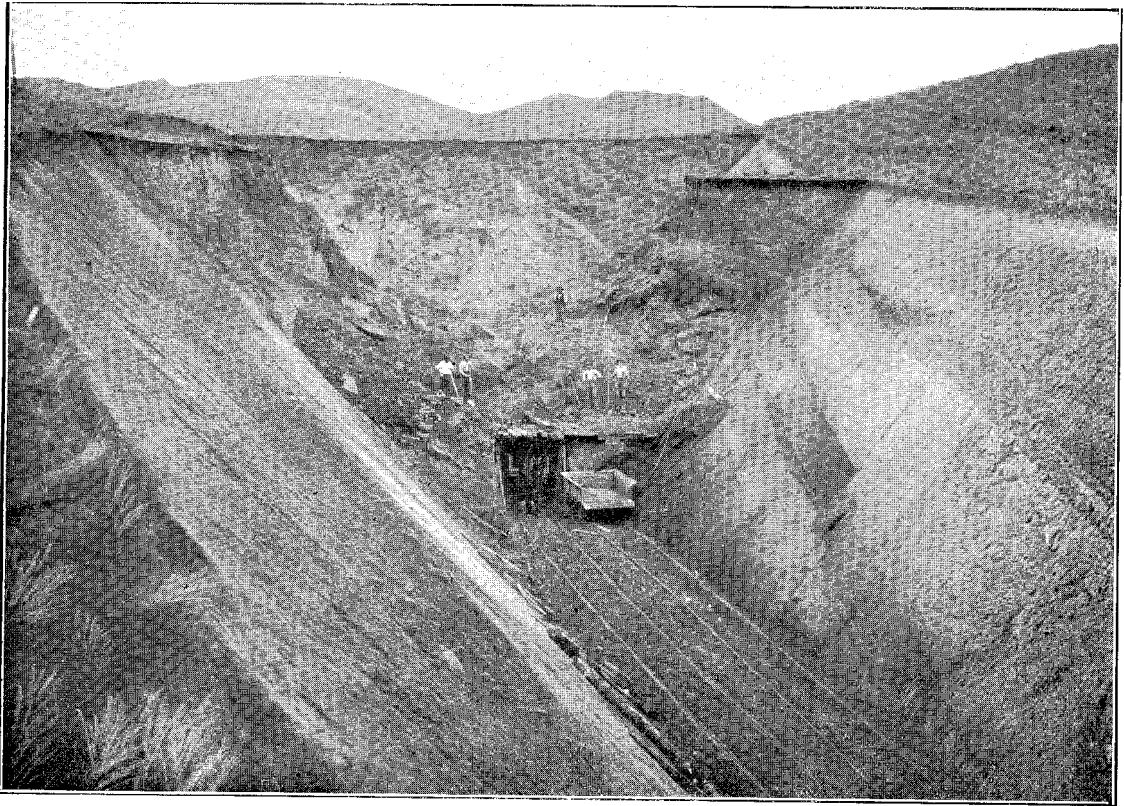


N.Z. MIDLAND RAILWAY, SPRINGFIELD SECTION: BRIDGE OVER KOWAI RIVER.

One timber span of 11 ft., four steel girder spans of 34 ft., and four of 80 ft. on braced steel piers; height from river-bed to rail-level, 68 ft.

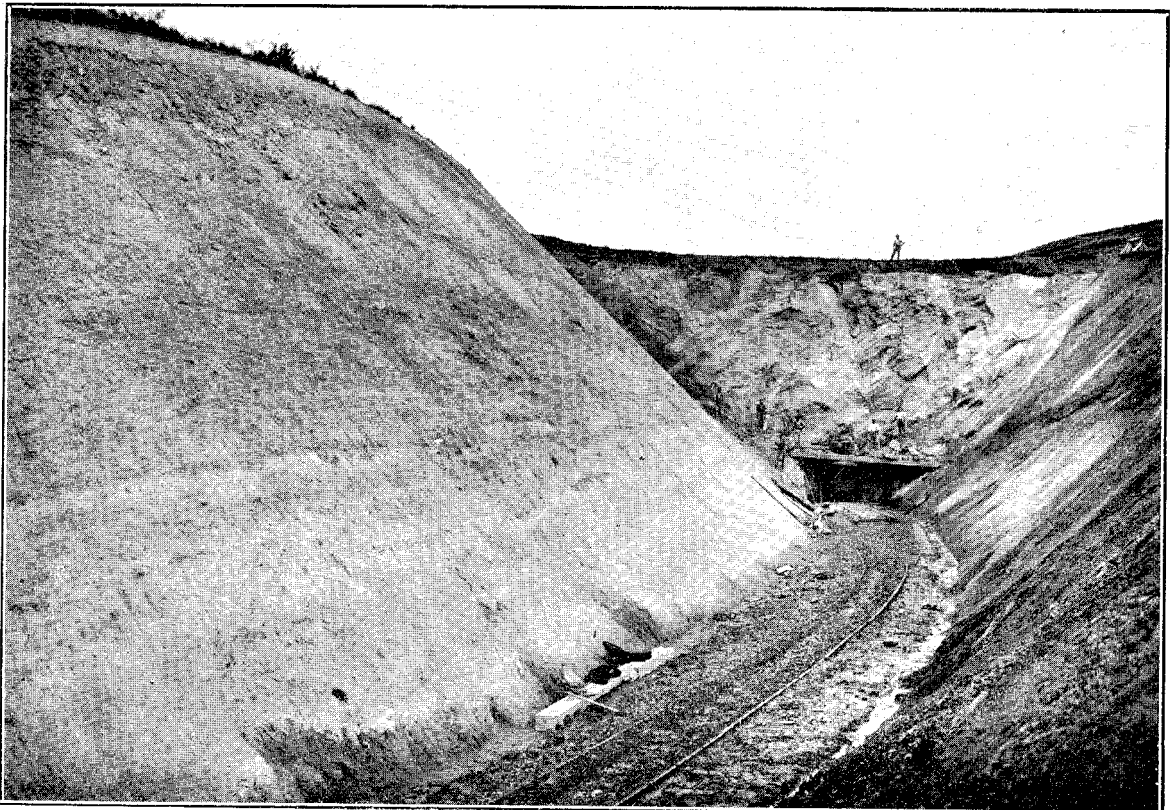






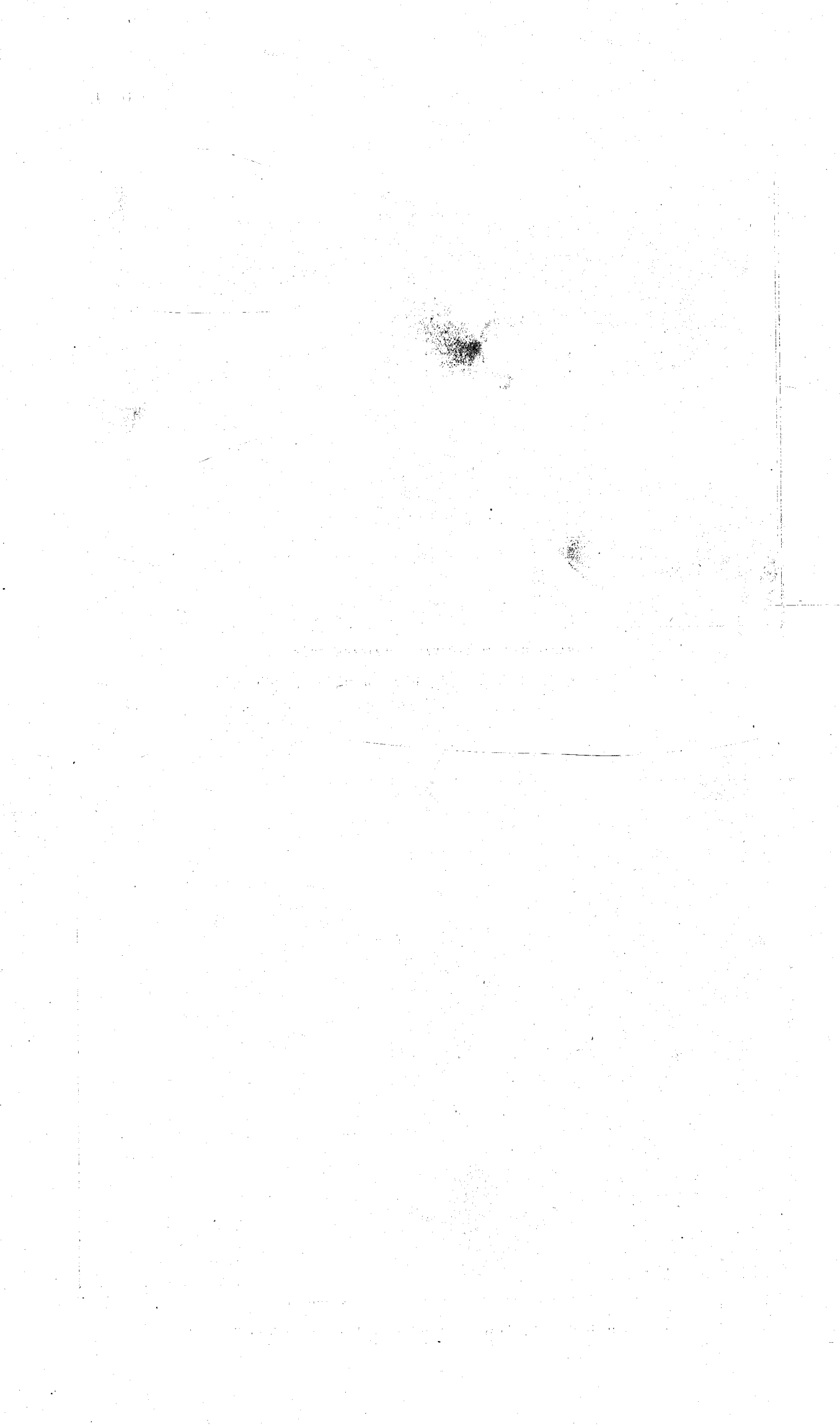
WAIPARA-CHEVIOT RAILWAY: WAIKARE SECTION.

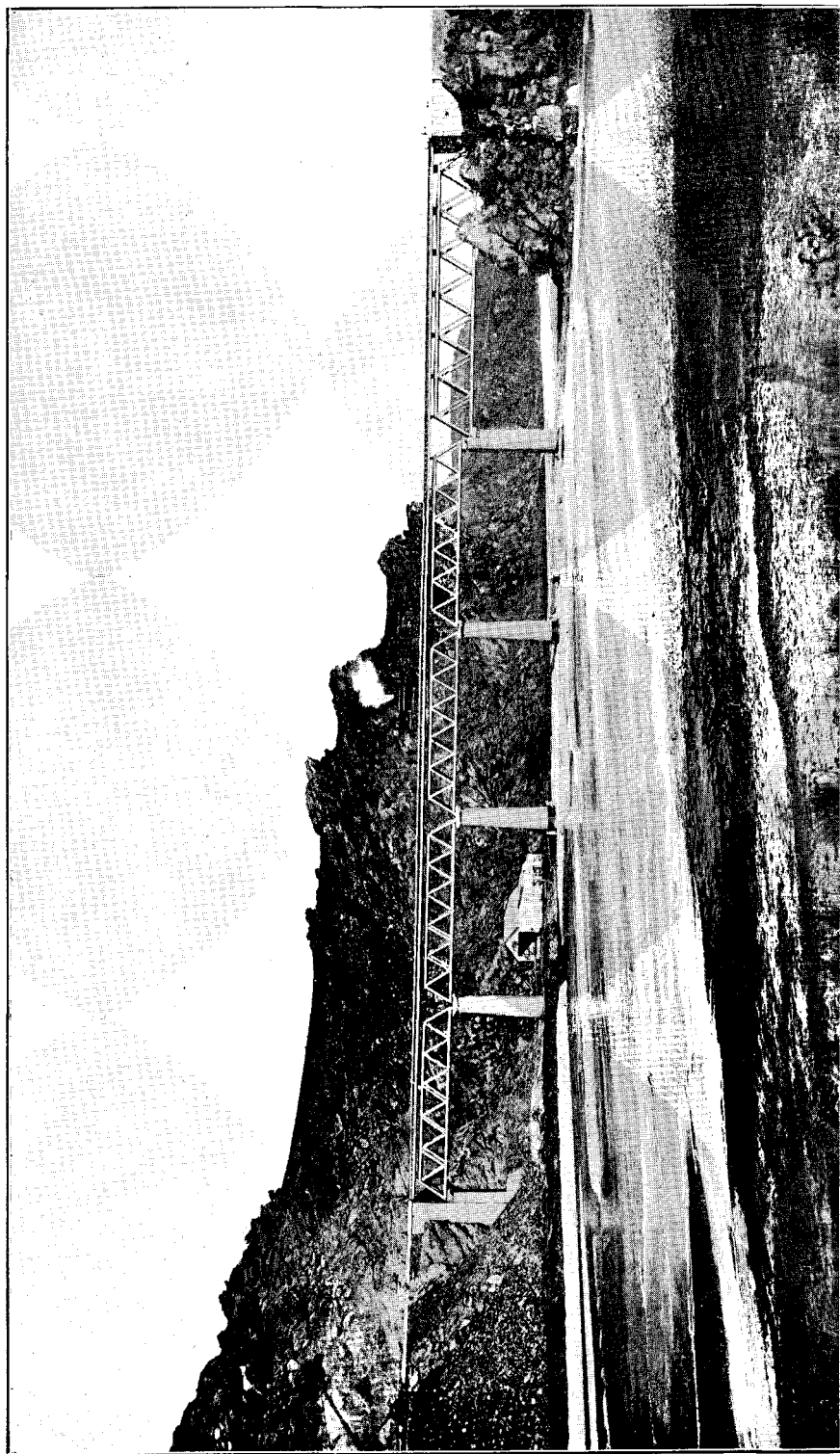
Cutting, 47 ft. deep at 20 miles 75 chains (South end).



WAIPARA-CHEVIOT RAILWAY: WAIKARE SECTION.

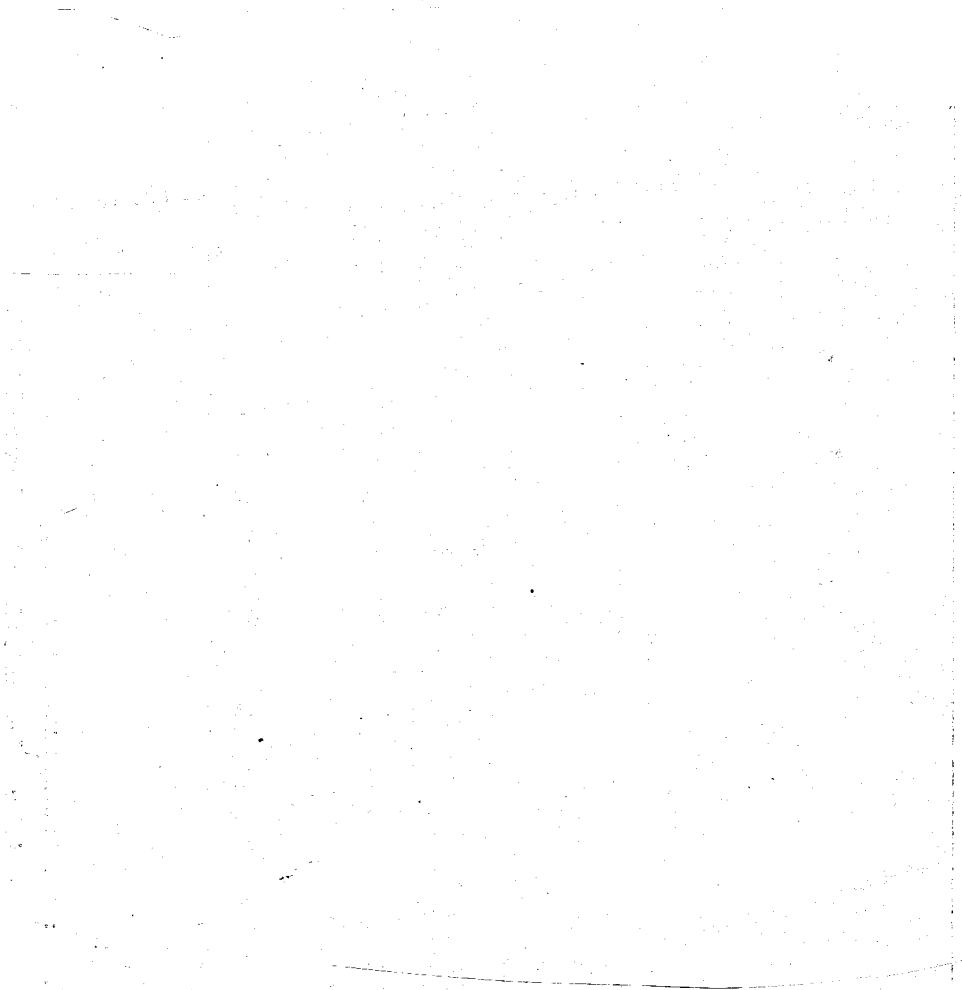
Cutting, 47 ft. deep at 20 miles 75 chains (North end).





OTAGO CENTRAL RAILWAY: BRIDGE OVER MANUHERIKIA RIVER.

Four 66 ft. and one 100 ft. steel girder spans on cylinder and concrete piers; length over all 368 ft.  
Height, river-bed to rail-level, 50 ft.



0.010



OTAGO CENTRAL RAILWAY: POOLBURN GORGE BRIDGE.

Three 66 ft. and one 156 ft. steel girder spans on masonry piers and abutments; length over all, 400 ft. Height, creek-bed to rail-level, 121 ft.

1. The following table shows the results of the experiment. The first column shows the time taken for the reaction to occur. The second column shows the volume of gas produced. The third column shows the temperature of the reaction mixture.

