1883.

NEW ZEALAND.

CANTERBURY AND WEST COAST RAILWAY LINES

REPORT OF COMMISSION ON, APPOINTED APRIL 2, 1883.

Presented to both Houses of the General Assembly by Command of His Excellency.

To His Excellency Lieut.-General Sir W. F. Drummond Jervois, R.E., G.C.M.G., C.B., Governor of New Zealand, &c., &c.

MAY IT PLEASE YOUR EXCELLENCY,—

In presenting this our report, in completion of the duty imposed upon us by your Excellency, to make inquiry into the probable cost, and economical or commercial value, of the different lines of railway for the connection of the Provincial District of Canterbury with the West Coast of the Middle Island, we have the honour to inform you that, immediately we commenced our work at Christchurch, it became evident that, to the better understanding and appreciation of the subject, a personal inspection of the different routes, and examination of witnesses at the various places affected on the West Coast, was essential. So, leaving Christchurch, we drove by the Arthur's Pass route to Kumara and Hokitika, and thence to Greymouth, taking evidence at each place as to the various industries likely to be benefited by the construction of a line, or to add to the receipts to be derived from it. Then, on horseback, we travelled by the Arnold River line, crossed Lake Brunner, ascended the Teremakau River to its source at Harper's Saddle, and descended by the Hurunui and Waitohi Rivers to the end of the present railway at Waikari. Next, after crossing the Amuri Plains to Upper Waiau Ferry, opposite the Hanmer Plains, we followed the Waiau, Hope, and Doubtful Rivers to the confluence of the latter with the Boyle, where, dividing, one party crossed the Amuri Saddle and examined the line of the Ahaura River to the Kopara Flats, thence to the Township of Ahaura, and from there by the Little Grey River to Reefton; whilst the other party, crossing the Lewis Pass, the Cannibal Gorge, the Maruia Plains, and the Rahu Saddle, arrived at Reefton by the Inangahua River. From there, after taking evidence, and inspecting the mines, we went to Westport, and returned, *viâ* Greymouth and Kumara, to Springfield. We have attached, for your Excellency's guidance, a map showing the different lines which have been explored, and the foregoing itinerary will show your Excellency that we travelled over the most important of the proposed lines, and had an opportunity of making ourselves acquainted with the appearance and quality of the soil which would be affected by the alternative lines, and of the mineral and other products likely to be carried over them. Itinerary.

We did not inspect the Mathias and Whitcombe Pass routes. The height of the passes, —respectively 4,229 feet and 4,180 feet above sea level,—the unfavourable impression we derived from the evidence of the Government engineers and the Chief Surveyor of Westland, in addition to the greater number of miles from Christchurch by either of these lines, made

it appear to us improbable that traffic could be carried profitably over either of them; and, the season being too late for careful and prolonged observations, we reluctantly abandoned our intention of traversing those two routes.

Population. In examining into the questions referred to us by your Excellency, we first considered the population on both sides of the Island as it at present exists—an easy task, as the census returns of 1881 were obtainable, which revealed, however, the remarkably unsatisfactory fact that the people of Westland had diminished from 16,932, in the year 1878, to 15,010, in 1881, a loss of 1,922, of whom 1,502 were males. The total population of the West Coast, including Westport, is returned as 24,214, and reference to the decennial return proves it has been stationary since 1872. It was frequently asserted on the West Coast that the population was again increasing, which possibly may be the case; but, as no reliable evidence in confirmation of the statement was brought before us, we can at most believe the increase has been small.

Centres of population. Under present circumstances, it is difficult to say where the principal centres of population may in the future be situated. Those which depend for their existence on alluvial digging cannot be predicted: the shifting and transitory nature of that employment is such that it can only be a few years before the busiest centres of such industry will be deserted; nevertheless, there is a large area of alluvial ground, and a great many years must elapse before it is all worked out. The alluvial workings extend from south of Hokitika to north of the Buller, the most important being those at Kumara, half-way between Hokitika and Greymouth. Populations engaged in crushing quartz will probably have a longer fixed location, and evidence was tendered to the Commission to show that reefs at present known in the Inangahua District would last for forty years; and there is always the probability of others being discovered. The principal quartz reefs are near Reefton.

Timber industries would naturally gather the population round the most extensive forests, and the best growth of marketable timber is situated in the Lake Brunner District, the valleys of the Arnold, Grey, Lower Teremakau, and Hokitika Rivers. Elsewhere the forests are principally black birch, which is not extensively used, except for railway construction.

Coal-mining would most likely attract the principal resident population.

The Commission came to the conclusion that the centre of traffic and population would be near Greymouth, and opinions taken in evidence on this point were unanimous, with the exception of those expressed at Reefton.

The terminus of the line on the East Coast would naturally be the City of Christchurch, which, with its suburbs and Lyttelton, contains 27,800 people; but consideration must also be given to another matter of equal importance, viz., the best distributing point for the different centres of population likely to consume the products to be carried by a railway.

The Counties of Amuri, Cheviot, and Ashley, to the north of Christchurch, contained, by the census returns of 1881, a population of 15,236; while the Counties of Akaroa, Ashburton, Geraldine, and Waimate, in the south, contained 35,006. In addition to this, the ridings of the County of Selwyn, to the south of Christchurch, contained 22,748; and the ridings to the north, 11,575.

It therefore appears that a population of 57,784 would be benefited by a distributing point to the south of Christchurch, against 26,811 interested in a northern line. We have in this comparison taken no notice of any population south of the Waitaki; though, as we had evidence that timber from Invercargill comes as far north as Ashburton—a distance of 314 miles—it would not be unreasonable to suppose consumers as far south as Oamaru might benefit by a railway joining the trunk line to the south of Christchurch, the distance from Brunnerton to Oamaru being 262 miles.

By far the densest population is at present located to the south of Christchurch; and, although a large increase will take place in future years, there is no reason to believe the districts to the north are ever likely to become more thickly populated than those to the south.

Land on West Coast. The West Coast, so far as visited by the Commission, appeared to contain little land suitable for agriculture; though there is a considerable amount of level and terrace land on the Lower Teremakau, Hokitika, and Little Grey Rivers, and all around Lake Brunner, which appears to be of a fair to good quality, and no doubt, if cleared, would grow excellent grass. The climate, however, seems quite unsuitable for the raising of grain. But the most important factor in considering the West Coast as a farming district undoubtedly is the dense forest with which the whole country is covered. The present cost of felling and burning the bush is out of all proportion to the value of the land when cleared; and, owing to the

humidity of the climate, under-scrub and rushes soon appear, unless the land is ploughed. Agriculture on any scale beyond the most insignificant is out of the question where the cost of preparing the land for the plough is, as it is stated to be, £50 per acre. The agricultural statistics show that only 14 acres were sown in grain crops in 1882, and 343 acres in green crops and potatoes, although evidence obtained at Reefton shows prices to be such as should prove extremely remunerative, bread, meat, and flour being twice, oats nearly three times, and potatoes five times as dear as at Christchurch. The total area of land under crop or grass is mentioned as 10,886 acres, but we found practically that the extent of pasturage was so small that the whole of the meat supply has to be imported either by road from Canterbury or by sea from Wanganui; and not only is the meat not raised on the West Coast, but the grass is so limited that the stock cannot be fattened there. There are many isolated patches of land to be found in the valleys, and in favourable situations on the hill-sides, which could be made use of for grazing and garden culture; but the time has not yet come for this, and we fear that for many years to come there can be scarcely any population subsisting there by agricultural or pastoral pursuits.

On eastern slopes.

On the eastern side of the dividing range the country is far less wooded than in the western slopes, but on those portions which would be affected by any of the proposed routes the land is unfit for agriculture. The valleys of the rivers are rough and stony, and the mountain slopes afford only indifferent grazing for sheep; they cannot support a farming population, and will not produce traffic of any consequence for a railway. The features of the country are similar in all the rivers along which the proposed routes would travel. As soon as the plains and downs are left behind, the country becomes rugged and barren; the valleys are mostly little more than river beds—either naked shingle or having a thin covering of soil liable to be carried away by floods—and the hills exceedingly steep and rough. Although the foregoing account of our impression of the land to be traversed by either of the proposed lines may lead your Excellency to suppose we consider it of little value, we should not be doing justice, either to ourselves or the district we are reporting on, unless we stated in most explicit terms our conviction that ultimately the timber growing on the lands will become of the greatest value to the colony; and, even if venturing almost outside the limits of our instructions, we would urge the advisableness, nay necessity, of a careful survey and report on the forest lands of the West Coast, with a view to those portions on which the most valuable timbers grow being reserved from sale, and, when necessity arises, being let to sawmillers on payment of a royalty, by which means a return of several pounds per acre would be obtained when the timber becomes valuable, instead of parting with the freehold now for a few shillings, only to insure the destruction of that which is more valuable than the soil on which it grows.

Products.

Timber.

The principal products of the West Coast are timber, coal, and gold. The whole of the West Coast is covered with forest, and there is a great quantity of valuable timber; the most marketable is rimu or red pine, kahikatea or white pine, and matai or black pine. The various species of birch (*Fagus*), found in large quantities, are not generally used on the East Coast, although very suitable for sleepers and bridge building. The finest growth of marketable timber is found in the neighbourhood of Lake Brunner, and is said to cover an extent of 60,000 acres, with the advantage of being all on fairly-level terrace land.

The valleys of the Teremakau, Arnold, Grey, and Hokitika Rivers also contain much valuable timber. Near Reefton, and in the valley of the Inangahua, the timber is principally black birch; on all the higher lands and sides of the mountains the growth is chiefly of birch, much of it of inferior quality. Where other good marketable timber occurs it is usually found in isolated patches.

Quantity of timber.

The quantity of good timber growing in the localities mentioned above is very considerable, and, if not wasted, might supply the demand on the East Coast for more than one hundred years. The Commission had evidence to the effect that the land yielded a maximum of 70,000, and an average of 30,000 feet per acre. We had no information as to the durability of the timber, which may, perhaps, be affected by its growing in so rainy a climate; but we noticed everywhere, from the evidence of trees felled on the road side, that the timber is unusually sound even in the heart of the largest-sized trees. The fact of its commanding a ready sale on the East Coast is a sufficient criterion of the quality of the timber.

Coal fields. From information supplied by Dr. Hector, Colonial Geologist, in a letter dated 12th June, 1883, which is attached to our report, we find that the principal coal field on the West Coast is that which commences near the source of the Inangahua River and extends to the sea coast in the Karamea Bight. This is decidedly the largest coal field in New Zealand, and includes the coal mines at Reefton and those on the Mount Rochfort plateau. Part of this field, in the neighbourhood of Westport, has been surveyed, and the quantity of coal contained in it is estimated at more than 140,000,000 tons. That part of this coal field which is included in the Reefton district crosses the valley of the Inangahua obliquely; the coal-bearing rocks skirt the east side of the valley, and generally contain coal seams where natural sections afford facility for excavation. Seven small mines have been opened, from which a total of about 8,000 tons of coal has been abstracted. The total extent of the coal field at the surface is about 3,000 acres, but much of the country is still unexplored. The area over which coal is found in this district was said by Messrs. Thornton and Connolly to be 350 square miles; but, from the interrupted and broken character of the coal fields, this can give no idea of the quantity of coal to be expected. The coal seams at present known vary from 6 to 12 feet, but no correct idea can be formed of the extent of the field, or the quantity in it, until it is surveyed.

Brunner coal. The deposits of coal at Brunnerton are irregular and much faulted, although coal is found over a large area. There is as yet no survey, therefore the extent and quantity cannot be arrived at, and the Commission is of opinion that, before any works involving large sums of money are undertaken with the object of developing the coal trade of Greymouth and Reefton, a proper mining survey should be made, and the available quantity approximately ascertained. Instances are not wanting in New Zealand of deposits which were expected to last for many years having suddenly thinned out. Dr. Hector roughly estimates the area of the present leases at 9,000 acres; from which (if coal is available from two-thirds of it only, on account of faults, &c.,) the quantity of workable coal would be about thirty-eight million tons. This, of course, may be liable to correction by survey and new discoveries, and it is the impression of experts in the district that the extent of coal field is much greater. This impression may be founded on the consideration of the area of country over which indications of coal are known to exist, which in New Zealand, however, is no guide to the extent or quantity of coal.

Westport coal. The Westport is the best steam coal. That of Greymouth has the advantage in the gas it contains, and the excellent coke produced from it: for gas-producing purposes it is in request all over New Zealand, and in the neighbouring colonies, and it is sought for even in New Caledonia. It is said to yield 12,500 cubic feet, while the Newcastle yields only from 9,500 to 10,000 cubic feet per ton, and it should therefore be worth 2s. 6d. per ton more than Newcastle coal when gas is at 10s. per 1,000 cubic feet. It is also good steam coal, and the difference between the bituminous coal of the Grey and Westport is not very great.

The coals of the Inangahua District are more variable in quality. They are supposed to overlie the bituminous coals, and are mostly what are known as glance or brown coals, very similar to the best varieties of Malvern and other such coal on the East Coast. They are non-caking, and generally deficient in gas; but are good household and steam coals. There are, however, some seams that are bituminous, and slightly caking.

The following table is furnished by Dr. Hector, showing the relative values of Grey and Reefton coals. It must be observed, in reading these tables, that the value of coal generally increases with the amount of fixed carbon and hydrocarbon it contains, and diminishes with the amount of water and ash. The evaporative power is another method of testing the quality, and indicates the number of pounds of water which a pound of coal will turn into steam. The bituminous coal of Westport, and the best brown and glance coals of the East Coast Coast, may be taken to represent approximately the Greymouth and Reefton coals :—

COMPARATIVE ANALYSES OF GREYMOUTH AND REEFTON COALS.

GREYMOUTH.

No.	Locality.	Fixed Carbon.	Hydro-carbon.	Water.	Ash.	Evaporative Power.	Remarks.
42	Grey River	55·4	37·2	1·6	5·8	7·29	Bituminous.
332	,, ...	49·98	43·24	1·53	5·26	6·49	,,
44	,, ...	54·11	33·19	1·4	11·3	7·03	,,
1,790 (*a*)	Coal Creek	62·27	28·68	7·54	1·51	8·1	,,
1,790 (*b*)	,, ...	55·36	37·13	5·73	1·78	7·2	,,
1,973	Brunner	53·5	41·28	1·41	3·81	6·9	,,
1,631	Greymouth	62·33	31 68	1·16	4·63	8·1	,,
1,632	,, ...	64·91	24·87	9·3	·92	8·4	,,
1,960	,, ...	53·03	41·95	·99	3·98	7·	,,
1,220	Six miles north of Grey River ...	34·8	55·40	6·2	3·6	4·45	,,
331	Grey River	62·37	29·44	1·99	6·2	8 1	,,
1,240	,, ...	56·86	36·49	1·16	5·49	7·39	,,
1,923	Coal-pit Heath	59·38	34·88	1·05	4·69	7·7	,,
1,411 (3)	Grey Coal Reserve	47·19	30·96	17·01	4·84	5·94	Non-caking.
1,411 (2)	,, ...	50·21	32·47	14·07	3·25	6·37	,,
1,411 (4)	,, ...	64·16	21·02	5·53	9·29	8·34	Bituminous.
1,411 (1)	,, ...	58·73	29·53	4·21	7·53	7·63	,,
3,175 (1)	Coal Creek	55·88	35·57	4·95	3·6	7·25	,,
3,175 (2)	,, ...	56·71	34·89	4·82	3·58	7·35	,,
	Average of 19 samples ...	55·65	34·73	4·83	4·79	7·21	

REEFTON.

1,222	Murray Creek	54·94	33·7	10·38	·98	7·03	Cakes.
1,165	,, ...	54·52	39·31	4·98	1·19	7·03	Bituminous.
1,634	Reefton	59·54	30·93	9·07	·46	7·7	Cakes.
3,312 (*a*)	Little Boatman's	52·72	32·19	9·79	5·4	6·85	Altered coal.
3,312 (*b*)	Ajax Coal Mine	46·4	40·	7·8	5·8	6·01	,,
3,312 (*c*)	Breen's Coal Mine	50·8	31·6	16·2	1·4	6·58	Brown coal.
3,336 (91)	Capleston	53·04	36·73	9·22	1·01	6·9	Glance coal.
3,336 (58)	Garvie's Creek	46·12	37·09	5·99	10·8	5·99	Altered coal.
3,336 (125)	New Durham Mine	45·84	38·74	14·22	1·2	5·95	Dull altered coal.
	Average of 9 samples ...	51·55	35·58	9·74	3·13	6·67	

AVERAGE RESULTS OF EVAPORATIVE POWER OBTAINED BY ANALYSIS.

Locality.	Maximum.	Minimum.	Average of Samples.	
			E P.	No.
Greymouth	8·34 lb.	4·45 lb.	7·21 lb.	19
Reefton	7·7 ,,	5·95 ,,	6·67 ,,	9
Westport	10·3 ,,	6·7 ,,	8·29 ,,	25

12th June, 1872. JAMES HECTOR.

Dr. Hector also states that the average composition of Westport coal is as follows:—

Fixed carbon	63·81
Hydrocarbon	31·88
Water	3·08
Ash	1·23

Evaporative power, 8·30 lb.

Test of coals.

Mr. J. P. Maxwell, General Manager of New Zealand Railways, has taken considerable pains to ascertain the relative values for railway purposes of Westport and East Coast coals. He infers (Annual Report, 1881) that Westport and Newcastle, N.S.W., are about of equal value; and that Springfield, Lomas, Shag Point, Homebush, and Kaitangata may be regarded as of lower and approximately equal values; also, that one ton of Westport is equal to about $1\frac{3}{4}$ tons of the other native coals named.

Mr. Alison D. Smith, Locomotive Superintendent, Middle Island Railways, showed the respective value of the coals in the following form, viz.: A loaded engine (Class J) burned 30·50 lb. of Westport and 53·26 lb. of Malvern per mile run; also one ton of Westport hauled 7,345 tons and one ton of Malvern 4,621 tons per mile.

The Commission came to the conclusion that the bituminous coals of Greymouth would find a ready sale on the East Coast, provided the cost bore a due proportion to its superior quality; but that the necessity for the Inangahua class of coals, which are only slightly superior to the best varieties of East Coast coals, will only be felt when the latter are exhausted.

Gold. Alluvial.

The more important alluvial gold fields are found at Ross, in the neighbourhood of Hokitika, at Kumara, Charleston, and the Lyell; but there are many outlying localities where alluvial mining is carried on—as at the Maruia Valley and elsewhere. Some of these deposits will last at least twenty or thirty years; but the industry is so shifting and uncertain that no very definite idea can be formed in regard to its durability or productiveness, and the system of sluicing limits the quantity of ground that can be worked by the amount of water supplied for the purpose. In many cases those engaged in this industry make a good living for a few years, or even realize small fortunes, at the cost to the country of the permanent destruction of the soil.

Reefs.

Reefton is the centre of a large quartz-mining district. The number and extent of the gold-bearing quartz reefs are very considerable, and give employment to a numerous population; and there is no reason to doubt that, consequent on further prospecting, many more auriferous reefs may be discovered: it is estimated that those known to exist will last for forty years. At present, about 20,000 ounces per annum are extracted from the reefs; but for every good claim that is worked a large number are taken up and not worked, for want of means.

Minerals.

Indications are said to exist in this vicinity, as well as in the country south of Hokitika, of various minerals, but nothing very definite is known of the value or extent of the deposits. Antimony appears to be the most plentiful as yet discovered, but the value of or demand for such ore is very uncertain; it exists in great quantities in other parts of New Zealand, but has never been utilized.

Building stones.

Sandstone slabs and granite stone are procurable on the West Coast, and may probably add somewhat to the railway traffic hereafter.

Present Traffic.

The present traffic with the West Coast consists of live stock, provisions, general merchandise, machinery, &c., imported; coal, gold, and timber exported; as well as a small amount of passenger traffic.

Live stock.

Of live stock about 2,600 great cattle and 16,000 sheep are driven overland from Canterbury, and 1,800 cattle and a proportionate number of sheep are imported by steamers from Wanganui, annually; the cost of driving is represented as 15s. 6d. per head on cattle, and from 1s. 6d. to 2s. on sheep, and depreciation and loss come to a similar amount. The freight by sea for cattle is 25s., and 2s. to 3s. for sheep; the depreciation and loss is very small. The hides and tallow are exported to Dunedin or Melbourne.

Merchandise.

Provisions and general merchandise are imported by sea from Wellington, Lyttelton, and Dunedin. A considerable traffic with Melbourne is being gradually supplanted by Dunedin. The total amount is upwards of 20,000 tons per annum. The freight on these goods to New Zealand ports is 20s. by steamer, and varies from 10s. to 15s. and even 17s. per ton by sailing vessels. Wheat and oats are carried at about 6d. per bushel by steamer. Insurance is charged at greater rates for Hokitika and Greymouth than for Westport, and port charges and inland carriage are very costly.

Passengers.

The present passenger-traffic to and from the East Coast is very small; probably about 800 in the year travel by the coaches, and a few hundreds by steamers, but we obtained no reliable information on this point. The fare by coach is about £5, but the actual cost, with incidental expenses, of a journey to Christchurch amounts to a larger sum. There is also a considerable local traffic of passengers and goods between Greymouth and Reefton.

The export of gold only affects traffic indirectly. Most of it passes through Wellington on its way to Sydney and Melbourne.

Timber.

The export of timber amounts to over 1,000,000 feet per annum; the freight from Greymouth to Lyttelton is about 4s., and the cost about 4s. 6d. per 100 feet at the mill.

Coal.

The export of coal is carried on only so far as the facilities afforded by the harbours will allow. The entrance to the Grey is shallow and dangerous, and the port is not available at all in rough weather. At Westport the harbour is better than Greymouth, but is far from being safe for any but small vessels. Harbour works, with the object of improving the depth on the bars, are in progress at both Greymouth and Westport, but the works are not sufficiently advanced to have any marked effect. Only a very limited number of small vessels are engaged in the coal traffic, and the delays and risk are a great discouragement; but we learned that steamers specially constructed for the trade are now arriving in the colony, and an increased trade is confidently anticipated.

At Westport 48,000 tons of coal are raised yearly, and the price is about 12s. 6d. f.o.b.

At Greymouth the production is about 64,000 tons, and the price, f.o.b., is about 11s.

Probable Traffic for Railway.

It may be inferred, from what has been said as to the quality of the land on the routes proposed for the railway, that the traffic expected to be realized by the construction of a railway will be mostly terminal. Estimates of traffic on this basis were submitted to the Commission, calculated by the Railway Leagues of Canterbury and Westland; but we had some difficulty in deciding how much reliance could be placed on any estimates of traffic on the proposed railway, partly from the fact that they are based on an increased traffic and population expected to be created by the construction of the railway, and partly from the uncertainty of the effect of the competition by sea-carriage. Nevertheless, judging from the effects produced elsewhere by the opening-up of railway communication, some large increase over the present trade may be fairly expected to result from the facilities afforded by the railway; and, although the traffic thus anticipated may not at first be large, yet the growth of population and production is so rapid in New Zealand that the traffic may, without exaggeration, be estimated to double itself within the next ten years. If the harbours on the West Coast were very good, the prospects for the railway would be still more uncertain; but the harbours are as bad as they can well be, and it is doubtful whether they can be made even tolerably good without a very large expenditure. Therefore, as concerns the traffic of the West Coast with the East Coast, the construction of a railway offers a much more certain result for the expenditure required, although it tends to restrict the traffic to any other places except the East Coast, unless the harbours are improved also.

Terminal traffic.

Effects of railway communication.

The variety of products produced respectively on the opposite sides of the Island indicates the East Coast as the best market for the interchange of products with the West, and it must resolve itself into a question of convenience and expense, whether the carriage of such products should be by land or sea. For safety, convenience, and despatch, the advantage is of course with land carriage, and these are sure to have an effect on the prices of carriage in one form or another. With the harbours in their present condition it would be difficult to carry on a very large traffic.

It may be claimed for a railway that not only does it perform the traffic between the extremities east and west, but it assists to open communication all along its route, which a sea traffic cannot do, and that it is therefore of so much more value, as a tract of country is useless without communication. It has been shown that the East and West Coast Railway would have mostly a terminal traffic; therefore it would only afford this advantage to a limited extent: still, it offers these advantages in the present and future to the district it traverses, and it is difficult to say what requirements may arise even in the mountainous tracts through which it is proposed to carry the line. Sea-carriage offers no such advantages, and in addition there are sea losses which may be represented by insurance charged, which, for a traffic worth, say, £500,000, would amount to about £6,000 yearly. The sea freights must not be taken to represent all the cost of carriage; thus on coal brought from Brunnerton to Lyttelton there are various charges incurred, in addition to the sea freight, amounting to 9s. per ton; on timber there are similar charges, to the amount of 1s. 2d. per 100 feet. Consequently, it will be seen that, if the railway is able to carry produce at a less cost than at present by sea, it will either lower the cost to the entire community or attract to itself all the trade. If haulage by railway and sea freights were exactly equal, the saving would be 9s. per ton on all coal brought by the railway, represented by savings on various charges connected with the sea traffic, and the community would either get the benefit of this, or the railway would secure all the coal traffic of the district. In the same way there would be a saving of sundry charges on timber to the amount of 1s. 2d. per 100 feet, which would affect all the timber of the same quality used in Canterbury, or give the railway the advantage to the same amount. These savings would be at the expense of £16,770 at present earned by the Lyttelton and Christchurch line, and £4,350 by the Harbour Board as wharfage. The railway would also greatly increase the amount of passenger traffic, and facilitate settlement all along its line.

Advantages of railway- over sea-carriage.

Lowering of prices by railway.

It would also materially reduce the cost of the railways to the Government in furnishing a large supply of sleepers at a low cost. The want of sleepers is beginning to be already felt, and in the next five or six years the difficulty will increase to meet the demand of 400,000 sleepers yearly required to renew the New Zealand lines.

Sleepers.

Routes.

As generally happens on proposed lines of railway, the question of the best route has given rise to much difference of opinion, differences arising not only on the merits of the

question, but prompted by local and individual interests. Thus, the settlers in Reefton urge that the line should commence there, and go through the northern passes of the mountains to the East Coast and Christchurch; Brunnerton to have a branch line when necessary.

Westport. The settlers in Westport, as represented to the Commissioners, were comparatively indifferent to the question of railway communication, and were more interested in the improvement of their harbour; and the first paragraph of the report of the Westport Coal Committee—I.–6, Vol. II., Appendix to the Journals, House of Representatives, 1882,—explains this feeling: "The one thing needed to insure a large exportation of coal to foreign markets is the deepening of the entrance to the harbour at Westport;" and subsequently, if the bar had been deeper, "The Westport Colliery Company could have this year entered into contracts to deliver 250,000 tons for shipment to the Australian Colonies, and could have completed arrangements for the establishment of copper-smelting works at Westport on account of the Adelaide Copper Mines Company."

The settlers in Greymouth and Hokitika are anxious for a line that shall commence at Brunnerton, and go through the southern passes to the East Coast and Christchurch; Reefton to have a branch when necessary.

The question of routes has also been carefully studied by the Government Engineers, who for several years have been examining and surveying the different passes. Mr. Blair, the Engineer in Charge for the Middle Island, has personally inspected the principal passes and the routes through them; and, under his instructions, a well-considered report, dated the 13th May, 1881, was written by Mr. C. Y. O'Connor, Inspecting Engineer of the Public Works Department, who attached to it a table showing the lengths, heights, and other particulars of the different proposed routes.

Northern routes. The principal object which the Engineers of the Public Works Department had in view when examining the northern routes was to find a line which would combine suitably with a central line to Picton and Nelson. But it appears from Mr. Blair's evidence, as well as from the reports of Mr. O'Connor, that no satisfactory combination of lines could be thus obtained, and separate routes for Picton and Nelson and the West Coast were found to be the best.

Mr. E. Dobson, C.E., when he was Engineer to the Provincial Government of Canterbury, studied the subject of routes to the West Coast; and, in his evidence given to the Commission, he agreed with the conclusion arrived at by the Government Engineers, that it was not advisable to attempt to combine the lines to the north and west of the Island.

The Commission took the same view of this matter, and considered the subject of routes only with the object of determining the most suitable direction in which to connect the centre of production of the West with the centre of demand on the East Coast.

It has been shown that gold-mining extends from Ross in the south to Lyell in the north, but is somewhat more fixed and concentrated at the Reefton quartz mines. The largest and best growth of marketable timber is found towards the centre and southern parts of the district; while the coal deposits commence at Brunnerton, and extend to the Karamea Bight, to the north of Westport. It is evident that the most suitable route would be one which would give the best communication to all these products together. The Westport coal district would find its best outlet by sea-carriage by reason of its greater distance by land to the markets of the East Coast, and because the port is superior to any on the West Coast, and seems more

Southern routes. capable of being improved. On such considerations it seems that a southern route is the most suitable to give the best communication to the various products.

The line surveyed by the Government Engineers from Brunnerton to Reefton offers every facility for cheap construction, and an easy line, with the principal inclinations descending towards Brunnerton. Therefore, if the line terminated at Brunnerton, it would give access to the best timber and tap the commencement of the coal field at its most valuable part, while it remains capable of cheap extension towards Reefton as the necessity for more coal arises. The question is thus restricted to considerations of distance and engineering difficulties, and lies between the Hurunui and Arthur's Pass routes.

Brunnerton being taken as the point necessary to be reached, even as a temporary terminus, the table attached, compiled by Mr. C. Y. O'Connor, will give some particulars of different routes to connect that point with Rolleston and Christchurch, which are the centres of population and production on the East Coast. From this it may be noticed that the distance from Brunnerton to Christchurch by way of Arthur's Pass is 11 miles shorter than by way of the Hurunui, while for all places south of Rolleston the distance by Arthur's Pass is 41 miles shorter than by Hurunui; and, when the Central Canterbury line is finished, the distance to places south of Ashburton will be still further shortened by Arthur's Pass. The

shorter line has a decided advantage as regards the freight on produce and maintenance of the road: many thousands of pounds would be saved yearly on these two items of expenditure. On the other hand, towards the north, the distance by Arthur's Pass *viâ* Oxford to Rangiora is 5 miles longer than by the Hurunui, but north of Rangiora the distances are in favour of the latter route. Besides the advantage of shortness possessed by the Arthur's Pass route over that by the Hurunui, it would have the use of the present coach road in the conveyance of men and material for construction; whereas, if the Hurunui route were adopted, no work could be undertaken simultaneously along the line, until a tolerably good road was formed from Horsley Downs to the Teremakau River.

Height of summits.

The height at which the line would cross the main dividing-range of mountains would be about the same on both; there would be the same length of line still to be made on each, and the tunnels at the summits of the Hurunui would be about 1,500 feet longer than on the Arthur's Pass. The height of the Arthur's Pass is 3,014 feet, that of the Hurunui 3,150.

Engineering difficulties.

It may be worth while to notice, in favour of the Arthur's Pass route, that there is an abundant supply of water on the very top of the Pass, by which machines for boring the tunnel could be driven; or, if an ascent over the Pass by rope-traction instead of a long tunnel were adopted, the trains could be lifted over the Saddle by machinery driven by the headwaters of the Bealey; on the other hand, the engineering difficulties are considerably greater than would be found on the Hurunui route. The Otira Valley presents a rougher descent than the upper part of the Teremakau Valley; and on the ten miles at the Waimakariri Gorge there are difficulties of a serious nature, chiefly in the form of lofty bridges and precipitous rocky hill-sides. Having examined the sections taken over this part of the line, the Commission was of opinion that one or two of the worst features could be remedied by careful resurvey, or by taking the opposite side of the river, and the estimate of cost might be considerably reduced. The line through this gorge, bad as it is, has the advantage of descending gradients in the direction of the heavy traffic, and is about sixteen miles shorter than the diversion by way of Lake Lyndon and Homebush, proposed by the Government Engineers. This diversion has also to rise over a summit between the Lake and the Rakaia River; it is estimated to cost about £440,000 less than the Waimakariri Gorge line, and £54,000 less than the Hurunui line; it would be five miles longer to Christchurch, and twenty-five miles shorter to Rolleston, than the Hurunui: so that the advantages seem still to be with the Arthur's Pass route, even when diverted round by Lake Lyndon and Homebush.

Diversion by Lake Lyndon.

The estimated cost of the Arthur's Pass route by way of the Gorge is given in the tables at £2,030,000, but it is probable this might be reduced to £1,800,000.

The Lake Lyndon route is estimated to cost £1,587,000; but, being sixteen miles longer than the other, the maintenance of this extra length at £380 per mile per annum, which capitalized at 5 per cent. amounts to £121,600, should be credited to the route by the Waimakariri Gorge.

If the tunnel at the summit is abandoned for some system of rope-traction over the top of the Pass, the estimate of cost would be reduced by about £250,000.

Hurunui route.

The Hurunui route would leave the present north line of railway at Horseley Downs, and ascending the valley of the Waitohi, which is a crooked and rough piece of country, would cross the summit dividing the head waters of the Waitohi from the Hurunui Valley. This summit is 1,814 feet high, and would necessitate a tunnel of about fifty chains long. There are then eight or ten miles of the Hurunui Valley, which is very rough, with steep, rocky hill-sides and deep lateral gorges; but from a point just below Lake Sumner to the summit there is a fine open valley. The Saddle, which is 3,150 feet high, is flat on the east side, but very steep on the west, and would require a long tunnel. The descent from the summit would be about twelve miles of one in fifty gradient, which would bring the line to the river bed of the Teremakau, near the confluence of the Otira, from which point the line would take the same route to Brunnerton as that by the Arthur's Pass. The twelve miles descending from the summit would be a very rough and costly piece of work, in some places subject to heavy slips of shingle falling from the top of the ranges.

Notwithstanding its disadvantages, from an engineering point of view the Hurunui route is the most favourable of any.

Other Passes.

The Commission examined the Amuri and Lewis Passes, and were shown sections taken over the Hope and Ada Passes by the Government Engineers.

Hope Pass.

The Hope Pass line, which is the most southern of these, follows the Hurunui route as far as Lake Sumner. Thence it passes over a summit at the head of the Kiwi Creek, and,

ascending the Hope River, crosses the Pass in the main ranges, and descends the Ahaura River to the Kopara Flats, from which place the line can be taken either direct to Brunnerton or to the mouth of the Ahaura, where it would reach the Grey River about twelve miles above Brunnerton, or thirty-four miles below Reefton. This route is the same length as the Hurunui, but the estimated cost is £200,000 greater, and the summit tunnel is a mile longer. Judging from the sections of this line taken by Mr. Foy, it is unusually rough, and does not appear to offer any advantages to compensate for its extra cost.

Amuri Pass. The line by the Amuri Pass is not accessible from the Hurunui Valley, except by descending the Hope in a backward direction for nine miles. It is accessible from the East Coast by way of the Waiau Valley, and it joins the line by way of the Hope Pass at the Kopara Flats. It is therefore a much longer way to the same termination, and it has no advantages to recommend it in preference to the Hope route. The height of this Pass is about 3,170 feet.

Lewis Pass. The Lewis Pass is the shortest route to Reefton. It leaves the Amuri Plains at the "Red Post," and ascends the Waiau Valley, twenty-seven miles of the route being very rough. It then turns up the valley of the Lewis, where for fourteen or fifteen miles it would have easy country, with good gradients. The Saddle or Pass, which is 2,870 feet high, offers exceptional facilities for a tunnel of about two miles and three-quarters, in which the line would cross the summit at a height of 2,500 feet, and this would bring the line out in the Cannibal Gorge, nearly at the level of the river's bed, which, for about three miles, is exceedingly rough and crooked, with precipitous, rocky hillsides rising up to the snow-line, which are much subject to slips of rock and snow. After leaving the Maruia Valley another difficulty occurs in having to cross a range of mountains between the Rahu Creek and the Inangahua River. As this mountain cannot be tunnelled on account of the flatness of the summit, the line has to rise to the height of 2,250 feet; and, to be able to lay out a line up it with a gradient of 1 in 50 from the Maruia Plains or valley of the Grey (which here approach each other), the line would require to have a zigzag or doubling-back of several miles, and after crossing the summit there is a long and rough descent for about 800 feet to the valley of the Inangahua. Taken altogether, this line traverses more rough country than any except the Arthur's Pass line.

Ada Pass. The Ada Pass was recommended by the engineers employed by the Christchurch Railway League. It follows the same route as the Lewis Pass line, except that it diverges at the Hope River, passes up the Waiau and Ada Valley, and, crossing the Ada Pass, rejoins the Lewis Pass route at the Maruia Plains. Judging by the section of it made by the Government Engineers, this route is very unsuitable for a line of railway. The height of the summit is 3,300 feet, and the form of the top prevents anything being gained by tunnelling; consequently, the line must cross on the top of the Pass, which would involve very difficult and costly work for twelve or fifteen miles, the line being formed along steep mountain-sides at a height of 400 or 500 feet above the valley, crossing numerous ravines and gullies over lofty bridges, and subject for a great part of the way to slips of rock and avalanches of snow. From the top of the Pass the line must descend to the Maruia Plains, with a fall of 1,600 feet, and then rise over the Rahu summit as described in the Lewis route. The Ada Pass line would be six miles longer, and must cross the ranges 750 feet higher than the Lewis Pass: consequently the gradients would be much worse than on the latter.

Recapitulation.

Having now concluded the more narrative portion of our report, it remains only to recapitulate, for your Excellency's information, the conclusions and opinions we have arrived at.

The nature or circumstances of the soil are such that along neither of the alternative lines can it be looked to for the support of a population earning a subsistence from either pastoral or agricultural pursuits; and, although metals other than gold probably exist in many places, we have no reason to suppose they can be found in such quantity or quality of ore as to become for many years of any commercial importance, or likely to afford employment to a population of any magnitude. Where a population of even moderate density is resident on either side of a line of railway, it may be safely assumed that the traffic it creates on the line will be sufficient to pay for the cost of interest, management, wear and tear, &c., and consequently the number of miles to be run over is comparatively unimportant; but when no local business can be expected, and traffic from the extreme ends of the line only may be relied upon, the length of that line and the number of people to be served around the termini become of the first importance.

We have pointed out, in the earlier portions of this report, that the most marketable timber is to be found in the districts surrounding Greymouth, and the alluvial gold mines around that centre, or to the south, are of the most importance; while the produce of the Brunnerton coal fields is of equal value, when considered as steam and gas coal, with that of the mines in the vicinity of Westport, and superior to that at Reefton.

Geographically, Brunnerton may be considered the centre of the West Coast. No engineering difficulties exist to prevent branch lines of railway being made southwards to Hokitika or northwards to Reefton when an increased population would make their construction expedient; and from the facts that Westport possesses the best harbour, and from situation is better able to supply the Cook Strait and North Island coal requirements than any other place on the West Coast, we viewed the connecting of the Provincial District of Canterbury with Westport by railway as of secondary importance to either, and were able to eliminate that place from our consideration, and decided on Brunnerton as being the best place for the western terminus of the line. In doing so, we also had in mind that more available land for farming purposes is to be found in this vicinity than in any similar area, and therefore most likely to become ultimately the home of a settled country population.

Traffic. In considering the amount of traffic likely to be carried by the proposed railway, the Commissioners had great difficulty in arriving at a conclusion, so many factors had to be taken into calculation, with no sufficient data for placing much reliance on any of them. We found that during the grain season coal is brought from Newcastle at such low freights as to be nearly nominal, and this was likely to continue; that the mines on the East Coast are producing a coal which, although inferior to the Greymouth or Westport coals for gas or steam purposes, still is valuable for household, and of very fair quality for steam purposes; and, being necessarily cheaper by the cost of freight over a distance of a hundred miles, would probably compete with success against those higher-priced though intrinsically more valuable coals.

Freights. Then arose the question whether freight by sea, when pushed by competition, will not submit, on such articles as timber and coal, to considerable reduction—in fact, to such a low rate as absolutely to prevent any but an inland trade for the railway; and also whether the ordinary channels of trade already in existence would not militate against the transference of trade to completely different sources. It is usually accepted as an axiom that land- cannot compete with water-carriage, and Mr. F. Back, Traffic Manager, told us that, for one hundred tons of merchandise carried from Lyttelton to Dunedin by railway, one thousand went by sea, and that the trade between Lyttelton and Timaru was also by sea, although Timaru is a risky harbour. But, though this may be correct where shipments are made direct from one port to another, we found, on examination, that there were many circumstances connected with the trade under consideration which would modify such an opinion. On the West Coast the harbours are all bad, the insurance and delays consequently considerable, and the coal and timber, being found inland, would have to be conveyed to the ports of shipment by railway, and on arrival by sea at Lyttelton would be subjected to landing and railway charges before reaching the consumers; and, as the terminal charges form a very considerable part of the tariff rate, the cost at both ends would almost, if not entirely, counterbalance any advantages possible from sea-carriage. This particularly applies to the timber trade, which would be commenced twenty miles along the line towards Canterbury.

Charges. These particulars, however, cannot be taken into account in connection with the timber trade with the North Island, as evidence was given us that the use of totara and kauri would not be interfered with by the West Coast timber. On the whole, we came to the conclusion that a considerable portion of the timber would come by rail, but we cannot suppose that the timber so conveyed would lead to the exclusion of that coming from other sources of supply. In this and all other calculations we could be guided only by the tariff rates now in force on the New Zealand railways; but the General Manager, in his letter (attached) dated the 14th June, 1883, states—"The bulk of the traffic indicated—namely, coal, agricultural produce, sheep, and cattle—being carried at rates which are unremunerative or entail a loss, leads to the inference that, under conditions stated, the line, with the traffic indicated, would probably not pay." But any material increase in the tariff rates immediately places the railway at a disadvantage against the sea-carriage; on the other hand, unless tariff rates are fixed above actual cost of conveyance, no sound calculations can be arrived at, nor the profit to the community be fairly stated.

East Coast coal. The output of the coal mines in the Canterbury District, as received into trucks during the year ending the 31st March, 1883, was 23,209 tons. This quantity is likely to increase rather than diminish, and would materially interfere with the amount to be carried from the

West Coast; and during the grain season coal, in large quantities, will continue to come in from Newcastle to Lyttelton. Taking all these circumstances into account, the Commission arrived at the opinion that a traffic in coal of 70,000 tons and 15,000,000 feet of timber annually, on completion of the line, is all that can fairly be anticipated.

Newcastle coal.

Passengers.

The passenger traffic undoubtedly would increase enormously, in consequence of the cheapness and expedition of railway transit. Most likely cheaper and readier communication with the other portions of the colony would tend to increase the population and cheapen the necessaries of life, and thus enable the various resources of the West Coast to be developed, which now are dormant, from the expense of living and consequent necessarily high rate of wages. The present number of passengers by coach is about 800 during the year, but no estimate can be based on those figures. By the railway returns, it appears that the number of passengers travelling on the Greymouth Railway in the year ending 31st March, 1881, was 35,936, being a decrease of about 8,000, or nearlyone-fourth, on the preceding year; while, in 1882, the number was 34,506—a further decrease of 1,500. These figures, while showing how fluctuating is the traffic on that line, and how difficult it is to arrive at a just conclusion of what may be looked for, point to the fact that a large number of people are travelling locally, and would swell the returns from that source.

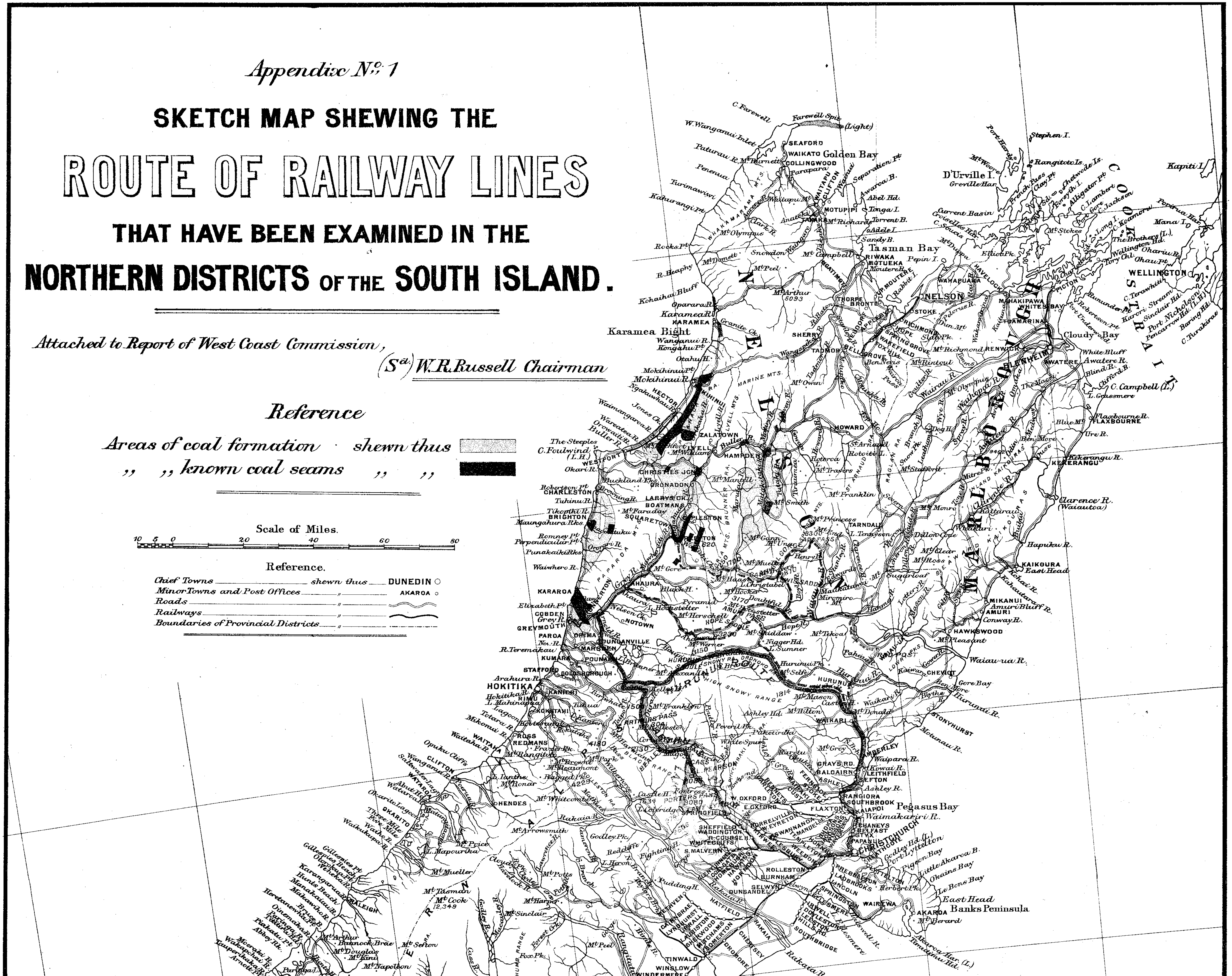
The Traffic Manager, Mr. F. Back, stated, in evidence, that the daily bookings between Christchurch and Dunedin and Dunedin and Christchurch during the last six months were, respectively, only £14 9s. 6d. and £16 16s. 4d. per diem, from an average of fourteen passengers, though the population surrounding the termini is large. Between Lyttelton and Dunedin fine steamers are running with punctuality and regularity, the distance being such that, embarking in the evening at either place, the passenger arrives early enough for business the following morning at his destination. Dunedin and Christchurch being each centres of considerable importance, passengers naturally gravitate from all intermediate stations to the nearest of them, and business necessitates but rarely any journey from one to the other. This probably accounts for the fact that the business on the line has not increased as much as was expected. Between the termini of the proposed line, however, circumstances are quite dissimilar. The harbours are so bad, the steamers so small, and the distances so great that passengers would never go by them to any place on the east coast of the Middle Island, and probably those going to ports in the North Island would usually prefer the expedition and comfort to be obtained by the larger steamers sailing out of Lyttelton. Combining all these reasons, we have assumed that the passenger traffic, though at present so insignificant, would be of the yearly value of £10,000, and would increase as trade and community of interests between the two coasts expand. In calculating the prospective traffic, we have assumed that there is no money available for the immediate commencement of the line; and, even if the necessary funds were at disposal for the purpose, the line could not be commenced until a careful working survey had first been made, which would consume at least twelve months. It would then take four years to complete the line, even supposing it was commenced simultaneously on several different sections; our estimate, therefore, of receipts, traffic, &c., apply to five years hence.

Indirect benefits.

The benefit to be derived by the colony, as a whole, from the connection of the East and West Coasts by railway, apart from the commercial and other merits attaching to the construction of any particular line, is a matter demanding due consideration, and the Commissioners can imagine a state of things which might justify the construction of a line irrespective of the direct financial return ordinarily demanded from an investment; but there does not appear to us any monopoly of the trade in either coal or timber, or any other circumstances to render it necessary for produce to be carried over the proposed line at a lower rate than such as will pay at the present wear and tear, maintenance, wages, salaries, and a fair percentage on the capital expended on its construction, and full interest in the immediate future. It would be manifestly unfair to provide the community settled round Christchurch with cheap coal and timber at the cost of the taxpayer living elsewhere, and unsound policy to interfere with industries already in full operation by bringing others into existence through the aid of carriage unremunerative to the State.

Survey of lands.

That at a future date the coal and timber of the West Coast, if nearly as extensive as we were led to suppose, must become of enormous value to the country we feel assured; but it would be the height of unwisdom to commence any line depending entirely for its success on these products until reliable information has been obtained as to their area and available quantity. And, in addition to recommending that a detail survey of the Arthur's Pass route be made, we would urge most strongly that a survey of the forest lands and coal-bearing country



Lithographed at the General Survey Office, Wellington, N.Z. July, 1883.

of the West Coast be also made, with a view to determining their extent and probable duration, and the more valuable areas being permanently reserved from sale; so that, instead of falling into the hands of speculators, they may become a source of wealth to the colony, as well as revenue for the railway. Reserves.

After considering the whole of the foregoing conclusions and opinions, we most respectfully report to your Excellency that, on account of its being the shortest line between the centres of production and demand, we recommend the route by Arthur's Pass as the most suitable; but the most sanguine view the Commission can take is, that there is no prospect of the traffic paying more than working expenses on the completion of any of the alternative lines. No commensurate indirect results can be anticipated from the expenditure of so large a sum as would be necessary for its construction, and not for as many as ten years or more can full interest on the cost be hoped for. Recommendations.

And we subscribe ourselves, with the greatest respect,

Your Excellency's most humble servants,

W. R. Russell.
James G. Wilson.
C. Napier Bell, M. Inst. C.E.

27th June, 1883.

Note.—The map accompanying the report not being ready, it will be circulated separately as soon as it is lithographed.

COMMISSION.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith: To our trusty and loving subjects, Captain William Russell Russell, of Hastings, in the Colony of New Zealand; James Glenny Wilson, of Bull's, in the said colony, Esquire, M.H.R.; Charles Napier Bell, of Christchurch, in the said colony, Esquire, M.I.C.E.

WHEREAS the Governor of our said colony hath, by and with the advice and consent of the Executive Council thereof, deemed it expedient that a Commission should forthwith be issued for the purposes and in the manner hereinafter set forth: Now, therefore, know ye that we, reposing great trust and confidence in your zeal, knowledge, and ability, do by these presents constitute and appoint you, the said

Captain WILLIAM RUSSELL RUSSELL,
JAMES GLENNY WILSON, and
CHARLES NAPIER BELL,

to be our Commissioners for the purpose of making inquiry into the probable cost and economical or commercial value and other merits of the several lines specified in the Schedule to this Commission, or any other lines proposed for the connection of the Provincial District of Canterbury with the west coast of the Middle Island, and also for the purpose of making inquiry into the mineral and other resources of the districts or lands which the several lines would traverse; it being the intention of these presents that you shall make inquiry in the most ample manner into all the facts and circumstances necessary and proper to be considered in determining the best line to connect Canterbury with the West Coast.

And, for the better enabling you to carry these presents into effect, we do authorize and empower you, or any two of you, to make and conduct any inquiry under these presents at such place or places in the said colony as you may deem expedient, and to call before you such persons or person as you may judge necessary by whom you may be better informed of the matters herein submitted for your consideration, and also to call for and examine all such books, documents, papers, maps, plans, accounts, or records as you shall judge likely to afford you the fullest information on the subject of this our Commission, and to inquire of and concerning the premises by all other lawful ways and means whatsoever. And our further will and pleasure is that you, or any two of you, do report to us, under your hands and seals (with as little delay as may be consistent with a due discharge of the duties hereby imposed upon you), your opinion on the several matters herein submitted for your consideration, with power to certify unto us from time to time your several proceedings in respect of any of the matters aforesaid, if it may seem expedient for you so to do. And we do further declare that this our Commission shall continue in full force and virtue, and that you, our said Commissioners, or any two of you, shall and may from time to time proceed in the execution thereof and of every matter and thing therein contained, although the same be not continued from time to time by adjournment. In testimony whereof we have caused these our letters to be made patent, and the Seal of the said Colony to be hereunto affixed.

Witness our trusty and well-beloved Sir William Francis Drummond Jervois, Governor in and over Her Majesty's Colony of New Zealand and its Dependencies; and issued under the Seal of the said Colony, at Wellington, this second day of April, in the year of our Lord one thousand eight hundred and eighty-three.

(L.S.) WM. F. DRUMMOND JERVOIS,
Governor.

Issued in Executive Council.

FORSTER GORING,
Clerk of the Executive Council.

SCHEDULE.

1. Reefton Line.—Brunnerton to Hanmer Plains *viâ* Reefton, Cannibal Gorge, and Ada Saddle.
2. Reefton Line.—Brunnerton to Hanmer Plains *viâ* Reefton, Cannibal Gorge, and Lewis Saddle.
3. Kiwi Line.—Brunnerton to Hurunui *viâ* Cannibal Gorge and Fowler's Pass, and by Lewis, Boyle, Hope, and Kiwi Rivers, and Lake Sumner.
4. Hanmer Plains Line.—Brunnerton to Hanmer Plains *viâ* Cannibal Gorge and Fowler's Pass, by Lewis, Boyle, and Waiau Rivers.
5. Kiwi Line.—Brunnerton to Hurunui *viâ* Hope Saddle and Ahaura, Tutaekuri, Hope, and Kiwi Rivers to Lake Sumner.
6. Hanmer Plains Line.—Brunnerton to Hanmer Plains *viâ* Hope Saddle, by Ahaura, Tutaekuri, Hope, and Wairau Rivers.
7. Lake Brunner Line.—Brunnerton to Hurunui by Arnold River, Lake Brunner, and Teremakau and Hurunui Rivers.
8. Kumara Line.—Brunnerton to Hurunui *viâ* Greymouth and Sea Beach to Teremakau River, thence by Kumara and Teremakau and Hurunui Rivers.
9. Lake Brunner Line.—Brunnerton to Waddington *viâ* Arnold River, Lake Brunner, Teremakau River, Taipo River, Waimakariri River, Goldney's Saddle, and Waimakariri River.
10. Kumara Line.—Brunnerton to Waddington *viâ* Greymouth, Sea Beach to Teremakau, Teremakau and Taipo Rivers, Waimakariri River, Goldney's Saddle, and Waimakariri River
11. Lake Brunner Line.—Brunnerton to Waddington *viâ* Arnold River, Lake Brunner, Teremakau, Otira, Bealey, and Waimakariri Rivers, Goldney's Saddle, and Waimakariri River.

12. Kumara Line.—Brunnerton to Waddington *viâ* Greymouth, Sea Beach to Teremakau, Teremakau, Otira, Bealey, and Waimakariri Rivers to Goldney's Saddle, and Waimakariri River.

13. Whitcombe River Line.—Brunnerton to White Cliffs *viâ* Greymouth, Hokitika, Lake Mahinapua, Hokitika River to Whitcombe River, Whitcombe Pass, Louper's Stream, Rakaia River, Lake Coleridge, and Acheron River.

14. Mathias Saddle Line —Brunnerton to White Cliffs *viâ* Greymouth, Hokitika, Lake Mahinapua, Hokitika River to Whitcombe River, up Whitcombe River to junction with right-hand branch from Glacier; thence to Mathias River and Rakaia River, Lake Coleridge, and Acheron River,

As these routes are described more in detail in the tabular statement dated January, 1883, attached hereto.

MINUTES OF PROCEEDINGS.

CHRISTCHURCH, TUESDAY, 24TH APRIL, 1883.

THE Commission met at the Government Buildings, Cathedral Square, at 2·30 p.m.

Present: C. Napier Bell, Esq., M.I.C.E., Captain Russell, and J. G. Wilson, Esq., M.H.R.

Resolved, on the motion of Mr. Wilson, seconded by Mr. Bell, That Captain Russell act as Chairman.

The Secretary and shorthand-writer to the Commission (Mr. J. Grattan Grey) read the Commission, bearing the Seal of the Colony, from the *New Zealand Gazette* of the 12th April, 1883.

The Secretary was instructed to write to Messrs. W. Chrystall and E. Dobson, C.E, requesting their attendance on the 25th April, at 11 a.m.

The Secretary was also instructed to apply to Mr. J. H. Baker, Chief Surveyor, for maps for the use of the Commission.

The Commission adjourned until next day at 11 a.m.

WEDNESDAY, 25TH APRIL, 1883.

The Commission met, pursuant to adjournment, at 11 a.m.

Present: Captain Russell (Chairman), C. Napier Bell, Esq., C.E., and J. G. Wilson, Esq., M.H.R.

Messrs. W. Chrystall, E. Dobson, and J. Inglis were in attendance, and gave evidence.

The Secretary was instructed to summon Mr. Frederick Back, Traffic Manager, to give evidence on the following day.

The Commission adjourned until next day at 11 a.m.

THURSDAY, 26TH APRIL, 1883.

The Commission met, pursuant to adjournment, at 11 a.m.

Present: Captain Russell (Chairman), C. Napier Bell, Esq., C.E., and J. G. Wilson, Esq., M.H.R.

Mr. C. Y. O'Connor was in attendance.

It was resolved to postpone taking Mr. O'Connor's evidence until the return of the Commission to Christchurch from the West Coast.

Mr. Frederick Back, Traffic Manager, Christchurch, was in attendance, and gave evidence.

The Commission resolved to proceed to Hokitika on the following day.

The Commission then adjourned.

HOKITIKA, MONDAY, 30TH APRIL, 1883.

The Commission met at the County Council Chambers, Hokitika, at 10 a.m.

Present: Captain Russell (Chairman), C. Napier Bell, Esq., C.E., and J. G. Wilson, Esq., M.H.R.,

A deputation representing the County Council, Borough Council, Harbour Board, and Chamber of Commerce waited on the Commission and explained their views with reference to railway connection between the East and West Coasts

The deputation having withdrawn, the Commission proceeded to take evidence.

Messrs. Bonar, M.L.C., H. L. Robinson, Virtue, Malfroy, Hardy, and Mueller (Chief Surveyor) gave evidence.

The Commission then decided to proceed to Greymouth *viâ* Kumara.

The Commission adjourned accordingly.

KUMARA, MONDAY, 30TH APRIL, 1883.

The Commission, immediately on arrival from Hokitika, met at the Town Hall, Kumara, at 5.30 p.m.

Present: Captain Russell (Chairman), C. Napier Bell, Esq., C.E., and J. G. Wilson, Esq., M.H.R.

A deputation waited on the Commission, and the Mayor of Kumara explained the views of the deputation with reference to the proposed railway connection between the East and West Coasts, their views being in favour of the Arthur's Pass route.

Mr. Seddon, M.H.R., also addressed the Commission, agreeing with the Mayor that the Arthur's Pass route was the best that could be adopted.

After hearing others of the deputation to the same effect, the Commission adjourned and proceeded to Greymouth.

GREYMOUTH, TUESDAY, 1ST MAY, 1883.

The members of the Commission (accompanied by Mr. C. Y. O'Connor, Inspecting Engineer, Middle Island, and Mr. Grey, Secretary) proceeded to Brunnerton, to inspect the coal mines in that locality, and returned to Greymouth in the afternoon.

At 7.30 p.m. a deputation waited on the Commission at Gilmer's Hotel. The Mayor of Greymouth and Messrs. M. Kennedy, Rae, Petrie, M.H.R., Nancarrow, and Coates addressed the Commission.

The deputation having withdrawn, the Commission proceeded to take evidence.

Messrs. Kennedy and Ronayne gave evidence, after which the Commission adjourned.

WEDNESDAY, 2ND MAY, 1883.

The Commission left Greymouth at 4 o'clock a.m. Travelled up the Grey Valley; then up No Town Creek, through Molloy's Paddock; then across Lake Brunner, and through Bruce's Paddock to Jackson's Accommodation House on the Christchurch Road. Distance, 50 miles.

THURSDAY, 3RD MAY, 1883.

The Commission left Jackson's at 7 o'clock a.m., and travelled to the foot of the Hurunui Saddle. Camped there for the night.

FRIDAY, 4TH MAY, 1883.

The Commission left camp at 8 o'clock a.m., and travelled over the Hurunui Saddle and down the Hurunui to Lake Sumner, where the Commission stayed for the night at Lake Station.

SATURDAY, 5TH MAY, 1883.

The Commission started at 7 o'clock a.m., and rode down to Hurunui Township. Distance, 45 miles.

SUNDAY, 6TH MAY, 1883.

The Commission drove from the Hurunui Township to the Upper Waiau Ferry.

MONDAY, 7TH MAY, 1883.

The Commission rode from Upper Waiau Ferry (*viâ* the Count's Station) to the junction of the Boyle and Doubtful Rivers. Camped there for the night.

TUESDAY, 8TH MAY, 1883.

Struck camp at 4 a.m. The party divided—Mr. Bell, with Mr. Martin and guide, starting, *viâ* Cannibal Gorge, for Reefton; and Captain Russell and Mr. Wilson, with Mr. O'Connor, *viâ* the Amuri Saddle and Ahaura, for same place. Captain Russell and party made Mason's, in the Ahaura Valley, the first night. Mr. Bell's party passed through Cannibal Gorge.

WEDNESDAY, 9TH MAY, 1883.

Captain Russell and party arrived at Reefton at 7 p.m. Mr. Bell's party reached a point on the Inangahua River, near Reefton, at 4 p.m.

REEFTON, THURSDAY, 10TH MAY, 1883.

Mr. Bell and party arrived at Reefton at noon.

The Commission received a deputation, consisting of the Inangahua County Council. After hearing the views of the deputation, the Commission proceeded to take evidence.

Messrs. P. Brennan and W. G. Collings were examined.

In the afternoon the Commission proceeded to the coal and gold mines in the neighbourhood.

At 7.30 p.m. further evidence was taken, the witnesses examined being Messrs. G. Thornton, C.E., J. A. Montgomerie, H. A. Gordon, Charles Macquarie, Joseph Wylde, Hugh Graham, James Connolly, R. J. Johnston, and John Trennery.

FRIDAY, 11TH MAY, 1883.

The Commission left Reefton for Westport at 7.30 a.m., arriving at Westport at 7 p.m.

WESTPORT, SATURDAY, 12TH MAY, 1883.

The Commission received a deputation at Gilmer's Hotel, at 11 a.m.; and, after hearing their views, proceeded to take evidence. The following witnesses were examined: Mr. W. R. Haselden (Mayor), Captain Leach, Messrs. James Power, Thomas Bailie, and R. A. Young.

In the afternoon the Commission proceeded to examine the inclines of the Westport coal mines.

The Commission proceeded on board the steamer "Kennedy," and left Westport for Greymouth at 2 a.m., arriving at Greymouth at 1 p.m. same day.

GREYMOUTH, MONDAY, 14TH MAY, 1883.

The Commission received a deputation at Gilmer's Hotel at 11 a.m. The deputation consisted of the Grey County Council; Mr. Guinness, the Chairman, being present.

The deputation having explained their views and withdrawn, Mr. F. J. Gleeson gave evidence.

At 1 p.m. the Commission started for Kumara, thence next day to the Bealey, and the following day to Christchurch.

CHRISTCHURCH, THURSDAY, 17TH MAY, 1883.

The Commission met at the Government Buildings at 10 a.m.
Present: All the Commissioners.
Mr. Alison D. Smith gave evidence.
The Commission proceeded to read papers and reports, and to examine plans, &c.

DUNEDIN, TUESDAY, 22ND MAY, 1883.

The Commission met in the Minister's room at 10.30 a.m.
Present: All the Commissioners.
Mr. W. N. Blair, Engineer in Charge, Middle Island, gave evidence.
The Commission read papers and reports, and examined plans, &c., and were also occupied in the same manner on the following day.

CHRISTCHURCH, FRIDAY, 25TH MAY, 1883.

The Commission met at the Government Buildings at 11 a.m.
Present: All the Commissioners.
A deputation from the Canterbury Railway League was received. The views of the deputation were stated by Messrs. W. Chrystall, chairman of the Railway League; A. G. Howland, chairman of the Local Industries Association; T. Pavitt, timber merchant; and D. Reese, builder.
The deputation having withdrawn, Messrs. T. Pavitt and D. Reese gave evidence.

MONDAY, 28TH MAY, 1883.

The Commission met at 10.30 a.m.
Present: All the Commissioners.
Mr. John Dickenson, Locomotive Foreman, Christchurch, gave evidence.
The Commission read papers and reports, and examined maps and plans on this and the three following days.

WELLINGTON, FRIDAY, 1ST JUNE, 1883.

The Commission, on arrival from the South, met at the Parliament Buildings at 11 a.m.
Present: Captain Russell (Chairman), and J. G. Wilson, Esq., M.H.R.
It was arranged that Mr. Bell (who had remained at Christchurch) should come to Wellington on the 8th instant, with a view to meeting Captain Russell, in order to draw up the report of the Commission for presentation to His Excellency the Governor.

MONDAY, 11TH JUNE, 1883.

The Commission met at the Parliament Buildings at 10 a.m.
Present: Captain Russell (Chairman), and C. Napier Bell, Esq., M.I.C.E.
Business: Drawing up report. The Commission was also occupied in the same way on the 12th, 13th, 14th, 15th, and 16th June.
On the 16th, the report was ordered to be printed.

MONDAY, 18TH JUNE, 1883.

The Commission met at the Parliament Buildings at 10 a.m.
Present: Captain Russell (Chairman), and C. Napier Bell, Esq., M.I.C.E.
The Commissioners were occupied in correcting the proof copy of their report.
The Secretary was instructed to forward the evidence to the Government Printer.
The Commission adjourned until next day, at 10 a.m.

TUESDAY, 19TH JUNE, 1883.

The Commission met at the Parliament Buildings at 10 a.m.
Present: Captain Russell (Chairman), and C. Napier Bell, Esq., M.I.C.E.
The Commission was engaged in correcting and revising report.
The Secretary was instructed to superintend the printing of the minutes of proceedings, minutes of evidence, appendix, &c.

MINUTES OF EVIDENCE.

CHRISTCHURCH, WEDNESDAY, 25TH APRIL, 1883.

Mr. W. CHRYSTALL, Merchant, and Chairman of the Railway League, examined.

1. *The Chairman.*] If you will give us a statement of what you have done up to this time, and the special object you have in view, you will be able to put concisely before us more information than we could extract by questions. Will you please do that?—I am conversant with the subject from one point of view. I have not been over the routes, and have simply gathered information as to the necessity of making a railway rather than as to what its cost will be. We have got some reports that we have made up from time to time. If you want anything more than that, I shall be pleased to give it.

2. Your position is chairman of the Railway League?—Yes.

3. And may I ask what the views of the Railway League are? Are you in favour of a particular line, or simply the desirability of connection with the West Coast?—Yes. We have decided not to advocate any particular line until the Commission has sent in its report. Some of the members were disposed to favour one route and some another; and, rather than have any conflict of feeling, we determined on the necessity of connection between Canterbury and the West Coast, and decided to wait until after the Commission had sent in its report before deciding which line the League would advocate. This is the last report we brought up, dated the 21st March, 1883, and presented to a general meeting of the League:—

Your Committee has now to report as follows with respect to its action since the formation of the League on 6th November last:—

Proposed Extension, Middle Island Trunk Line.—The first resolution of the League was to the effect that any expenditure on the proposed extension to Blenheim by way of the East Coast would be a waste of public money and detrimental to the interests of Canterbury and the colony at large. In pursuance of this unanimous conclusion of the League, your Committee has in the meantime adopted every likely means with the view of inducing the Government to abandon the proposed extension. When the Commissioners that were appointed by the Government to report on the advisableness or otherwise of the scheme were in Christchurch, your Committee appointed a deputation to wait upon them, for the purpose of urging upon their consideration the many important reasons against the construction of any portion of the proposed line to Blenheim. Deputations from the Committee also waited successively upon the Hon. the Minister for Public Works and the Hon. the Premier; and your Committee has some reason to hope that the arguments which its delegates advanced at these interviews, together with its action in other ways, will have the effect of moving the Government in the direction of finally abandoning the proposed East Coast line. If only the abandonment of this manifestly unwise extension of the Middle Island trunk line should be accomplished by the operations of the League, a most important public benefit will have been secured. The Committee has been informed by the Premier that the Commissioners had completed their report, and that the same will be made public at an early date. Under this head your Committee would only add that, the more the features of the route and the surrounding facts are investigated and considered, the more does it become apparent that any expenditure upon any part of the proposed extension by way of the East Coast would be, in the words of the resolution of the League, "a waste of public money, and a work detrimental both to the interests of Canterbury and the Colony."

Connection between Canterbury and the West Coast.—Your Committee has devoted a large amount of time to the consideration of this question, and to the carrying-out of the unanimous resolution of the League affirming the desirableness of the said connection being made as soon as possible. A report setting forth numerous important grounds that call for the construction of this line, and embodying a detailed estimate of traffic receipts, was presented to the Commissioners at the interview before referred to, and at the succeeding interviews with the Hon. the Minister for Public Works and the Hon. the Premier similar views were advanced. In response to the repeated representations made by your Committee in these ways, as well as by direct correspondence, the Government at first proposed that the Commissioners for the Middle Island trunk line (who had already completed their travels and investigations) should incidentally furnish the Government with information on the subject. But your Committee at once took exception to such an incidental and necessarily incomplete report as this promised to be, in view, more particularly, of the fact that the Commissioners had not had the opportunity, as your Committee concluded, of gathering the requisite data to enable them to do justice to the question. The Government therefore ultimately promised unconditionally, in a letter dated the 20th December, "that full inquiry as to the West Coast routes would be made either by the existing Commission or by another." At the interview with the Hon. the Premier on the 28th February he, however, began by stating that the Government intended only to collect information from surveyors and other sources; but, the deputation having respectfully insisted that the promise made in the letter of the 20th December should be literally fulfilled, the Premier, in the end, assured the deputation that this would be done; and at his request the Committee furnished him with the following outline of the duties of the promised Commission: 1. That the said Commission should be appointed for the purpose of making inquiry into the comparative probable cost and economical or commercial value and other merits of the several lines specified in the accompanying tabular statement, dated January, 1883, or any other line proposed for the connection of the Provincial District of Canterbury with the West Coast of the Middle Island; and also for making inquiry into the mineral and other resources of the districts or lands which the respective proposed lines would traverse, it being the desire of this League that the said Commission should make inquiry in the most ample and complete manner into all the facts and circumstances necessary and proper to be considered in determining the best line to connect Canterbury with the West Coast. (2.) That, in the opinion of this Committee, if the Commissioners who reported on the proposed extension of the Middle Island trunk line northwards by the East Coast and Tophouse routes could be induced to undertake the work, it is desirable that they should be appointed to make the promised report on the several proposed lines to connect Canterbury with the West Coast.

Routes.—After full consideration, the Committee has decided that it will not be advisable to take any action in the direction of reporting to the League on the comparative merits of the several routes, so far as they are known, until after the promised Commission shall have published its report. Survey parties, appointed by the Government, are now at work on one of the proposed routes. The Committee has not yet received any intimation from the Government as to the appointment of the Commission.

Correspondence.—In a circular letter, dated the 7th December last, the Committee addressed all the local bodies in Canterbury and the electoral districts of Westland and Nelson, suggesting that they should form branch leagues, and urging upon their attention the importance of taking steps to secure the desired connection by railway with the West Coast, and at the same time to use every endeavour to induce the Government to abandon the palpably unwise proposal to extend the Middle Island grand trunk line northwards by way of the East Coast.

Parliamentary Influence.—The various local bodies referred to were also invited to bring, in a constitutional manner, the necessary influence to bear upon their respective representatives, with the view of securing the due consideration in Parliament of the claims and merits of a railway to connect Canterbury with the West Coast. Your Committee regard it as of special importance that the Canterbury constituencies should confer and have a clear

understanding with their representatives as to their action in the House in connection with this matter as well as concerning the matter of railway extension generally as affecting Canterbury; and, with the object of ventilating these questions more thoroughly, your Committee would propose that the League should invite the various representatives of Canterbury and West Coast constituencies to a conference to be held in Christchurch before the next session of Parliament.

Incidental Expenses.—Subscriptions were invited in various ways for the purpose of providing the necessary funds for defraying the expenses incidental to the carrying into effect of the objects of the League. The total receipts in respect of such subscriptions aggregate £107 17s., while the expenditure to date amounts to £25 3s. 1d., leaving a balance of £82 13s. 11d. in hand.

General.

In view of the existing limited population, and the financial position of the colony, your Committee is of opinion that there is nothing involved in the idea of simply connecting the two ends of the colony that should at the present stage merit any consideration by the Legislature. The carrying-out of such an idea, by any route, is clearly premature and unwarrantable from every economical point of view. On the other hand, the construction of a railway to connect Canterbury with the West Coast is not only a work which, according to the eminent engineer, Mr. Foy, should take precedence of any line having simply for its object the connection of the two ends of the colony, but that it should, on its own particular merits, be constructed at the earliest possible moment. The special conditions of population and settlement on the East and West Coasts, and the variety and importance of the mineral and other wealth that awaits development in the districts concerned, in the opinion of your Committee urgently call for the earnest attention of the Legislature to the matter of railway communication between Canterbury and the West Coast; while the question of extending the Middle Island trunk line northwards should in the meantime be left entirely in abeyance. The Committee would reproduce here the figures of its report before referred to, representing the estimated annual revenue from traffic upon a railway that would connect Canterbury with the West Coast, and which might be fairly expected to accrue within the next three years, having regard to the present consumption of the various articles:—

Timber—12,000,000 feet, at 4s. per 100 feet	£24,000
Coal—75,000 tons, at 12s. 6d per ton	46,875
Building stone	3,000
Merchandise and agricultural produce—20,000 tons, at average rate of 30s.	30,000
Parcels	1,500
Sheep and pigs	2,000
Cattle	2,000
Passengers	25,000
Total	£134,375

This estimate is based on an average distance of 176 miles.

Your Committee would endeavour to impress upon members the urgent necessity for continued vigorous and persevering effort in order to accomplish the great objects of the League—namely, the abandonment of the East Coast line, and the construction of whichever may be proved to be the best line to connect Canterbury with the West Coast. In representing the claims which this latter work has upon the favourable consideration of the Legislature, it has been justly said that there is a large amount due to Canterbury in respect of its share of the expenditure of loan money. The amount thus due was stated in a recent return to be about £1,500,000, and at the interview on the 28th ultimo, the Premier admitted that at the present time at least half of that amount was due to Canterbury. Moreover, by a return that was laid on the table of the House on 29th August last, the Christchurch section of railway is, or was then, yielding a net profit of about 3 per cent., or about £47,000 per annum, above working expenses and interest on cost of construction. This considerable sum, which has at present to be applied to provide interest on unremunerative railways in the North Island and in other parts of the colony, would probably represent about 3 per cent. on the cost of the proposed railway to the West Coast; and the comparatively large revenue that is thus being raised in the Canterbury district your Committee would adduce as another reason why the interests of Canterbury in respect of the construction of a railway to the West Coast cannot in justice be any longer ignored by the Legislature.

In conclusion, your Committee would reiterate in brief the main objects which in its opinion the operations of the League should continue to be directed to secure—namely, the abandonment of the proposed extension by way of the East Coast, and the construction at the earliest possible moment of the best line to connect Canterbury with the West Coast.

By order of the Committee. W. CHRYSTALL, Chairman.

4. You say you have confined your attention principally to the traffic there would be on the line?—Yes.

5. Can you tell me how that has been arrived at?—We had information partly from the other side, and partly by taking the imports of coal here, and the consumption of timber. That was prepared for the Commission which inquired into the East Coast Railway. Here is a report we handed to them while here. We propose to give you more information in the direction you want, because it refers to the resources of the West Coast, and so on.

6. What I want to ascertain is whether any of this estimated produce travels over the line already in existence, or whether it is new traffic. There is a line part of the way, is there not?—It would work in with the system already in existence.

6A. Does any of this traffic go over that line?—The estimate there would simply apply to a railway from Reefton to Christchurch.

7. *Mr. Bell.*] And of that about fifty miles is already made? You would either go by Springfield or the Hurunui?—Yes.

8. *The Chairman.*] Then the fifty miles already in existence is included in that estimate?—Yes. In the matter of coal, I might say that the starting of these direct steamers will cause an additional consumption at Lyttelton. They will be going to Lyttelton direct in a short time.

9. *Mr. Bell.*] In coming here, it is their last port?—They come out direct to Wellington, and go alternately to Lyttelton and Port Chalmers to load Home.

10. Then, presumably, they would take the bulk of their coal on leaving?—Yes. They have contracts at other places for frozen meat.

11. *The Chairman.*] Then the question of sea freight comes very much into consideration. Have you any idea what the cost per hundred feet of landing timber at Lyttelton by sea is?—I could not answer that question without going into the data from the timber merchants.

12. *Mr Bell.*] Is that 12,000,000 feet the whole of the timber used in the province?—Yes; 12,000,000 feet per annum. We made up that partly from the Chamber of Commerce returns. I think that is rather in excess. We estimated the increase that would take place in a period of three years. Last year, the timber imported to Lyttelton was 20,355,000 feet seabord, besides sleepers, laths, and shingles: that includes Van Dieman's Land timber, and kauri from Auckland and Oregon timber.

There is not much Oregon timber imported now. The total value of the 20,000,000 feet was £86,000. That was the declared value at the Customs.

13. *Mr. Wilson.*] What is the general average value of timber here?—An average value of 14s. per hundred.

14. *The Chairman.*] The Commission may assume that it will take 4s. per hundred feet to land it by railway. You imagine there will be 12,000,000 feet to come by the railway, exclusive of freight by sea?—Yes, that is what we assume.

15. Do you imagine the railway freight will be able to compete with the freight by sea?—They will get the timber before going to Reefton. You must always take into account that there is a considerable expense between Lyttelton and Christchurch—wharfage, sorting, and so on.

16. In the matter of coal, do you know what proportion of this 75,000 tons would be used in Christchurch?—It would be very difficult to say that exactly. By going into the matter we could tell you how much is imported. The imports at Lyttelton are 10,900 tons from New Zealand ports. Then there is a large import of Australian coal besides that. That estimate of timber would not include Van Diemen's Land; it is simply from New Zealand ports. In 1882, there was an import of 5,895 tons from Australia, and 10,000 tons from New Zealand ports. In addition to that, there is of course a large consumption from Springfield and the other mines in Canterbury. The quantity of coal carried from the Springfield Colliery in 1881 was 12,448 tons. 75,000 tons seems a very large quantity. 21,728 tons is carried on the railways from the Canterbury mines.

17. Do you know what the freight is from any of these mines to Christchurch?—You will find that from the tariff. I do not know what the existing tariff is.

18. Are you able to give us any information as to the relative value of the West Coast coal for steam purposes?—The West Coast coal is best, but I cannot tell the percentages.

19. Supposing this coal to be of the very best quality, is it of so superior a quality that it would cut out all these other mines?—That is what they think it would do.

20. Do you know where we could get information as to the relative values of coal for steam purposes?—I think the railway and the Harbour Board had some tests made. There is coal of the same quality at Reefton. It would be very much better coal than we get in Canterbury, and would be largely used for steam purposes.

21. Can you tell us what the freight of coal is from the West Coast to Lyttelton by sea?—I could not tell that exactly. I could tell you by referring to it. The freight varies very much, but I could not give you the exact rate.

22. *Mr. Wilson.*] What is imported coal worth?—Ships are coming with it as ballast, and selling it at all prices. Even Newcastle is selling at £1 a ton, and the freight is 10s.; so that it only leaves 10s. to represent the cost.

23. Who does most of the carrying trade in coal?—Cuff and Graham could give you information on that subject.

24. Is there any monopoly in the trade?—No. I was going to suggest that it might be well to examine Mr. John Inglis, who was one of the Commissioners appointed by the Chamber of Commerce to go over the route to Reefton. We selected Messrs. Inglis, McIlraith, and Beaumont, and they travelled over the route. Mr. Inglis could give evidence as to all the resources of the West Coast. John Tinline, William Atkinson, and William Hossack could also give evidence. They could tell you more particularly about the nature of the country at this end—the northern part of Canterbury. They could not tell you the features of a line to go by Arthur's Pass. The information you would get from them would be as regards a line going by the Hurunui. They were all examined as to the making of a deflection of the Middle Island trunk line towards the West Coast. Mr. Tinline could tell you a great deal about the nature of the country.

25. *The Chairman.*] Before you leave the question of coal, has it been calculated here what the effect upon the sea traffic would be by the opening up of this line—whether it would bring down sea freights considerably?—It would bring them down considerably. We calculated that, if this railway were opened, the greater portion of the coal used in Christchurch would be taken from the West Coast. You must always take into account the large expense between Lyttelton and Christchurch. I think it would be well to examine Mr. Back, the manager of railways here, as to the charges between Lyttelton and Christchurch, and between the Canterbury mines and Christchurch. Mr. Back could tell you how far the consumption is taken from these mines, or whether it goes further south.

26. *Mr. Bell.*] Then your estimate of 12s. 6d. for 176 miles is about 1½d per ton per mile?—Yes, I suppose it is. These figures were supplied to me by the Chamber of Commerce and the coal merchants.

27. *The Chairman.*] Another question is, whether the grades would enable them to carry coal at the usual rates?—I could not tell that, not being an expert; but Mr. Back can tell you all about it. If there is any specific question you would like to ask, I could get the precise data, if you are going to be here for any length of time.

28. Has any estimate been come to as to the effect of through traffic on the gold industry?—What they always say is that, if they had a railway, gold-mining would be carried on to a much larger extent. We have not taken into account the very large increase of consumption that would take place in consequence of the increased prosecution of the gold-mining industry.

29. How is this estimate of merchandise and passengers arrived at?—We based that on what the commission appointed by the Chamber of Commerce did to some extent. You would get that information from Mr. Inglis. They have taken into account the quantity of imports of the West Coast.

30. *Mr. Bell.*] Then, the imports at the West Coast are merchandise sea-going?—Yes; they bring all their grain, breadstuffs, and provisions by sea from various ports, and we suppose it will all come to Christchurch.

31. Have you any means of knowing the population that would be served by such a line?—No.

The population does not extend over a very large area. It would depend where you would tap the country. If there was a railway from here to Reefton, it would be continued down to Greymouth and Hokitika. There is a line authorized from Greymouth to some point further south, but not so far as Hokitika.

32. *The Chairman.*] Then would the merchandise and passenger traffic be affected by any route we might select?—I think it would. Speaking for myself personally, I think the route by Arthur's Pass would carry the most passengers and merchandise, and is the shortest line. I simply give that as my own personal opinion. I am not conversant with the features of the country. If the railway went by Arthur's Pass, I believe it would have to go north of Hokitika, about Brunnerton. The company wanted to go to Reefton, but the association I represent does not advocate any particular route.

33. *Mr. Bell.*] Do they advocate any particular terminus?—I believe if you were taking a vote on the question, it would be somewhere about Brunner or Greymouth. Mr. O'Connor made a calculation of what the capitalized value would be of £510,000, taking into account what would be saved in mileage. He was then reporting on the matter at the request of this company. Taking into account the greater cost of the Arthur's Pass route per mile, the amount saved on the whole would be £510,000 capitalized value. That was opposed by Messrs. Thornton and Brown, but I think Mr. O'Connor's report is more reliable. Messrs. Thornton and Brown were advocating specially the Ada Pass line. Mr. Weston has taken a very large amount of interest in the railway, as far as the proposition to go by Reefton is concerned. I think he is rather in favour of that line.

34. *The Chairman.*] As to merchandise, I presume the main trade of the West Coast is done with Melbourne?—Yes, as regards the imported articles, such as groceries. But within the last two years there has been a considerable change. The Union Company have been fostering the trade with Dunedin, and have arrangements for transhipping at Wellington. It will be found, I think, that a large portion of the Melbourne trade goes to Dunedin, and all their breadstuffs come from this quarter.

35. Taking either Dunedin or Melbourne as places from which large imports are made on the West Coast, I ask whether they would not be likely to place merchandise at less than £1 10s. a ton?—The freight from Melbourne here is £1 10s., and it would not be anything less to Hokitika. Then there is a very heavy charge at the harbours. At Hokitika it is enormous. Even then the expense is not finished—they have to carry it inland. Then, you see, a very large amount of produce taken from Canterbury would not be carried from Christchurch—they would find it at Springfield and other places; so that you must not reckon the mileage from Christchurch only. That cuts two ways. The receipts would be less, but they could compete better with other places. I find we made a comparison between West Coast and Newcastle coal. Newcastle in Christchurch is £1 10s. They actually sell by the ton at £1 15s. and £2. Then it is very largely mixed with the local article. With a railway other traffic would increase to a considerable extent. Here are papers supplied by people on the West Coast, to the commission of which Mr. Inglis was a member, as to stone, and land fit for agriculture.

36. You are not in a position to give us information as to the amount of Crown lands, or anything of that sort?—No. I think Mr. Inglis could tell you about that; but, if not, you could get it from the department.

37. These figures are based on what the traffic would be three years hence?—Yes; and taking into account the fact that these direct steamers are coming regularly.

38. These figures are not based on present population?—No; we could not say that by the present population they would be borne out. It would take three years to make the line. Carrying traffic over the present mileage, the additional cost to the department would not be very great. If you have all this coming to Waikari, it would not be very much more expense to have locomotives and carriages running on the part of the line not yet made. It is fair to say that the department would profit considerably in bringing all that traffic over the existing line. They have got stations—and locomotives running every day. In speaking of the consumption of coal, there would no doubt be a large consumption at points between Amberley and the West Coast.

39. What is the fuel used now?—Timber, to a large extent, and coals are sent up there as well.

40. *Mr. Bell.*] Does any coal from Malvern and neighbouring mines go up to the north?—I could not say. Mr. Back, manager of the railways, could tell you all about that.

The following documents were subsequently handed in by witness, and he desired that they should be received as evidence:—

T. S. Weston, Esq., M.H.R., Chairman, East and West Coast Railway Company, Christchurch.

SIR,— Christchurch, 16th January, 1882.

In accordance with the request contained in your letter of the 10th ultimo, addressed to the President of the Chamber of Commerce, we have examined the greater part of the route of the proposed East and West Coast Railway, with the view of giving an opinion on the commercial prospects of the undertaking.

We proceeded on the 16th ultimo, in company with George Thornton, Esq., C.E., to Greymouth, *viâ* Kumara; thence to Reefton and the Maruia Plains. Mr. McIlraith and Mr. Inglis were already sufficiently acquainted with the eastern side of the ranges; but on our return from the West Coast the former accompanied Mr. Beaumont in a partial exploration of that portion of the route. It is not necessary that we should give you the details of each day's work; suffice it that, besides traversing the country, we visited various gold and coal mines at Greymouth, Reefton, and Kumara, and collated information from various sources as to the capabilities of the country through which the railway is intended to pass.

We were very much impressed with the large quantity of valuable timber along the route, and the great extent of the gold and coal fields. The ranges for the most part are covered with dense birch bush of a first-class character, while on the lower levels the pines find their habitat. Some varieties of the former, which are found in large quantities, are invaluable for bridge building, railway sleepers, posts, and stakes. The pines are of first-rate quality, and will meet a demand sooner or later for house-building. The coal fields of Reefton and Greymouth are of very great extent, while the quality is admirably suited, according to locality, for household, gas, and steam purposes. The gold-mining industry is evidently only in its beginning. Alluvial workings and gold-bearing quartz reefs are to be found everywhere on the West Coast, and there are indications in various quarters of the presence of antimony and other valuable minerals. The Paparoa Mountains and many other ranges have hardly been examined, and it only requires easy com-

munication, and the consequent cheapening of the accessories of life, to insure their being properly prospected and opened out. Building stone of various kinds is also to be found in abundance. The prosecution of these industries under favourable circumstances must eventually lead to the settlement of a large population, depending in a great measure for supplies of merchandise and produce on outside markets. The only land available on the east side of the dividing range to the Ada Saddle would be second-class to inferior pastoral land for merino sheep. To the West of the Ada Saddle towards Reefton and Greymouth the land, if available for railway purposes (except the Maruia Plains), is covered, as we have already stated, by dense bush, and where cleared and sown with English grasses would only be fit for grazing stock. There might be a few patches which could be used for cropping. The Upper Maruia Plains—say, within fifteen miles of the line of railway—can only be utilized for grazing purposes. The whole of the unsold land is, we understand, a proclaimed gold field, and is not therefore available unless under arrangement with the Government; but if acquired we do not think a company could reckon upon selling it readily and settling a large population thereon. Having collected statistics and made estimates showing the goods, produce, and stock consumed on the West Coast, as well as the coal and timber imported into Lyttelton, and having carefully calculated the traffic returns on that basis, we find—assuming, as your prospectus suggests, 60 per cent. on the amount of the working expenses—that there is no reasonable hope of such an enterprise as that projected proving remunerative to the shareholders under the present Act. On the other hand, we are of opinion that the position of the Government in relation to this question is a very different one. . . . .

We are, &c.,
JOHN INGLIS.
HUGH MCILRAITH.
J. BEAUMONT.

To Captain Russell, Chairman, West Coast Railway Commission, Christchurch.

SIR,— Railway League, Christchurch, New Zealand, 25th May, 1883.

As requested by you at an interview which you were good enough to grant to a Committee of this League to-day, I have now the honour to hand you herewith a memorandum representing the approximate annual consumption of coal and timber in the Canterbury District; and I might add that, with the exception of the deliveries of coal from Canterbury mines, which are furnished by the Manager of Railways, all the figures are taken from data supplied to the Canterbury Chamber of Commerce by the Collector of Customs at Christchurch. For your further information I beg to enclose a copy of the last annual report of the Chamber of Commerce; and I need not add that I shall be pleased if I can render the Commission any additional service. The memorandum now enclosed you will doubtless kindly append to the evidence which I had the honour of giving previously.

I have, &c.,
W. CHRYSTALL,
Chairman.

Information supplied to the West Coast Railway Commission respecting Coal and Timber.

To the Chairman, West Coast Railway Commission, Christchurch.

IMPORTS at Lyttelton for the year ending the 30th June, 1882; From New South Wales (Chamber of Commerce Report, page 31), 34,300 tons; ditto (page 32), 5,389 tons; from other parts of the colony (page 30), 10,900 tons. Deliveries from Canterbury mines (23,672 tons), as per returns furnished by Manager of Canterbury Railways (Chamber of Commerce Report, page 40): Glentunnel Mine, 6,203 tons; ditto, 2,119 tons; Whitecliffs Mine, 323 tons; Springfield Mine, 12,458 tons; Kowai Pass Mine, 628 tons; Sheffield Mine, 1,941 tons. Approximate consumption per annum in the Canterbury District, 30th June, 1882, 74,711 tons.

In April, 1883, the New Zealand Shipping Company commenced to use for their direct steamers at the rate of 1,250 tons per month, at the port of Lyttelton, which would increase the total consumption in Canterbury to about 90,000 tons per annum.

In addition to the above, there is every year some quantity of coal imported direct to Timaru. The figures representing the imports at Lyttelton are supplied by the Customs at Christchurch.

Imports of timber at the port of Lyttelton for the year ending 30th June, 1882, according to figures supplied by the Customs at Christchurch:—From other parts of New Zealand (see page 30, Chamber of Commerce Report): Timber, 20,355,800 feet; laths and shingles, 327,800 feet; sleepers, 42,814 feet. Also, seven cargoes of timber from Tasmania, of which particulars were not supplied. During the last twelve or eighteen months the whole of South Canterbury, as far north as Ashburton (inclusive), has been supplied with timber from the forests in Southland, the low railway tariff having enabled the mills in that quarter to compete successfully with Christchurch importers, so far as Ashburton and places south of that are concerned.

Christchurch, 25th May, 1883. W. CHRYSTALL.

Mr. E. DOBSON, C.E., examined.

41. *Mr. Bell.*] Have you devoted any attention to the traffic on the proposed line to the West Coast?—Not at all. I am not in a position to give the slightest opinion as to what the traffic would be. I don't see any data at present to base it on.

42. Will you please show us the routes and explain them?—I have here the report that was made to the Provincial Government of Canterbury when first considering the question of making the West Coast road. There was great pressure put on the Government to make a coach road by way of Kaiapoi through the Hurunui Valley. Another portion of the community was anxious to get a road over Arthur's Pass, which was a much shorter route for driving stock from the southern part of the province than that just named. We adopted the road over Arthur's Pass. Mr. Blair recommends taking the West Coast railway from the present line, near Oxford. There is no doubt this is the shortest route from Christchurch, but the difficulties of a surface line at Arthur's Pass are, I think, insuperable. You would have to tunnel about two miles to make a practicable line. I don't think there is anything to be gained by wandering up Ada Pass or Lewis's Pass. With regard to any rivalry between the northern and western railways, I think it seems a mistake to connect the two at all. If you want the line north, you want the shortest to the North Island; and for the West Coast line you ought to make the terminus at Greymouth, which is the centre of population and about the centre of the traffic.

43. You have no idea of the grade that might be obtained through Walker's Pass?—1 in 50. You can get grades of 1 in 50 all up the Waimakariri country.

44. Do you know what route was surveyed by Mr. G. P. Williams?—Up the Waimakariri to the Bealey and down the Otira Gorge. I think he began at the bridge over the Waimakariri on the Oxford and Sheffield line.

45. In the atlas of maps attached to your report to the Provincial Government of Canterbury is there anything like a section of the Hurunui and Teremakau?—Yes; it is all given in great detail. You have sloping hills on each side in the Hurunui and Teremakau Valleys. In the other gorges you have not. You have a line already made nearly to the Hurunui, which gives the Hurunui route an advantage over the other lines proposed. If you went up the Hurunui, you would not go near Reefton.

46. Are the Hanmer Plains of any value?—Yes; there is a great deal of very fine country. The Waiau Township is the traffic centre for all the flat country in the neighbourhood.

47. You think that by taking the Ada Saddle line there will not be more traffic?—I think that if you make a line to the Waiau Township, you provide for all that. I think you would get a line with shorter travelling by way of Walker's Pass than by Arthur's Pass.

48. *The Chairman.*] On the whole you recommend Arthur's Pass?—Either Arthur's Pass or the Teremakau Saddle.

49. What are the advantages of the Ada Pass route?—It is alleged that you can creep up the Pass without a tunnel. I think the line by the Teremakau Saddle the easiest as regards engineering, because you make a three-mile tunnel, and have done with all other engineering difficulties.

Mr. JOHN INGLIS, Merchant, examined.

50. *The Chairman.*] On the subject of the report of the Railway League, adopted on the 21st March, there are figures given of the traffic which they expect would come by the railway if it were made. Mr. Chrystall said he thought you would be able to give the Commission some information?—I forget what the statistics were.

51. I understood him to say the estimate was based on what it was imagined the traffic would be on the completion of the line, and that it would subsequently increase?—Of course, it is one of those things that is a matter of opinion. I was on a Commission to the West Coast some two years ago with Mr. McIlraith and Mr. Beaumont. We took the returns of all the timber that came into Lyttelton, and put it rather this way: that there would be a certain amount of traffic if all that timber came over the line, which is not at all likely. I stated at the meeting that I thought it was rather in excess, but it is a matter of opinion. The trade might develop very much if a railway were made.

52. Are you connected with the building trade yourself?—Yes; I import timber from the North Island and elsewhere.

53. *Mr. Bell.*] Mr. Chrystall showed us that 20,000,000 feet of timber came into Lyttelton?—I think that will be found to be a mistake, in this way: that the timber which would come from the West Coast would not be the same timber coming eastward, because there is a quantity of kauri timber which has to be deducted from that, and Australian timber besides.

54. *The Chairman*] Is there any timber on the West Coast that might supplant kauri?—I don't think so.

55. Do you know what timbers there are on the West Coast?—Very much the timbers we get from other places—rimu, black pine, black birch, &c. The bulk of the forests on the West Coast are black birch.

56. Then, do you imagine that, if a line were opened through to the West Coast, there are forests there which would supplant the sea-carrying trade?—I have no doubt of that, because timber has been got from the West Coast by sailing vessels over and over again, so that it would pay to bring it.

57. What is the ordinary freight, say from Auckland?—About 3s. 6d. from Kaipara for the kauri timber. From Wellington, about 2s. 6d. I am not aware what it would be from the West Coast, but there has not been a great deal of timber brought over recently.

58. What should you imagine, from your experience, would be the result of the competition consequent upon opening the line of railway?—Do you think it would tend to reduce freights in sailing ships?—I think it is now pretty well as low as it pays.

59. That is to Lyttelton only?—Yes.

60. What is the rate per foot from Lyttelton to Christchurch?—I could not say. It is something like 1s. 8d. or 1s. 9d. per 100 feet.

61. Then do you think this estimate of 12,000,000 feet a probable one?—If all the other mills were to give in to the competition, it would be so, no doubt. That a considerable quantity would come from the West Coast there is little doubt, because the exchange of commodities would induce it.

62. *Mr. Bell.*] The timber from Pelorus is like what the West Coast supplies?—Yes. There are other places in Auckland that send kauri besides Kaipara. There is no doubt a lot of timber besides that is consumed in Canterbury, which comes from Invercargill, but some comes overland to Ashburton by railway.

63. Then it is evident 15,000,000 feet of native timbers which could be supplied by the West Coast comes into Lyttelton?—Yes.

64. *The Chairman.*] Can you give us any idea of the total amount used in the provincial district?—I have no means of doing that. The supply of Oxford timber could be got from the railway department. On the south side of the Waimakariri there is not much timber coming from the Malvern side, but still a little. Then there is the Pukapuka bush timber.

65. *Mr. Bell.*] There is no reason to suppose that the West Coast would supplant the timber sent by them?—No. Of course Oxford supplies a very great quantity of timber yet, and they could compete with the West Coast. The supply, I suppose, will soon be exhausted.

66. *The Chairman.*] Do you know anything about the saw-milling trade on the Coast?—I only saw one place north of Greymouth where they were working, but they don't do a great deal; in fact, the trade is not very large.

67. Is the forest peculiarly suited to saw-mills?—I think in many places they have to move the mills. But that is only a casual view.

68. *Mr. Bell.*] Have you seen or heard that there is a great quantity of good timber on the West Coast?—I have no doubt of that. I have not seen south of Hokitika, but I am told there is a great quantity of good bush there. In the Reefton direction there are many places where there would be large quantities of timber. I have been told that most milling is done south of Hokitika.

69. It seems to me, from what I have gathered, that 12,000,000 feet is not a very large estimate, seeing there are upwards of 20,000,000 used in the province. The question arises whether the railway would carry it at rates which would supplant sea freights?—I think in their through rates they would. When the Commission went into this question we went into the cost of all these lines; supposing it to go to Reefton, which would be longer than going from here to Greymouth, we came to the conclusion that there they could just compete with the seaborne timber. These long-distance rates are very low.

70. *The Chairman.*] But you think there would be no probability of the sea rates declining so as to cut out the railway?—If the mills reduced their prices, there is where the competition would come in.

71. Would the ships reduce their freights?—They would no doubt try to meet the competition.

72. From your experience generally in merchandise, do you imagine that heavy traffic can be carried on as economically by railway as by water?—I think the experience is against that.

73. *Mr. Bell.*] Mr. Chrystall thought the same, but argued that the port charges were so heavy. He thought the handling would make up more than the difference?—If you bring it to Christchurch, of course it would.

74. Then as to coal: it does not appear that the province uses as much as is represented?—I think 75,000 tons is more than we actually use. I think it is somewhere about 50,000.

75. The 20,000,000 feet of timber is largely under what it is?—Yes. There is a regular traffic with Greymouth for coal, but any brought down from the Bay of Islands would come under that head.

76. *Mr. Wilson.*] Are you aware of the class of timber on the West Coast? Is it a good-class timber?—It appears to be so.

77. What kind?—The usual timbers found in the North Island—white and red pine, &c.

78. No totara?—Not very much, apparently.

79. Which line of road did you go over when on the Commission?—I went over by Porter's Pass to Kumara, Greymouth, Reefton, and then inland, and came back the same way. None of us knew the country. I had seen the greater part of the road from this side, and knew it quite well.

80. What is the nearest point at which the timber would be reached by any line?—I should think not nearer than Hokitika. I have been informed that most of the timber is supplied from the south of Hokitika, but I have not been there.

81. The country all over there is not agricultural?—Not the least. Our commission was of a certain character. We were asked to say, "Is this a suitable commercial speculation?" We said, No; that the surroundings were against it, and that the traffic would not make it worth while for any company to take it up. That applied to the extension from the Waiau to the West Coast by Reefton.

82. I suppose it is possible to get through with these lines?—Quite possible, with the exception, I suppose, of ten miles, perhaps. I have been over the whole road.

83. *The Chairman.*] Coal is pretty evenly distributed over the West Coast?—Yes; we saw it everywhere. Springfield coal is used all over the railways.

84. It has been stated that 11,000 tons of coal come into Lyttelton coastwise, and 34,000 Newcastle. Do you think that correct?—I should doubt if that is the whole amount of Newcastle. They mention in that return the vessels that go and come from London. I think there must be some return showing the whole of it.

85. *Mr. Wilson.*] What is the value of Newcastle coal here?—At the ship's side it is worth, in a wholesale way, about a guinea.

86. And the value of West Coast coal?—I have not had anything to do with the sale of West Coast coal, so don't know, but it will just compete. They take the Brunner coal for steam purposes, but it is not liked as a household coal. At Reefton they say there is coal very suitable for household purposes. Dr. Hector has got a report on the coal at Reefton.

87. Have you any idea what the coal costs to put out per ton—the lowest rate it can be put out at?—I don't know. They told us they threw it over the cliff at Reefton for £1 10s. a ton, but there was not a great consumption, in consequence of so much timber being about. The coal around Reefton was very easily got at; seams were cropping out in all directions, and were very easy of access.

88. *The Chairman.*] Is there much coal at Hokitika?—None at all, as far as I have heard.

89. A railway suitable for timber there would not necessarily suit for the coal trade?—No.

90. Are you able to tell us the freight of coal from Newcastle here?—I do not recollect at the moment. It varies very much, according to the season. In the wool season vessels will bring it as low as 10s. 6d., but perhaps 12s. 6d. might be taken as the rate about this season. At other times it is higher. For the sake of a freight they will take at a lower rate, and make a difference of a couple of shillings.

91. Vessels coming here in the wool season ballast with coal?—Yes; the charterers at Home go to some of the colonies with goods, from there to Newcastle to load coals for here, and then Home to England.

92. *Mr. Bell.*] Have you got the estimates of traffic there would be on a line connecting Canterbury with the West Coast?—I did not make those estimates. I furnished the committee with what I had made up with the other gentlemen of the Commission at that time. As to traffic, imports, &c., we got that from the West Coast people.

93. *Mr. Wilson.*] Building stone is mentioned. Have you any information about that?—No. We saw several building stones which might be used, but did not go into that very particularly. There is stone at Brunnerton which looks like a mica schist more than anything else. It seemed to stand the weather very well, where the memorial stone to Mr. Dobson is placed.

94. Do you think building stone would come from there unless of very fine character, such as marble or granite?—I do not think so. Specimens of stone were shown here by Messrs. Thornton and Weeks. I forget what they were. One was a blueish stone.

95. Is there any granite over there?—There is a granite in the hills at the head of the Inangahua, twenty-five miles from Reefton.

96. White or red granite?—White; as cropping out, it would not do for building stone, but it might improve deeper.

97. Do you know what is the population of the West Coast?—It was said to be something under 20,000. Greymouth furnished us with statistics as to actual imports, and the committee at that place wrote to Hokitika asking for their imports, but they did not reply.

98. *The Chairman.*] Does the West Coast supply itself with meat?—No; it has all to be imported either from this side or Wanganui—mostly from Wanganui. It is all imported.

99. *Mr. Wilson.*] Is the land of any value at all for agricultural purposes?—I think not, except in very small patches.

100. And it must always be supplied from elsewhere with any produce?—I dare say, if the country got cleared, it would support stock by the sowing of grasses, because you can see the soil in very many places is very good, what there is of it. The gardens are in a most flourishing condition, but it would never be fit for agriculture, because it is very stony. In the Maruia and Matakitaki there is no bush, except in small clumps. It is very good sheep country in summer time. Cattle mostly run there, but nothing else.

101. *The Chairman.*] Mr. Chrystall said he thought you could give information generally as to the resources of the West Coast. I see in the prospectus of the East and West Coast Railway that there is a quantity of ironstone mentioned?—I only know of it from report, but there seems to be every description of stone.

102. You do not know whether there is iron, coal, and lime in proximity, to make smelting easy?—No; our visit was too hurried for that. There is no doubt they are all there, but whether in payable quantities remains to be proved.

103. Have you formed any idea as to the relative advantages of the different lines to the West Coast?—I thought in a general way that probably the most economical would be to go straight for Brunner. I suppose the nearest way would be to get over Porter's Pass, and—after passing Arthur's Pass—by the Brunner Lake, which brings you out at the Brunner mines.

104. *Mr. Bell.*] I understand these figures of the Railway League are made up for a three-years' increase?—That is the idea. There has been a line surveyed from West Oxford up the Waimakariri, avoiding Porter's Pass, by G. P. Williams.

105. Do you know whether any merchandise goes by sea to the West Coast?—Yes; flour, potatoes, and things of that sort; but the bulk of the merchandise comes from Melbourne. Steamers and other craft touch there and leave drapery, &c.

106. *The Chairman.*] Do you know what the freight is from Melbourne to the West Coast?—I forget it now.

107. *Mr. Bell.*] Are you of opinion that there are 20,000 people on the West Coast?—That was what I was told two years ago.

108. How do cattle, sheep and pigs go to the West Coast at present?—By the Hurunui and over Porter's Pass, besides those brought by steamers and other craft from Wanganui. I might say, with regard to the mining districts and the quantity of machinery they have been obliged to import from Melbourne, that the cost of transport is so excessive that it debars a great deal of enterprise in mining properties. It prohibits the opening-up of mines.

109. *The Chairman.*] Would a railway affect that?—It would depend a great deal on where the railway went, but I suppose it would. The transport of machinery by rail would be much cheaper.

110. *Mr. Wilson.*] Your impression is that the preferable line is the one to reach Hokitika?—I should say so. The Commission I was on was not to consider whether it was desirable to connect with the West Coast, but whether a railway from Waiau to Reefton, and connecting with Hokitika, would pay.

111. *Mr. Bell.*] Mr. Dobson gave his opinion that Greymouth was the centre of population and about the centre of the traffic, and that he thought any line should aim at reaching Greymouth?—I can fancy that would be so, because Greymouth is now a busy place compared with Hokitika.

112. He says all the bulk of the coal is produced north and south of Greymouth, and that in Hokitika it is only mining?—Only mining and timber.

113. Then Hokitika is equally distant south as Westport is north of Greymouth?—Not quite so much. I think it is twenty miles from Greymouth to Hokitika, but it must be seventy miles to Westport. It is fifty miles from Greymouth to Reefton, and I understood it was over twenty miles from Reefton to Westport. Reefton is the centre of the mining industry. There is a considerable deal of mining going on at Kumara—the washing-out of the soil from the boulders. A great part of it has been washed over two or three times already.

114. Did you see the statement of the League in contradiction of Mr. Blair?—Yes. It is my impression they have over-estimated as much as he has under-estimated. Our Commission could not see anything like the statement in the Westland Railway League circular.

115. They stated that £169,000 would be the estimated traffic, disputing Mr. Blair's previous estimate, which was £36,000; and the Railway League of Christchurch think the estimate would come to £134,000?—I think they over-estimated, and Mr. Blair under-estimated, what the traffic would be.

CHRISTCHURCH, THURSDAY, 26TH APRIL, 1883.

Mr. FREDERICK BACK, Traffic Manager, Christchurch, examined.

116. *The Chairman.*] We had a good deal of evidence given yesterday about the relative merits of importing timber, coal, and so on by sea or by rail, but could get no really reliable information as to the cost of bringing these things by railway. Can you supply the Commission with that informa-

tion?—I did not get your notice until half-past nine o'clock this morning, but I jotted down a few figures in connection with the coal and timber trade. These figures relate to the quantity of coal imported by sea into Lyttelton during last financial year; also the total quantity of coal carried from the different coal pits in Canterbury during the year; and also the rates of carriage for Native coal and timber from 100 to 150 miles, including the rates from Invercargill, a distance of 369 miles. The total quantity of coal imported to Lyttelton or carried by the railway was 60,667 tons. Everything that comes seaborne and landed at Lyttelton goes into the trucks. Of the total coal imported 5,061 tons were used in Lyttelton. The rest was taken to Christchurch and other stations in Canterbury. None of it goes beyond Ashburton. Practically, fifty or sixty miles will be the furthest, as the railroad carries very little coal more than fifty or sixty miles. The total quantity of timber brought to Lyttelton during the same period was 19,238,730 feet. Of this 449,830 feet was used in Lyttelton.

117. Do you know where it came from?—I could not tell what quantities came from each place, but it came to Lyttelton. The Native coal carried by rail in Canterbury during that period was 23,209 tons. There is a decrease of 464 tons over the same period last year.

118. *Mr. Wilson.*] And is there an increase in the amount imported?—It is about the same. The output of the local mines shows a decrease of 464 tons.

119. *Mr. Bell.*] Is a small decrease like that caused by the lower price of imported coal?—No; that decrease represents the decrease in the output of the Springfield mine. The total quantity used in Canterbury is 84,000 tons of coal; that is borne on the railways. The following is the output into railway trucks from the different mines of Canterbury during the financial period ending the 31st March, 1883: Albury, Gillingham's pit, 10 tons; Sheffield, Austin and Kirk, 3,683 tons; Springfield Coal Company, 6,321 tons; Kowai Pass Company, Springfield, 467 tons; McIlraith, Glentunnel, 10,355 tons; McClatchie and McIntosh, Glentunnel, 2,021 tons; Saunders, Whitecliffs, 50 tons; Wilson, Whitecliffs, 302 tons: total, 23,209 tons. I should explain that the names of the places are the names of the stations where the coal is loaded.

120. *The Chairman.*] Do you know anything about the probable output for the future—whether it will increase or decrease?—I don't think that for the next year or two there will be much variation, as far as I can judge.

121. Is there any means of accounting for this diminution in one pit?—Circumstances connected with the working of the mine have not been successful. I should not care to say too much about it. It is a private industry with which I have nothing to do. They had to stop operations and put down a new shaft and machinery, and when they came to work the coal I believe they found it not to be so good as they anticipated.

122. Can you give an opinion as to the amount of coal there is in Canterbury?—There is a supply for many years to come.

123. How many?—I cannot say. Springfield is working on a very large area. In the Malvern District I should say you would find coal for the next century.

124. Can you give us any information as to the relative merits of the Springfield coal and the West Coast coal?—The Locomotive Superintendent would be able to give you his statistics on the subject, but I can always carry ten wagons more on a mixed train with Westport coal than I can with the native coal of Canterbury. Given similar conditions in all things, I find that a train burning Westport coal will take ten wagons more than a train burning Malvern coal. That is my practical experience, which is more valuable than any figures. Probably the same remarks would apply to Greymouth coal. Of course the same remarks as to brown coal will not apply to Newcastle coal.

125. Can you tell us the difference between Newcastle and West Coast coal?—I observe very little difference as far as the loads go.

126. *Mr. Wilson.*] Are you able to give us any idea as to the cost of coal to the Government?—I may say I can go to the market and buy any quantity of Newcastle coal for £1 0s. 6d. or £1 1s., delivered into our trucks at this season of the year. Newcastle coal is now being quoted at £1 1s., delivered at the ship's side. The reason why the price is so low is this: ships are chartered for the round turn. They go to Australian ports with general cargoes from Home, and then they go to Newcastle and load coal for this place, taking it at a nominal freight. If vessels were not to take this coal, they would have to take ballast in Australia; that would cost them something; they would have to put out the ballast, which would cost them something more; whereas by taking coal at a nominal rate they save the cost of taking in ballast and discharging it. As a matter of fact, coal freights are taken at as low as 7s. 6d. a ton in the grain season.

127. Do you know what the average freight is?—I dare say 12s. would be the average, but I would not like to say positively off-hand. The other figures I am aware of.

128. How long do these low freights last?—During the grain season. We could lay in enough Newcastle coal to last for a year at £1 1s. 6d. a ton.

129. What would be the value of West Coast coal here?—I think the contract is £1 2s. 6d. or £1 3s. a ton, but I am not quite sure about it. That is a matter about which the Locomotive Superintendent could inform the Commission.

130. *The Chairman.*] You cannot tell what they charge on the West Coast for putting coal into the trucks?—No; you could get that at Westport from the District Manager.

131. *Mr. Bell.*] Then it appears, from what you say, that Westport coal is supplied here at the same cheap rate as Newcastle coal?—You cannot go into the market at this particular season and buy Westport coal as cheaply as you can buy Newcastle coal.

132. It is only in the grain season that Newcastle coal is exceptionally cheap?—It is only then that we can get it at these exceptionally low rates.

133. The grain season lasts two months?—It lasts four months.

134. *Mr. Wilson.*] What, then, would be the cost of bringing coal from the West Coast by rail, say, 176 miles?—It would be 12s. 8½d. per ton.

135. *Mr. Bell.*] These are your regular tariff rates?—Yes.

136. *The Chairman.*] Would that rate be affected by the grade of the railway?—That is our general rate. There are certain circumstances under which special rates are made. Between Malvern and Christchurch we have special rates which work out about 1¾d. a ton per mile. On the Rimutaka they make an extra charge for the gradient.

137. We should be liable to the same thing here if there were any extraordinary grade?—Yes; probably there would be a special charge levied. It is a matter for the Minister of the day to decide. The figure I have quoted is the ordinary tariff rate; and, whilst there are some special or reduced rates for coal on lines that are moderately level, in the case of the Rimutaka incline there is a higher rate.

138. *Mr. Bell.*] Is there not a great quantity of coal carried over the rough line from Shag Point to Dunedin?—Yes.

139. Do you make any exceptional charges for carrying over that road?—Yes.

140. *Mr. Wilson.*] What would the rate per ton per mile be?—For a distance of fifty miles it practically runs out 1¾d. That is as nearly as possible the local rate up to fifty miles. The rate for native coal for 100 miles is 10s. 2d. per ton; 150 miles, 11s. 10d. These are the ordinary tariff rates.

141. *The Chairman.*] Do you imagine that, in case of a large coal traffic springing up in the colony, the seaborne coal could come in at cheaper freights?—I think that if you brought coal in for nothing you would not increase the consumption very much.

142. What I want to arrive at is this: Is there not sufficient traffic between New Zealand and Australia to insure the coal being brought in even at lower rates of freight?—It is brought as ballast in the grain season.

143. *Mr. Wilson.*] Practically, it might be reduced to 5s. a ton. Would that not apply to other than grain seasons?—I do not think so.

144. Are there no colliers, pure and simple, trading between here and Australia?—Several.

145. What kind of vessels take grain away?—They come from all countries. I could supply you with the number of vessels that have brought coal from Newcastle and loaded out for Home, and the coal-carrying capacity of those vessels. There is one important factor in striking a rate for the West Coast, namely, that we should have to send empty trucks to bring the coal down. Double haulage would have to be taken into consideration.

146. *The Chairman.*] Would you be able to charge for that, or make a general loss?—We could not charge for that, but it should be considered in making any rate.

147. Do you know anything as to freight by sea for coal from Westport?—I think it varies very much—from 12s. to 18s.; but I speak only from memory.

148. *Mr. Bell.*] The Railway League, in their report, say there would be 12,000,000 feet of timber carried over the West Coast Railway annually. Do you consider that a correct estimate?—I don't see where the 12,000,000 feet is to go to. At present we have a sufficient supply from other parts of New Zealand; Picton, Auckland, and Southland are really supplying the market. The question is whether timber could be supplied from the West Coast at so low a price that it would shut up the other saw-millers, and take the trade to the West Coast. Unless it will do that, I don't see how we are to get such a large increase in the carriage of timber.

149. It was represented to us that within the next three years a large increase of traffic would occur from the natural growth of the place. Is that so?—I don't think they are justified in saying there will be such a large increase. It depends on the increase of population.

150. *The Chairman.*] Would not the building regulations affect the question?—Hardly, because, except in the larger towns, there are no regulations prohibiting the erection of wooden buildings.

151. *Mr. Bell.*] The population of this district is increasing very rapidly, is it not?—The whole colony is increasing in population, and there is bound to be an increase of consumption, but not to the extent mentioned in the Railway League's report. Twelve million feet is more than half the total quantity of timber imported into Lyttelton. I cannot see that we should have such a very large increase in three years' time. If the increase was in the same ratio as it has been for the last three years, we could soon find out what that increase has been.

152. *Mr. Wilson.*] Is there a stringent regulation with regard to building with timber in Christchurch?—They have what they call building blocks. The city is divided, and in certain districts they allow people to build with stone or brick only. In other districts they are allowed to build with brick party walls, and outside these with timber altogether. I don't think it would affect the consumption of timber.

153. *The Chairman.*] What is the rate charged for the carriage of timber from Lyttelton to Christchurch?—Eightpence per hundred feet; 480 feet to the ton.

154. *Mr. Wilson.*] I think you said the rate for timber for 176 miles would be 4s. a hundred?—Yes; that is over a penny a mile per ton.

155. *Mr. Bell.*] Why do you run timber at under 1d. a ton, and charge coal 1¾d.?—We don't carry at under 1d. per ton.

156. *Mr. Wilson.*] Do you unload in either case?—No; there is no handling by the railway.

157. *Mr. Bell.*] What do you think of the League's estimate of £1,500 for parcels and £25,000 for passengers?—If the railway were made now, I should say that this is an extraordinarily liberal estimate. I am certain £25,000 is a very liberal estimate indeed for passengers, and I also think £1,500 a very liberal estimate for parcels.

158. *Mr. Wilson.*] You would not consider they have over-estimated the carriage of sheep and cattle, would you?—I don't know, I am sure, whether it would not be cheaper to drive them. If there was good feed on the road, it would be cheaper to drive them.

159. *The Chairman.*] What is the experience of the department in carrying stock?—We seldom get any large quantity of store sheep. We get fat and valuable sheep.

160. These would be all fat sheep for consumption which they have estimated?—I have no means of forming an estimate as to what the market would be.

161. What do you take sheep at for a hundred miles?—We get very little business for store sheep, but sheep would be £2 7s. 10d. per single truck load, and £3 17s. 9d. per double truck, for 176 miles.

162. *Mr. Wilson.*] How many sheep to the truck?—You might say thirty-five to forty fat sheep to the single truck; twice that number to a double truck.

163. Then, again, there is an estimate of 20,000 tons of merchandise and agricultural produce at an average rate of £1 10s. per ton. Is that correct?—Under class A, our rate for merchandise for 176 miles would be £3 6s. 2d. per ton (the highest rate); under class B, £2 13s. 1d.; under class C, £2 2s. 3d.; and under class D, £1 13s. 10d.; that is the lowest rate for merchandise. Grain is much cheaper: 17s. 4d. a ton would be the rate for agricultural produce for 176 miles.

164. What would be the rate for cattle?—£3 9s. per truck load.

165. To carry how many?—About five. It depends upon the size of the beasts. About 14s. a piece.

166. The rate you would charge for passengers for 176 miles would be what?—According to the present tariff it would be £1 13s. first-class and £1 2s. second-class. You may take, all through, one-third at £1 13s. and two-thirds at £1 2s.

167. The estimate would give 16,000 passengers, would it not?—I don't think there would be anything like that.

168. You don't consider you would get that through traffic?—No; Passenger traffic fluctuates very much.

169. What would be the time occupied in doing 176 miles?—I don't know what the grades or curves would be. Put it down at eighteen miles an hour; that is as fast a speed as we could get. If we carried coal with mixed trains, we would not do that much.

170. *The Chairman.*] Do you think that a line going over very high country would be worked at a much greater expense than a line going over a low country?—I have not been across the country in question, and don't know of my own knowledge what it is like.

171. But assuming that there are falls of snow?—They would stop the traffic and add to the expense. We should require snow sheds through the gorges.

172. *Mr. Bell.*] Do you know the average weight of trains carried over the rough pieces of road between Dunedin and Oamaru?—It depends so much on the class of engine that it would be impossible to say. Under favourable circumstances, on such a line as I anticipate the West Coast line would be, it would take two trains a day each way.

173. What arrangement could you make by which two trains would carry 410 tons a day?—Allowing five tons to a truck, eighty-two trucks. With such a grade you could not take possibly more than sixteen trucks to each train. I don't suppose you would be able to take more than sixteen, but until one got the curves and grades it is quite impossible to say what could be done. Given the grades and curves, we could tell what loads would be taken, but we are now working on an unknown quantity. With suitable engines, they ought to take sixteen trucks over a 1-in-40 line, but we could not do it without proper engines.

174. That requires three trains one way, and probably two the other?—You would have to run an equal number of trains, or you would have all your rolling-stock at one end.

175. Could that quantity be done?—If we had decent locomotives it could be done, no doubt. We should want a better class of locomotives than are running now.

176. *The Chairman.*] Wouldn't that involve stronger permanent-way?—I don't suppose that a less weight than 53 lb. steel rail would be used, and that would answer all purposes.

177. *Mr. Bell.*] You have given your opinion as to that schedule of assumed quantities and rates. Do you think it is a liberal estimate?—For the present time I think it a very liberal estimate.

178. Do you think in three or four years hence, looking at the growth of the country, it would be still a liberal estimate?—Comparing it with other lines and the increase that has been made, I should say it is a liberal one.

179. *The Chairman.*] Are you able to give us any opinion whether the opening of the line to Dunedin has increased the business on the line immensely?—It has to a certain extent, but not so much as you would imagine. It has increased the business in an indirect way. Our through takings, of course, add to the revenue considerably; but merchandise is carried very largely by sea between Lyttelton and Dunedin. Speaking from memory, I think where we carry 100 tons by rail 1,000 tons would be carried by sea.

180. Then can you give us any information as to a vessel coming from a foreign port with a cargo for transhipment for Dunedin—I mean general merchandise? Would it be sent by steamer or by rail?—It would be transshipped by steamer.

181. Would nothing go overland?—I don't think any transshipment stuff would go by rail.

182. Are you competent to form an opinion as to whether goods imported to Lyttelton would go again by sea to the West Coast or overland by railway?—I should say probably by sea. The question of time might be taken into consideration. Valuable goods would probably be sent by rail, to save time and incur less risk.

183. *Mr. Bell.*] Do you think it would be carried by sea, seeing the exceedingly risky harbours there are on the West Coast?—In the case of valuable goods they would probably be sent by rail, because of less risk and saving of time. I don't think such an article as cement would be sent by rail. Timaru is a risky harbour, and yet nearly all the goods between Lyttelton and Timaru go by sea. They cannot look at the rates by rail. Timaru is served with merchandise almost entirely by sea. I don't think a railway can compete with water carriage. I think Timaru is a very good instance of that.

184. How many miles is it from Lyttelton to Timaru?—One hundred and six.

185. *The Chairman.*] I suppose the same thing will apply to coal and timber?—The same thing will apply.

186. Then you imagine it would be cheaper to land timber in Christchurch from Kaipara (counting railway carriage) by sea than it would be from the West Coast by rail?—I don't know what the freight is from Kaipara. I don't think the West Coast timber would have any bearing on the subject, because kauri is a specialty. No timber, I think, will cut out the kauri for special purposes. I think I am right in saying that no kauri is grown south of Auckland.

187. *Mr. Wilson.*] You get timber from Invercargill?—Yes, in large quantities.

188. What is your opinion about that?—The rate of freight from Invercargill is 7s. 6d. per hundred feet, and the distance is 369 miles by rail: that is at the rate of 1·17d. per ton per mile. Practically, we bring it only to Ashburton, and the markets south of Ashburton are also supplied from Invercargill, except what comes from Waimate.

189. *The Chairman.*] What quantity comes into Lyttelton by sea?—Nineteen million feet.

190. But I mean from Invercargill?—Very little.

191. Then, practically, the railway has done away with the sea-carriage there?—Yes; but there never was a large trade by sea, because the bush is a long way from the sea. They would have to take it to the Bluff, which would necessitate handling and wharfage, and wharfage and handling again here.

192. *Mr. Bell.*] That would seem to apply precisely to the West Coast timber?—Provided the railway were put in the proper position, I have no doubt it would take all the timber traffic from the West Coast, in preference to the sea-traffic. In the case of transshipment goods we find we cannot compete against water-carriage with Timaru, or anything like it. We have had several part-cargoes of sugar, coal, and so on, and I have endeavoured to arrange to get the traffic, but found we could not touch it at our rates.

193. *Mr. Wilson.*] Then I understand you to say the 12,000,000 feet of timber is not impossible, but you imagine the coal estimate would not come over the line?—I don't think the West Coast line will make a very appreciable reduction in the amount of imported coal, on account of the heavy rates.

193A. Therefore, how are you to consume the coal in Christchurch?—I don't suppose that if we got coal for nothing we should burn very much more. I have inquired at the factories here, and they tell me that if they got coal for nothing they would not burn much more. I asked a maltster and a brewer, and they told me that if they got coal for nothing they would not burn any more. The question is, whether new industries will spring up. As to timber the same thing applies. I do not see where you are going to get a market for the extra 12,000,000 feet. Of course, if the district goes ahead to require two-thirds more timber, we shall get it; but it is a very large increase. The importation of timber at Lyttelton has not increased to any appreciable extent within the last two or three years.

194. *The Chairman.*] Has that been caused by the railway carrying this Southland timber?—I do not think so. Timber for the last three years has been carried between Invercargill and Ashburton.

195. In Napier, the railway has diminished the importation of timber, has it not?—Yes; but the railway is through the bush, and you have a very bad port. This coal and timber is not so much a question of supply as of demand. When you can get Newcastle coal at £1 1s. a ton, I don't see that you would be able to push the whole of it out of the market. Ninety thousand tons is practically the whole of the coal consumed in North Canterbury—that is a full estimate. Numbers of people would not burn Westport coal in their grates. It is grand coal for steaming, but not for grates. It is the best steam coal we get.

196. *Mr. Bell.*] Then, if we are to consider that quantity, we must also take into consideration the probable increase; and that is guided by the past increase, is it not?—The consumption of coal in the province has increased in one year by 10,000 tons. Between 1881 and 1882 there is an increase of 8,000 tons.

196A. Are we justified in saying that for the next three years we shall have a similar increase?—In the year just entered upon we have made, not an increase, but a small decrease in native coal, but an increase in seaborne.

196B. I find that in foreign coal there was an increase last year of 12,000 tons, and in native coal an increase of 8,000 to 9,000 tons. That is a 21,000-tons increase in one year?—I do not think that can be right, but I will get you the exact figures.

[The witness subsequently furnished the Commission with the following return:—

Coal received into Railway Trucks.—At Lyttelton: 1880-81, 51,770 tons; 1881-82, 44,506; 1883-84, 60,667. At local mines: 1880-81, 15,205 tons; 1881-82, 23,673 tons; 1882-83, 23,209 tons.]

197. *The Chairman.*] What are the average through bookings for passengers between Christchurch and Dunedin?—From Christchurch to Dunedin, 6½; value, £14 9s. 6d.: this for the period of six months ending the 31st March, 1883. The average daily bookings from Dunedin to Christchurch amounted to £16 16s. 4d., say, 7½ passengers. The cash collected at Christchurch station for parcels traffic amounted to £1,355 8s. (outwards paid and inwards to pay) for the half-year ending 31st March, 1883. There would be a somewhat similar amount for parcels to pay and paid at other stations to and from Christchurch. In dealing with the question of timber and coal traffic on a line of railway proposed to be constructed between Christchurch and Westland, the question of how far the lines now working will be affected should be considered. I find the freight on timber and coals from Lyttelton to Christchurch alone amounts to the following sums:—Coal: Freight—haulage, 3s.; loading, 1s.; cranage, 6d.=4s. 6d. per ton—£12 5s. 11d. Timber—Freight, 8d.; loading, 3d.=11d. per ton—£8 6s. 11d. Total rail charges, £21 12s. 2d. Wharfage charges—Coal, 1s. per ton, £2,780; Timber, 2d. per 100 feet, £1,565: total wharfage, £4,346. The first item is all railway revenue; the second is paid to the Harbour Board, less 2½ per cent. charged by the railway for collecting. The sum of £21 12s. 2d. represents the charges from Lyttelton to Christchurch only, and not from Christchurch to stations up country. The Accountant in Wellington can furnish details of freight to up-country stations; also the freight paid on timber carried from the Southland mills to stations

north of Timaru. The receipts per mile of railway for the twelve four-weekly periods ending 3rd March, 1883, on the Hurunui-Bluff section averaged £795 4s. 2d. per mile per annum. The return to 31st March is not yet to hand.

HOKITIKA, MONDAY, 30TH APRIL, 1883.

Mr. HENRY L. ROBINSON, Stock Agent and Auctioneer, Hokitika, examined.

198. *The Chairman.*] An estimate of stock likely to be carried over a line connecting Canterbury with the West Coast has been prepared by the Railway League. Do you consider it a correct estimate?—I am acting as agent and auctioneer of stock here, and I think the number of cattle set down is reasonable. I think that number would be sent.

199. Do you know how many head come from Canterbury to this Coast?—About fifty a week come from the east side.

200. Do you know how many come in by sea?—About twenty a week from Wanganui—rather more than that on the average. Shipped cattle do not pass through me.

201. You think that as many as eighty head of big cattle are used on the Coast?—Yes; including Greymouth. Reefton is partially supplied from Westport.

202. Where do the Westport cattle come from?—Wanganui, principally.

203. Do you know what the freight is?—I don't know. It is mostly done by charter.

204. *Mr. Bell.*] You say the number of cattle passing over the roads is fifty a week?—Yes; that does not include the shipping.

205. *The Chairman.*] From your experience as salesman, how many would you be likely to deal with?—Now, about fifty per week of fat cattle come overland.

206. How many by sea?—About twenty or twenty-five per week.

207. That does not include Westport?—No.

208. You think there would be about a hundred used per week?—Yes; including Westport and Reefton.

209. Are you able to tell us as to the cost of driving overland from Christchurch or Canterbury?—Including a very heavy toll at the Otira, the contract price for driving from Longbeach is 10s. 6d., and Mr. Grigg finds horses and pays toll (5s.) in addition; so that the actual cost would be 15s. 6d. In addition to that there is horse-feed at some seasons, or farriery, wear and tear of horses, and loss of cattle. The depreciation would be 10s. per head, leaving the risks out of the question.

210. Suppose 900 head of cattle start, what number would arrive here?—At some seasons very little over 800. In summer time of course they travel with comparatively little loss, but there always is a loss.

211. Are there any losses in the way of accidents?—A few. An occasional beast topples over a precipice in the Otira.

212. Do they get tutued?—Very rarely. The men know the country to camp in.

213. What is the contract price for sheep?—They are driven by men upon wages, but the cost of driving, I suppose, would be perhaps about 1s. 6d., and the depreciation nearly as much. The toll is 3d. a head.

214. *Mr. Bell.*] How many sheep would come across?—The number of sheep given in the printed report does not cover the total consumption on the Coast. There is still a margin left for shipments from the North Island. It represents as nearly as possible the number coming from the East Coast.

215. Do you know what the freight is from Wanganui?—It is 3s. from Nelson. They charter boats, and put the sheep and cattle on deck.

216. Are there no means of raising stock here?—It does not do very well.

217. What is the process—are sheep slaughtered straight away, or are there paddocks?—No; there is very little accommodation. We used to grow uncommonly good cattle in the bush in the early days, but bush feed is exhausted, or nearly so. You cannot find a fat beast on the Coast, except in a few small clearings where they have laid down English grass.

218. Does the grass do, surface-sown?—Fairly well; not so well as in better soil. Our soil is poor throughout. Cattle do better in the Grey Valley.

219. Then we may take it that there are practically no cattle on the West Coast?—The production is very small. We import the bulk of our supplies, and from all I can see we shall have to do so.

220. Why?—Because the land is so poor.

221. What can the best paddocks do?—You cannot quote them as being able to carry a quantity of stock. They are not of sufficient extent. The best and sweetest soil is in the river beds.

222. Then, practically, the West Coast will be dependent for many years to come upon imported stock?—Yes, as far as I can see. In fact, our local production now is less upon artificial feed than it was twelve or fourteen years ago from the bush. We turn out fewer fat cattle now, and they are worse in quality.

223. What is the selling price of beef?—Since the New Year beef has averaged £1 5s. per cwt.

224. Does it vary much?—Not much. Sometimes at the end of the winter and beginning of spring it rises.

225. What is the price in Christchurch?—About £1. It varies from 18s. to £1 2s. 6d.

226. *The Chairman.*] What is the average price of mutton?—It is very difficult to say.

227. What would a 70-lb. wether bring?—You may say £1 or £1 1s. at this time of year.

228. *Mr. Bell.*] Then the hides, wool, and tallow of the sheep and cattle slaughtered here go back to the East Coast?—They go to Melbourne and Dunedin; I don't think any go back to the East Coast. I think the figures set down are reasonable. I am very sure sheep and cattle could afford to pay the charges that are set down by railway.

229. Would the making of a railway lead to any increase of these numbers? Could the Coast consume more beef and mutton?—Certainly, if the population increased. If the railway had the effect we anticipate, of increasing the export of coal and timber, the population would necessarily increase, and so would the consumption of stock. The figures given now are actual.

The Hon. J. A. Bonar, M.L.C., examined.

230. *The Chairman.*] The Railway League have given an estimate of the passenger traffic there would be on a railway connecting Canterbury with the West Coast. Do you think that estimate correct?—The passenger traffic must necessarily be an estimate, but still only about thirty a day is given. The present coach traffic is no criterion, because the charge is £4 10s. for passengers, besides £1 10s. or £1 15s. for expenses on the road. £1 16s. is the Government scale.

231. Can you tell us what is the price of timber landed in Hokitika from the mills?—The ordinary selling price is about 6s. on the wharf. There is one mill about three miles out, and another on the other side of the river, and one or two mills up the river. They have knocked off, because the difficulty of getting timber away is great. A gentleman told me yesterday that he has got an order for a million or a million and a half feet of timber. I believe it is intended for Belgium.

232. Do you know anything of the position of these mills? Suppose there was a railway brought hereafter into Kumara or Hokitika, are the mills within a reasonable distance?—Malfroy's mill is just alongside the line.

233. Can you tell us what are the sea freights of timber from here?—About 3s. 6d. to 3s. 9d. from here to Christchurch.

234. *Mr. Bell.*] Are there any other charges?—The wharfage charges in Lyttelton, and conveyance from Lyttelton to Christchurch.

235. Do they charge any wharfage here?—No.

236. Supposing that you can land your timber as cheap in Christchurch by railway as it can be landed there by sea, have you taken into account the competition that would ensue from your producing more timber than you now do?—We are quite satisfied we can compete with any other place.

237. And you think you can compete with water-carriage?—Yes.

238. Do you think the Northern mills will not be able to come down at a lower freight than you will by the railway?—No; because they have the additional handicap of the carriage from Lyttelton to Christchurch, and extra insurance to Timaru, and the further cost of distribution from any one of those ports. We are now at a great disadvantage here. If a man at Geraldine wanted ten or twenty thousand feet of timber and telegraphed to send it over at once, that could not now be done, because a man has to get a full cargo, and then you cannot get vessels when you want them. There is a great difficulty in getting vessels. There is towing over the bar and the risk of working bar harbours, and of course extra expense.

239. *Mr. Wilson.*] Practically, the out-trade is contingent on the in-trade?—It is, at the present time. The fact is, that our timber trade is practically reduced to nothing, from the difficulty of getting vessels to take timber away.

240. *The Chairman.*] Whereabouts is the principal timber? Is there timber at Greymouth or Westport?—There is timber at Greymouth, and all along the line of railway. All the land that is given in the printed circular is good bush land. South of Ross there are 491,000 acres of good timber land.

241. Are you prepared to say where the best timber land is?—It is generally a very average bush all round about the Coast, more particularly from the Teremakau south. About Kumara there is very good timber.

242. *Mr. Bell.*] Do you suppose there would be a great many years' cutting on the flat land, without going into the ranges?—Yes, a hundred years' cutting. You may say this is entirely a bush country.

243. *The Chairman.*] Then, there is good bush all around Greymouth?—Not so much until you get further back in the country, but there is good bush around Greymouth as well.

244. In general merchandise, you assume the freight through will be £1 5s. per ton. What is the freight to Melbourne?—By sailing vessels, £1 10s. to £1 15s. a ton.

245. And to Dunedin?—Now it is £1 2s. 6d. by sailing vessel, and £1 7s. to £1 10s. by steamer.

246. Are there any additional expenses besides?—Wharfage here, 3s. 4d. for ordinary merchandise, and 2s. for produce. It is the same in both cases, whether they go to Melbourne or Dunedin.

247. Do you not imagine freights by sea would fall lower than that?—I don't think so. We have to pay 10s. a ton towage at Hokitika.

248. *Mr. Bell.*] Do they not discharge from lighters at sea?—They used to when large steamers called here. They were tendered by the little steamer Waipara.

249. *The Chairman.*] Are the freights the same at all West Coast ports?—They are less to Greymouth, because they have the back freights of Greymouth and Westport.

250. What are the back freights?—I think they get from 15s. to 18s. a ton back freight in coal.

251. What is the insurance by sea?—Sailing vessels, 1½ per cent., and 1 per cent. by steamers.

252. *Mr. Bell.*] Does that amount to anything appreciable?—£1 10s. for every one hundred pound's worth. In flour, it would come to about 3s. a ton.

253. Is there any such insurance by land-carriage?—No. It could be effected, but never is. You can get insurance on train freights, but I don't think it is ever done. Practically, it is not done.

254. Then 3s. is an addition to these rates?—Yes.

255. No goods, I suppose, are shipped without being insured?—Very few people ship without being insured. Flour is £12 10s. a ton: it would make an increased freight of 3s. 9d. a ton. By land-carriage you save all insurance.

256. *The Chairman.*] Does general merchandise include flour, potatoes, and so on?—Yes.

257. Is there any prospect of producing these things on the Coast?—Not so cheaply. We do produce them to a certain extent, but the quantity of rain that falls very often spoils the crops.

258. Surely you grow potatoes?—To a certain extent, but nothing like sufficient to supply local requirements. We always import very considerably.

259. *Mr. Bell.*] The 20,000 tons includes food and all sorts of merchandise?—Yes. I took the tonnage as it came in.

260. Is this the actual quantity?—Roughly, it is, excluding timber, bricks, &c. The tonnage refers to the importation of general goods exclusively.

261. *The Chairman.*] Do you import bricks?—Yes. There have been some made here several times, but not successfully.

262. Have you no stone that would answer the purpose of bricks?—No. They make fire-bricks at the Brunner.

263. *Mr. Wilson.*] Then you have supposed that the present traffic by steamer would entirely go by railway?—We assume that if you can send your order away to-day and get it by train, that fact would make the trade come here. You have now to wait for a vessel, and run the risk of bad bars, and the vessel going ashore. I think nearly the whole of the traffic would go by rail, and of course we look to the establishment of the railway to make an increased traffic.

264. *The Chairman.*] That is a natural assumption, but have you any data to go upon, or how have you arrived at that?—We only have the general data that wherever railway communication is made it has always led to increased traffic, and we feel perfectly satisfied that, given increased facilities, our population would largely increase.

265. I see you have 150 passengers each way per week. Have you any idea what the passenger traffic now is?—The coach traffic would run from thirty to forty per week each way.

266. And the foot traffic?—I cannot tell. Sometimes you will find 100 men going over. In the case of Kumara over 1,000 men came over in a few months. The present coach rates are so extreme that they are practically prohibitory.

267. *Mr. Bell.*] Is this an estimate of 150 passengers each way?—Yes, 300 a week, equal to £15,600 per annum. There would be a great traffic for part distances. Plenty of people would go up to look at the glaciers and the Otira Gorge, and on shooting excursions, if the rate were a moderate one; but you cannot go and pay £4 or £5 a head for families to stay for a few days, besides the personal inconvenience. It is rather a severe journey for ladies to make. Practically, no one goes unless they have special and important business.

268. *The Chairman.*] Is the population on the West Coast increasing?—Yes. I think it has been remaining pretty well about the same, increasing a little; but we look to its increasing very considerably within the next year or two. From 1876 to 1880 our gold increased from £131,000 to £216,000 in value. That is the export from Hokitika alone. In addition to that, there is Greymouth, Reefton, and Westport gold. That is only the export from Hokitika.

269. I presume they have exhausted the fields?—No. They took the gold that was most easily got. Stafford and Waimea are now doing better than they have done for many years. Government water-races have been brought in, whereas before they were entirely depending upon rain. A week or fortnight's dry weather makes a most appreciable difference.

270. I thought you had too much water?—Not enough. I assure you that for a fortnight or three weeks hundreds of parties of miners are standing idle.

271. And it is your impression that the alluvial mining will afford lengthened employment for large bodies of men?—Unlimited employment, in my opinion, because the gold here is not as it is in Victoria. They used to get it there in patches. But here gold is distributed over the whole area. You can get more or less wherever you sink. It only wants the introduction of water to enable it to be worked to advantage. That is what is being done to a greater or lesser extent. I consider mining entirely in its infancy; we are only making a commencement to work it in a satisfactory and systematic manner.

272. Are there any other minerals worthy of consideration?—There has not been very much found. We have copper, galena, silver ore, and we believe we have found tin from time to time; some has been found occasionally, but has never been traced to a developed lode yet.

273. *Mr. Bell.*] In a report similar to the one laid before the Commission by the Westland Railway League there was a certain return put down for stone. What stone do you think they could have referred to?—They have got plenty of limestone at Greymouth. They are using it for making the breakwater.

274. Is it a crystallized or chalky limestone?—I am not sure. You will see it when you get there. We have very important deposits of lithographic limestone at Pawarika, which we are unable to work for the want of communication. We have had it tested in Wellington, Victoria, and London. It is a very valuable stone. I know those who are in it think some day they will make a fortune when they are able to get it worked, because there is only one other place in the whole world where the same stone has been got—namely, in Bavaria.

275. I see the working expenses of the railway in your statement are set down at 65 per cent.?—Yes.

276. You mention it is double the usual rate?—We were led into that by the report of Mr. O'Connor, which he has explained to-day. He says he put it down as being the minimum. We thought that would be too low an estimate, and we made it £600 per mile per annum. That came very nearly to what is the usual rate.

277. *Mr. Wilson.*] There is coal found at Reefton?—Yes, but not worked, except to keep the engines going.

278. *Mr. Bell.*] In this statement here, is the actual traffic at present existing in the district given?—Stock is actual; merchandise is actual within a trifle—it was put roundly at £20,000, which I think is just as near as you can go to it. Some of this must be estimated.

279. *Mr. Wilson.*] And the timber, is it the actual quantity? Do you absolutely deliver that

in Christchurch?—Oh, no. We are debarred from delivering it by the difficulties of shipment, and it has practically resulted in our timber trade being stopped, because we were unable to meet the requirements. That is what we say is in point of fact such an injury on the district. We can get orders from other places, but we cannot execute them for want of means of communication.

280. *Mr. Bell.*] Christchurch and its immediate surroundings appear to consume 20,000,000 feet of timber a year. You estimate that you would pour 10,000,000 feet more into that, or displace 10,000,000 feet of other timber. Would not that bring the prices down?—You cannot go much below a certain price. We have here certain facilities, because you can put your mill in the centre of the bush and cut away, and then you can move to another bush. That makes a considerable difference, instead of having to drag timber a long way. In the Sounds they have to drag timber a long way.

281. Then timber would not fall in price?—No.

282. In your attempts to get your timber to Christchurch and the surrounding district there would be some disturbance in the market?—It might be so.

283. Could your district stand a fall of prices in competition with Picton and Southland?—Southland is now able to send timber to Ashburton by train. If they can send it 300 miles, we ought to be able to send it 140. Our timber is immediately on the line of railway, so that good timber could be put on the trucks at any part of the line.

284. Do you think you could maintain your traffic against the competition?—It is the opinion of the saw-millers that they would very largely increase the traffic over and above this estimate.

285. *Mr. Wilson.*] What would be the lowest paying price in Christchurch?—I could hardly tell you that. There is one thing: you can effect a very great saving in cutting by improved machinery. Not many mills have got improved machinery, but if there was a prospect of a steady outlet improved machinery would be used, which would cheapen the cost of production.

286. Do you suppose it could be done for 11s.?—Yes (the freight being 5s.), or less. They deliver at 5s. or 6s. on the wharf now. If they were supplying direct to the railway, they could load the trucks at the mills, and there would only be one handling before it was delivered at its destination to the purchaser. That would make a considerable saving—quite from 2s. to 3s. on that alone.

287. *Mr. Bell.*] You would save charges in Lyttelton?—Yes.

288. Do you know what they are?—I don't know positively.

289. How many hundred feet are there in a ton?—480 superficial feet.

290. I have often heard it disputed as being possible to convey timber for such a distance and compete successfully?—It is done now from Invercargill to Ashburton.

291. They accounted for that by saying that the timber had to go a considerable distance to reach the port, if it were required to be shipped by sea at Invercargill?—As a matter of fact, when we do get a chance of sending timber away, we are able to send it away and get orders for it; so that, if we are able to compete at the present time, how much better hereafter, with direct communication.

292. *Mr. Wilson.*] I see you have put down the passengers at £1 16s. We had evidence to show that the first-class fare would be £1 13s., and the second £1 2s.?—We had not the exact rates before us.

293. We also were told that 7s. 6d. would be the rate for every hundred feet of timber for 176 miles?—They don't charge 7s. 6d. from Invercargill to Ashburton; 5s. per 100 feet is equal to £1 5s. per ton. I don't see why they should put on an extra price for timber. The passenger traffic is naturally an estimate, but there would be a large way traffic on that line by people going part distances.

294. *Mr. Bell.*] That £1 16s. is the highest first-class fare for 146 miles. You would not have all your passengers travelling at that rate?—They might not; but 300 passengers a week is a very low estimate of what the traffic would be.

295. *The Chairman.*] Then you take it a central line would be the best for the Coast generally?—I have no doubt about that at all.

296. Haast Pass and the Ada you don't think would be as advantageous?—I should like to see one come as near as possible to Hokitika, but I take it as a compromise that the Arthur's Pass would be the most desirable line to suit all, and would gain the most traffic, decidedly.

Mr. VIRTUE, Merchant, examined.

297. *The Chairman.*] Are you acquainted with the timber trade?—No.

298. Or with the freights of timber?—No.

299. We have it in a statement here that the actual tonnage for the year 1882 was 20,000 tons. That, I presume, does not include Westport?—No.

300. What is the freight on general merchandise from here to Christchurch?—£1 2s. 6d. for sailing vessels and about £1 10s. for steamers is about the freight to the East Coast.

301. What are the freights from Melbourne?—By steamer, £2 10s.; sailing vessels, £1 15s.

302. With what place is most of the Hokitika trade now done?—With the East Coast. I may say that to some extent the trade that has been carried on between this place and Victoria since the Coast opened has virtually died out, simply because we can now buy more largely in the colony, and then the freights are less.

303. And the rate of insurance, I suppose, is considerable?—Yes; I think sailing vessels, £1 10s.; steamers, £1.

304. *Mr. Wilson.*] In getting goods from Melbourne you obtain a rebate from the Customs there, do you not?—Of course, they ship under bond, so that there are no goods shipped from Victoria or Sydney duty paid. You pay duty here. I was asked why the commerce had ceased with Victoria. That is one of the reasons; namely, that parties buy goods here duty paid, and of course that is a great advantage to merchants, because the outlay in duty is a very great item.

305. *Mr. Bell.*] Which part of New Zealand do you get your merchandise from?—Produce principally from Dunedin, Oamaru, and Timaru, and something from Nelson; but principally from Dunedin and Oamaru. General merchandise, I think, is pretty equally distributed between Wellington and Dunedin. Very little comes from Lyttelton or Auckland; in fact, almost nothing.

306. *The Chairman.*] And shipping is a considerable difficulty? You cannot get freights here for exporting timber, &c.?—It is very difficult.

307. What is the rate of wharfage here on imported goods?—On produce, 2s. a ton; coal, 1s.; and general goods, 3s. 6d.

308. *Mr. Bell.*] Do you know of any advantages which carriage by railway would bring so as to secure the traffic to the railway more than by sea?—The advantages would be these: that there would be none of the interruption we have now on account of the bar. Sometimes boats have been shut out as long as three months, and the whole trade of the Coast has been almost paralysed. It frequently happens that boats are lying in the roadsteads for a month on account of the weather or the bars being silted up. Delays are nearly periodical. The time varies very much. Last year the delay was not so long. It was about three weeks. If there was a railway connecting the East and West Coasts, these delays would be obviated. Of course, I really do not know very much about the matter. I have not given it much thought.

309. *The Chairman.*] Have you any idea whether the making of a railway through would tend to increase the population, and in what form it would be likely to increase here? Would it bring through more miners, who would prospect the country; or would the building trade be improved, or would new industries be started?—Yes; I really think they would start new industries. That is one of the principal advantages that would arise. The fact of the matter is that this place is very much isolated. It is almost cut off from intercourse with other parts of the colony. If I want to go to Canterbury on business matters, I am deterred because of the expense. It means £25 to go there and back. If you want to go to Wellington, it will cost £10 more. I have gone twice, and cannot do so under £35. No families can move out of here. If they go by seaboard, it means what I say, and if by overland coach, higher. I believe that with a railway there would be a great deal of traffic backwards and forwards, because it would connect us with the centres of population. People would travel a great deal more than they now do. The traffic itself, with the population we have, would increase very considerably.

310. Can you give us any instance of this isolation having driven people away, or prevented people from coming here? Do you think it has much effect in either of these directions?—Yes; I have known of families leaving here on that account, because they could not get their children educated. The expense of sending them to Christchurch or other places is very great. That would have been obviated if a railway had existed. I have known a great many very desirable citizens who have left on that account.

311. *Mr. Wilson.*] Speaking for yourself as a merchant, suppose you had an opportunity of sending goods by railway for £1 10s. a ton from this place, and you could send them by steamer or sailing vessel for £1 per ton, would you give the railway the preference?—Certainly not; I should send them by steamer. I should not pay the extra amount unless there was an immediate want of the goods. If I wanted them at once, of course I might pay the extra freight, but not otherwise.

312. Practically speaking, all the trade would not go by train?—Certainly not, if there was that difference.

313. If the charges were the same, would the railway take all the trade?—I should think so, if the freight were the same. I do not believe they would give two or three shillings' consideration to the train, if they could get their goods carried by seaboard for that difference. A difference of 2s. or 3s. would spoil the train as regards traffic. My own impression is that, if the train is coming here, they will have to make the freight as little as, or less than, it is by sea.

314. Do you not think that this competition will bring down sea freights?—It very possibly will. I anticipate that freights will soon be reduced. I do not think they will keep on at the present rate much longer, because the competition is beginning to get very great. The Union Company are getting steamers to run to these ports, and that will cause sailing vessels to reduce their freights considerably, or they will be run off.

315. *Mr. Bell.*] What are the freights now?—£1 2s. 6d. by sailing vessels, and £1 10s. by steamer.

316. Then there are several incidental charges connected with sending goods by sea?—We pay nothing except £1 2s. 6d., and the wharfage here.

Mr. JULIUS MALFROY, examined.

317. *The Chairman.*] You are in the timber trade, I understand?—Yes; and I have been for ten years in Hokitika.

318. There is an estimate of 10,000,000 feet of timber per annum as the amount that would be carried by a railway from the West Coast. We found out that there are a certain number of millions of feet used in Christchurch. The question we are not quite clear about is, whether the persons who made this estimate imagine that these 10,000,000 feet would be in excess of the 20,000,000; or do you think you can produce so much more cheaply than other places as to turn 10,000,000 feet out of the market?—A railway going in the direction it is supposed to go will call at Ashburton, and a great deal of timber comes as far as Ashburton from Invercargill. We could supply it cheaper at Ashburton than the millers at Invercargill. And, besides, if you refer to the timber merchants in Christchurch, you will find that they will sooner take West Coast timber at 3d. extra. It is clean, has few knots, and is very little cross-grained. I have an order from Mr. W. England, of Christchurch, for 100,000 feet, and it is nearly 4d. dearer than he could get it from the Sound and other places. If there were railway communication from here to Ashburton, the merchants in Canterbury would not have to send the timber from Lyttelton to Christchurch and then on to Ashburton, if the order came from Ashburton. The present freight delivered in Christchurch, counting the Lyttelton

charges, amounts to 5s. a hundred. We pay 3s. 6d. to Lyttelton, and from Lyttelton to Christchurch we are told it is 1s. 6d. An advantage which I hold to be great is that, with railway communication, the timber merchants in Christchurch could leave the timber at any place along the road they wished to deliver at, and they would be able to supply as far down as Timaru at a much cheaper rate than it could be supplied from Invercargill. The Invercargill people could compete with us at Oamaru at about the same price. Therefore I should not extend our competition beyond Timaru. We could secure the trade from Christchurch to Timaru.

319. I suppose you have had no means of ascertaining the consumption of timber at Ashburton and in that district?—It is great. Year after year we have exported from Hokitika, with all our disadvantages, as much as 5,500,000 feet of timber in one year. During the last few years there has been a decrease in the timber trade, because we have had to compete with the rail on the other side. Even with the difficulties we have had to contend with, we did a very large trade before the railway was open between Dunedin and Invercargill. From the time that line opened the trade has decreased, because we have not been able to supply more readily. If a merchant has a small order, he will not send to us; he wires to Invercargill and gets it at once. If there were a railway here, timber merchants would not require to keep such large stocks. If 20,000 feet is wanted, they cannot get less than 50,000 or 60,000 feet, because the vessels will not take 20,000 feet only. You will find that our trade in timber has been great, considering the disadvantages we have been under. At the present time I can show a telegram to this effect: "Have you secured a vessel? If you cannot secure one at 3s. 3d., add 3d. more, as we want the timber badly." That shows that the quality of the timber here is better. I am now waiting to see if I can secure a vessel. We get our produce from Oamaru and Timaru principally, and the vessels trading there belong to Keith Ramsay. He won't go to Lyttelton because he can get no cargo to Dunedin or other ports. He declines to take timber to Lyttelton. All this would be obviated if we had a railway. We should only have about 142 miles of railway, and we could compete easily with those who send their timber three or four hundred miles from Invercargill.

320. How many hundred feet can you cut per acre?—Taking the whole, good and bad, 30,000 feet. In some parts you will get 60,000 feet, and in others 70,000. I have worked freehold property to the extent of over 600 acres, and, taking good and bad together, my average has been from 30,000 to 32,000 feet per acre. There is one part of the road where the bush will give 60,000 feet per acre; that is between Kumara and round as you turn from Lake Brunner and this place. £5 or £6 of royalty would be nothing for it.

321. Which do you consider the best bush?—From the other side of the Ahaura to the other side of Lake Brunner.

322. Can they bring logs to the mill from those steep hill-sides?—We roll them down; the cost is not a great deal, but we can only go a certain distance.

323. You cannot take them down the very steep hill-sides?—No; there are bluffs down which it would spoil the timber to pull the logs.

324. *Mr. Bell.*] At what rate could you cut timber?—I could cut 10,000 feet a day, if I had the orders. I cut more than an acre per week. If I had orders to keep the mill going the same as six years ago, I should cut more than an acre per week. I have cut as many as 60,000 feet by working two hours' overtime, when a vessel was waiting for a cargo. Sometimes there are four or five vessels here, and we cannot supply them. They all want to be loaded in a week, and then for months we shall have none.

325. Do you send timber anywhere besides Canterbury?—We have sent some to Wanganui, Oamaru, and Timaru; Wellington very little—they can supply themselves cheaper than we can. We used to send a great deal to Dunedin before the railway was opened to Invercargill. Since then I have sent only one cargo.

326. Do you think generally that railways can compete with sea traffic?—The railway itself would not, if there was a good port; but the railway can easily compete with our port.

327. If it were a first-class port, you believe it would be cheaper to send by sea?—Yes; the competition would be greater.

328. If it were a first-class port, would not other first-class ports be able to cut you out—Auckland, for instance?—No; I could place timber on board the trucks, if we had a railway, at 4s. 6d.

329. *Mr. Wilson.*] Then you could actually place timber on board the trucks at 4s. 6d.?—Yes.

330. And not sell at any less price than now?—No.

331. *The Chairman.*] If you can land the timber at 9s. 6d. per hundred, don't you think that would have the effect of bringing down the prices of the Auckland mills?—They would supply a certain part of the country which we could not. It would only equalize the supply. Auckland and Invercargill mills would supply as far as Oamaru, but on this side of Oamaru we could take the lead, because the railway being shorter we could supply it cheaper than they could. No doubt it would be a great advantage to us, and a little disadvantage to them. They have now a monopoly as far as Ashburton.

332. Do you know the average price of Invercargill timber?—Six shillings; but they bring it by rail cheaper than we could by sea. There is no second handling. In our case we have to put it on the wagons at the mills, then put it on board, then take it to Lyttelton, then from Lyttelton to Christchurch, handling it no less than four times; and the result is that dressed timber, tongued and grooved, is injured. By rail it is only handled once, and they reckon 7½ per cent. of saving.

333. *Mr. Bell.*] I see in this estimate of traffic receipts there are 200,000 sleepers per annum mentioned. What kind of sleepers would they be?—Totara, black pine, silver pine, &c.

334. Are these timbers used for sleepers?—Yes; and also rata, but rata is too heavy. We have black birch also for sleepers round about the Teremakau, where this railway would pass. It is good for railway sleepers, but nothing else; it is everlasting, in fact.

335. *The Chairman.*] What becomes of the land after you cut the timber off it?—Some of it goes back into bush; but if you set fire to it and sow grass it is very good for cattle. I have paid

£800 for the timber of 400 acres, and the owner has sold the land at £1 15s. per acre afterwards; and cattle are now running over it.

336. *Mr. Bell.*] To whom does the bulk of the land which is covered with timber belong?—To the Government.

337. At what price do they sell it?—£1 per acre. If the railway is made, I will take 3,000 acres from here to the Grey.

338. Saw-millers would not pay such a royalty as £4 and £5 an acre; they would buy it, you think?—The Government can reserve the land and put a price on it. A great deal of it is worth nothing for saw-milling purposes, or anything else. The land on each side of the railway could be reserved.

339. How long do you think it would take to cut out 65,000 acres?—A long time.

340. Then it would last some years?—Yes. I have been sawing for ten years, and have worked about seven hundred acres of land; but I could have worked three times as much if I had had an outlet for it.

341. It appears from your statement that the bush gives about 32,000 feet to the acre?—Some a great deal more. I am in a bush now which would give 60,000 or 70,000 feet to the acre. It is about the best bush we have within miles and miles of Hokitika.

342. Do you think Christchurch and the neighbouring districts would take the amount of timber that is mentioned here if there were a railway to the West Coast?—I was inquiring what was the average amount of timber landed at Lyttelton, and was told that it was 39,000,000 feet a year. None of that goes to Ashburton, so that the 10,000,000 feet mentioned in the estimate would be a very fair average of what would be used in the district.

Mr. Henry Hardy, examined.

343. *The Chairman.*] The Commission understand that you compiled these statistics on the subject of general merchandise. What is your position?—I am Secretary to the Harbour Board.

344. How did you arrive at these figures?—From the manifests of the vessels, as far as Hokitika is concerned. I had nothing to do with Greymouth. I find that 10,000 tons is the general average of merchandise imported into Hokitika.

345. Can you say what it is likely to be at Westport?—I don't know.

346. It is a better port?—There is more water on the bar.

347. Do they do a larger import trade than Hokitika?—No; they do less.

348. Has this been increasing of late years in Hokitika?—No; since 1878 it has rather decreased, but it has increased during the last year to the extent of four or five hundred tons.

349. What was the actual tonnage last year?—Leaving out bricks, timber, and other goods, it was 8,200 tons.

350. And then bricks and timber brought it up to the 10,000 tons?—Yes; to more, in fact; but I think 10,000 tons a fair average.

351. What class of timber do you import?—Kauri and other timber for the construction of vehicles.

352. Do you know anything about the export of timber?—In 1871 it was 2,160,000 feet; in 1872, 2,636,000 feet; in 1873, 2,500,000 feet; in 1874, 5,036,000 feet; in 1875, 5,083,000 feet; in 1876, 3,537,000 feet; in 1877, 2,500,000 feet; in 1878, 1,635,000 feet; in 1879, 1,066,000 feet; in 1880, 900,000 feet. In 1881-1882 the exports have been reduced. I have not taken the particulars out. They are under a million at the present time.

353. *Mr. Bell.*] Was not that large consumption of timber which appears to have taken place some years ago due to the wants of the digger population?—No; it was owing to an export of timber to Victoria.

Mr. Gerherd Mueller, Chief Surveyor of Westland, examined.

354. *Mr. Bell.*] Can you give us any information concerning the Mathias Pass?—The railway route, as explored by the Public Works Department, would commence at Hokitika, go up the Hokitika River (south side), and then, following the Pass River, arrive at Whitcombe Pass; then through by a tunnel, and down to the Rakaia. The Whitcombe Pass is about 4,200 feet summit. The other line (Mathias Pass line) would run the same way, and follow up the Pass River for about thirteen miles, then down the Pass River on east side, up Frew's Creek and Hokitika River to Mathias Pass tunnel, thence down Mathias and Rakaia Rivers. I think these two lines are not to be compared with any of the others; there is very little good land along these lines—I mean land suitable for cultivation; not for agriculture, but principally for clearing for grazing purposes. Beyond the first twenty-five miles from Hokitika there is really no good land whatever. The indications for metals, as far as the Whitcombe Pass River is concerned, are exceedingly good. There is copper, and several other minerals. There are also indications of silver, but of gold very little. The prospecting for gold has not been successful anywhere up either Hokitika or Pass Rivers. Above the fourth gorge the country is very rough, and indications of minerals I have never come across there. No land worth cultivating is to be found between the 25th and 65th mile along the Mathias Pass line, and between the 25th and 60th mile along the Whitcombe Pass line. For a distance of about forty miles the country traversed by the proposed Mathias Pass line is, for purposes of settlement, comparatively useless. From the sixty-five-mile point the land widens out down the Mathias River. On getting into Neeve's country I think the land is worth cultivating. The available land within the valley of the Mathias River is on the east side of that river. I don't think it averages more than a mile and a half. The hills are pretty steep. From there downwards to about Lake Coleridge the line traverses nice downs and good land for agricultural purposes.

355. *Mr. Wilson.*] Where is the track they are putting through the Mathias Pass?—They have got close upon the Pass now. It is to be a cattle-track to tap the central part of Canterbury. A great portion of the stock is coming from that part of Canterbury, and they have, I understand, to travel

as many as eighty miles round to get to this Coast by the Hokitika to Christchurch Road. There are difficulties in construction, but they are not insurmountable.

356. *Mr. Bell.*] Are the difficulties in these Passes as great as those which would be met with at the Otira, Teremakau, and other places in constructing a railway?—I certainly think there would be as great difficulties.

357. *The Chairman.*] And the altitude would be a thousand feet higher, in round numbers?—Yes; I am making no allowance for a tunnel; the summit is considerably over a thousand feet higher.

358. *Mr. Bell.*] The tunnels being equal, the railway in any case would be a thousand feet higher?—It would.

359. *The Chairman.*] You have been over this country yourself?—Yes; but I never came across the Whitcombe Pass.

360. Which country do you imagine to be of least value?—I certainly think the Mathias of less value than the Otira. It is decidedly the roughest. You come into broken country immediately you pass the junction of Frew's Creek and Pass River, whereas on the Otira line you don't get into broken country until you are well up the Otira. I think if the line were taken along the south side, it would be better. Once past the right-hand branch of the Otira the trouble is over.

361. *Mr. Wilson.*] Then what do you say with regard to the land?—When the Hokitika Railway League wanted the particulars *re* lands given in their schedules, under heading "Collateral Advantages," I supplied them; but their printed estimate of available timber lands is considerably below the actual figures I worked out. It came to 71,000 or 72,000 acres instead of 65,000 acres, in one case, and the 100,000 acres should be 145,000 acres. That refers to the timber area along the line. The whole of the two-mile width on the Lake Brunner was thrown out. So, again, coming round past these Tekinga and Otira Ranges only a width of two miles was taken, instead of four. The estimate given by the League, therefore, is well within the mark.

362. *Mr. Bell.*] That amount of timber land is upon the sides of the proposed railway?—Yes.

363. *The Chairman.*] Which do you consider to be the best timber land in the district?—That is difficult to say. There is good timber land everywhere, here in smaller and there in larger quantities. I should class that at the Arnold as superior timber. There are many belts of good timber land running right down from Lake Brunner. If it is a question as to land suitable for agricultural purposes, I must say we have not got much of that sort of land in the northern part of Westland—only a few patches here and there. But the bulk of the land is well worth cultivating for the raising of stock and root crops.

364. Does it give grass?—Splendid grass. I don't believe better grass could be found than that on the cleared bush land.

365. Why is it, then, that there are no paddocks for depasturing stock?—There are.

366. We have evidence to-day that all stock must be produced elsewhere?—There are a considerable number of paddocks, and a good bit of ground is cultivated and laid down in grass. Dairy farming certainly absorbs a good deal of it.

367. Speaking of the thing from an economic point of view, one is surprised that they don't grow their own meat, and Mr. Robinson spoke of the improbability, if not impossibility, of growing or even fattening their own stock for many years to come?—As to the impossibility, I differ from him entirely. In the special settlements at Wanganui and Wataroa Rivers there are hundreds of acres laid down in grass. These paddocks are magnificent, and certainly do not support his idea. To some extent I believe I can account for it why more land is not cleared. On this coast the proper clearing of an acre of land costs upwards of £40, £50, and even £60; while at Wanganui and other places in the North Island only £2 to £4 per acre is paid for clearing. Wages being very high, and the cost for clearing land running up so tremendously, is enough to frighten people from embarking their money in cultivating lands on the West Coast. That to a very great extent will account for it.

368. Then you think the country is perfectly capable of growing its own meat?—I am quite sure it is.

369. *Mr. Bell.*] If the land were cleared, would it grow grass?—Certainly it would. Down south, below Ross, where the land has been cleared for roads, grass seed has been sown, and for seven miles—for instance, from the Okarito to the Waiho River—there is one sward of beautiful grass. The same plan has been adopted elsewhere, and there are fifteen or twenty miles of road along which you may stop now at any place and give your horse a good feed. It is the expense of clearing the land that frightens the people. I have heard some of the surveyors from the North Island say that they can clear land there for £2 to £4 an acre; but then the climate here is so very different.

370. If you were to fell your bush land, could you burn it?—As a rule, the clearing of land means two fires, and then you have all the stumps left, and must allow them to rot out, or have recourse to grubbing, which is very expensive work, and after that finish up with another burning.

371. Does the timber rot quickly?—It depends on what sort it is. We have had some silver pine lying along the Greenstone Road for eighteen years, and it is sound still; but in the case of ordinary light-wood timbers two or three years will suffice to rot the stumps out of the ground.

371A. Instead of attempting to burn at once in so wet a climate, would it not be better to let the timber lie for a season and so get properly dry before burning it?—No. Small scrub would spring up in a few months, and the whole of the dropped timbers would be found to be overrun and matted together by creepers.

371B. But supposing it would get overgrown by creepers and all sorts of things, would not the timber in the meantime rot?—The fallen timber would, but then there would also be a fresh growing. It would be far better to have the ashes. What you clear on this coast you must get rid of at once, because, if you don't, it is not only what you have knocked down that you will ultimately have to clear away but also the creepers, vines, &c., that are about it. The growth on this coast is very great, owing to the enormous rainfall and constant moisture.

GREYMOUTH, TUESDAY, 1ST MAY, 1883.

Mr. MARTIN KENNEDY, examined.

372. *The Chairman.*] Are you in a position to afford any information to the Commission on the subject of the proposed railway?—This afternoon I reduced a few particulars to writing, and I would hand in the document as evidence. They are as follow: Looking at the mineral traffic for railway revenue, we may estimate the quantity required in Canterbury at present, say, 40,000 tons, and, assuming a railway to be finished and open for traffic in five years, we can safely estimate the requirements at 50 per cent advance, or, say, 60,000 tons of coal for all Canterbury, including portion of Timaru. Can this be supplied by railway better than by sea? And can it be supplied from Brunnerton against Newcastle competition? I would answer both questions in the affirmative. (1.) Assuming seaborne freight 10s. per ton (present rate may be taken as 14s.), to this 10s. has to be added 8s. for other charges, viz., the railage rate now paid from Brunnerton to Greymouth, 2s.; from Lyttelton to Christchurch, including wharfage, 4s. 6d.; saving in breakage of coal loading and unloading 1s.; insurance, regularity of supply, &c., 6d.: that would be 18s. to Christchurch station by sea as against the railway rate, Brunnerton to Christchurch, say, 15s. (2.) As regards competition with Newcastle, the lowest price for cargoes at Lyttelton may be taken at £1 1s. per ton, and 4s. 6d. to Christchurch makes £1 5s. 6d. And we must not overlook the fact that this low rate only obtains during the month of April and part of May, when the large grain bottoms bring in cargoes of coal simply as ballast for 8s. and 9s. per ton freight, the ordinary rate throughout the year being 5s. per ton higher, or, say, £1 10s. at Christchurch. The price of our coal at Brunnerton is 10s. per ton, and 15s. railage puts our coal down in the ordinary course of trade at £1 5s., quite as low as the lowest rate in the exceptional season for Newcastle coal. And I may add it is most likely in a race of competition, that the mine-owners would not stick for the 10s., but would, in all probability, be content with 8s., and sell at Christchurch for £1 2s. to £1 3s. As regards quality of our coal compared with Newcastle, I may mention we obtain in Canterbury from Anderson and Co., Duncan and Sons, and other foundries, 4s. to 5s. per ton extra for coal over that for which they can obtain Newcastle coal; the same remark applies to all gas companies. And we have several contracts for steamboats at Wellington, and the Harbour Board's dredges and steam-tug at Lyttelton, all of whom positively refuse to accept Newcastle coal, and insist on being supplied with our own coal. Indeed, we can affirm it is 20 per cent. better for steam than average Newcastle. For household purposes our coal is not much known on the East Coast; it has been used simply for steam foundries and gas; but, where it has been used and properly treated, it has been found much superior, and lasts longer. In addition to this freight traffic the Railway Department, we feel confident, would draw a large portion of its fuel from Brunnerton, either coal, small coal, or coke. At present the Middle Island lines consume about 40,000 tons yearly. Coke, fire-bricks, and pipe-clay goods: We might assume 5,000 tons of this class would pass over the lines, and pay averagely £1 per ton, or £5,000, making the total income to the railway from minerals from the mines the first year after opening £50,000, with a certain yearly increase thereafter. Assuming the question to resolve in this way, between a railway to Canterbury or the prosecution of our harbour works, we would answer for the harbour works, as giving the wider field for the coal trade. At the present time Canterbury does not take more than a tenth of our output; and ere long we expect to develop a large trade with Victoria, Tasmania, and Adelaide. The gas companies in those colonies will give 20 per cent. extra for our coal over that for which they can obtain the best New South Wales coal; this trade alone would fall little short of 100,000 tons yearly. And, further, we have just contracted to supply Noumea, in New Caledonia, with 200 tons coke and 100 tons coal monthly, first cargo starting this month; and our first trial cargo of 100 tons coal has just been despatched in the barquentine "May" from Wellington for Hongkong. With the harbour improved as indicated by Sir John Coode, we expect the export of minerals at this port to exceed 200,000 tons, or four times the present trade, within the next five years. The coal area will best be obtained from Dr. Hector's department at Wellington. So far, this Grey coal-field is the only coal obtained in New Zealand that excels for all purposes—gas, steam, smithy, and household. Westport is deficient in gas. There are three mines in operation at Greymouth, viz.: the Brunner lease, 1,280 acres, capable putting-out will be daily 500 tons; the Coalpit Heath lease, 770 acres, 250 tons; and the Wallsend lease, 1,000 acres, 800 tons. The two first pay 2s. trainage and 6d. royalty per ton; the Wallsend pays 2s. 6d. per ton and no royalty, only £20 yearly rent.

373. *Mr. Bell.*] You have estimated 40,000 tons as the present requirements of Christchurch and district?—I assume that is about the quantity imported into Canterbury and Timaru now.

374. Do you think you can get possession of all that market without lowering the prices?—Assuming the railway to carry at 15s. a ton, we could.

375. On what basis do you estimate 15s.?—On the present tariff rate.

378. And you have reckoned 50 per cent. additional during the construction of the line?—During five years I believe it will increase 20 per cent. The rate of increase is enormous every year. Take for instance the imports: they are nearly as great as ever, and yet 300,000 tons of New Zealand coal is produced. That is nearly three times what it was ten years ago. When there was no New Zealand coal being produced, the imports were 150,000 tons of coal. Now, there are 320,000 tons of New Zealand coal produced, and yet the imports are 160,000 tons. That shows a marked increase in the coal consumption of the colony.

379. *Mr Wilson.*] What is the present output from Greymouth?—It was 69,000 tons last year. There would be about 60,000 tons of coal exported for the past year.

380. *Mr. Bell.*] What does it cost you to put the coal out?—It costs variously. We can ship it at 10s. without any loss; that is, paying 2s. railway charge and 6d. royalty. It would be selling at 8s. at the mines; but I assume we could sell it at 10s. In times of competition I should not be surprised to see it sold at 8s.

381. What does it cost to get the coal from the Brunnerton mines to Christchurch?—It fluctuates a good deal.

382. What is the cause of its fluctuating?—In summer-time there are more ships seeking employment, and there is not the same demand for them. In winter-time there is a greater consumption of coal and less ships to do the work. £1 1s. would be a fair rate from here to Christchurch; 2s. Brunnerton to Greymouth; 4s. 6d. Lyttelton to Christchurch; 6d. other charges, marine insurance and waste; and 14s. here to Lyttelton: total, £1 1s.

383. Then do you think the freights would fall very much if you were to take a quantity of coal by train?—No; it would not affect them at all, because the ships are not confined to the carrying of coal to Lyttelton. The freights are affected more by the grain trade, by the demand for ships elsewhere—the employment that ships find all over the colony and in Australia.

384. *Mr. Wilson.*] Are you aware that Newcastle coal is selling for £1 1s. in Lyttelton?—Yes; I have said so in my written note.

385. You could not expect to compete at that price?—Yes, we could. They sell at Lyttelton for £1 1s. Then it is 4s. 6d. to Christchurch. That brings it up to £1 5s 6d. If the railway carries our coal at 15s., and our price at Brunnerton is 10s., doesn't that meet it? And for the purpose of competition we could sell at 8s. at Brunnerton.

386. On what basis of calculation?—I think the tariff rate is set down at 15s.

387. *The Chairman.*] Do you know anything of the relative values between the Brunnerton coal and the lignite to be got at Springfield? Have you taken into consideration that there will be competition with the mine, and that of course the Springfield coal can be sold much cheaper than the Brunnerton coal?—I have taken that into view, because we already compete with that directly. We get £2 for our coal in Christchurch, while Springfield coal is sold at £1. We have been many years in competition with Springfield.

388. Applying that to railway purposes here, you anticipate the railway may possibly carry coal for burning on other parts of the line. Do you think it might not be better to use an inferior and cheaper coal than to carry other coal from an extreme end of the line?—They pay £1 6s. now for our coal, as against 14s. for coal on the East Coast. They accepted tenders at that price, showing that they accept our coal at £1 6s. and £1 8s. as against the other coal, which they get for 10s. and 14s.

389. Do you know what relative proportion they use?—That indicates, I think, the proportion. They use probably double the amount of the other coal.

390. *Mr. Bell.*] What is the lowest price at which these coals have been obtained for burning on the locomotives?—I think 10s.

391. Do you think these cheap coals on the East Coast have driven Newcastle coal out of use on the locomotives?—I know the Government have in many cases accepted the local article in preference not only to Newcastle but to ours and Westport. But the policy of the Government for the last two years has been not to use any imported coal, and they would either accept our tenders or the local coal. In no case have they accepted Newcastle for the last two years, although they might get them at something less.

392. Then you think that if they had your coals at an advance on the East Coast coal they would take your coal?—I think that if they got our coal at 8s. a ton (they could get small coal at 6s.) they would use that coal almost throughout the Middle Island, certainly down as far as Oamaru, in preference to using the lignite or brown coals.

393. I suppose the Government must reckon in the cost the coaling distance they have to carry it?—They would not charge themselves full tariff rates. If they charged us 15s. they would probably charge themselves 10s.

394. You don't suppose you could supply the Springfield part of the line, do you?—Not just in the vicinity of Springfield; but when they have to add their own freight on the coal, we could supply Timaru and Ashburton, Christchurch, or North Canterbury.

395. Is your coal as durable as Newcastle under exposure?—I believe it is. I have seen our coal out for a twelvemonth in Wellington, and they have then taken it into the gasworks.

396. Is your coal subject to going to pieces in the weather?—No; it only breaks when any heavy friction comes upon it, but not by mere exposure.

397. Have you any evidence to offer as to the extent of coal here?—We have it at Brunnerton, and it crops out for a distance of seven miles down to the sea, and extends to a considerable distance up country. It may be under Greymouth for anything we know.

398. *Mr. Wilson.*] Can you tell us what the exports to Lyttelton were out of this 60,000 tons?—About 5,000 tons. Perhaps there is more now. The gasworks use 5,000 tons. There may now be 8,000 tons.

399. Where does the bulk of it go?—Dunedin takes 10,000 tons; Auckland, 4,500 tons.

400. *Mr. Bell.*] How does Auckland take so much when it is surrounded with mines?—They only draw it for gas purposes through the Manukau. Napier takes coal; Wellington, 4,000 tons; and about 3,000 tons go to Melbourne.

401. *The Chairman.*] Have you ever been obliged to refuse cargoes on account of your inability to get coal away?—Yes; we often have orders which we cannot supply for want of ships, especially in winter-time.

402. Then the output would have been larger if you could have got it away?—We could have doubled it two or three years ago if we could have got it away.

403. How does the Wallsend Company expect to get their output away?—They are building steam colliers for the trade, and the Manager says they intend to try to send their coal to Australia and Adelaide.

404. Is 300,000 tons per annum an over-estimate?—No; I put it down at double that. If we have a demand for our coal, we can bring the output to 1,500 tons a day.

405. *Mr Bell.*] How many would that give employment to?—Five hundred men at coal-cutting

alone, and half the number otherwise employed, I suppose. It would employ 800 men at least in the coal operations alone.

406. It would employ more also in the shipping?—Yes.

407. *Mr. Wilson.*] And the number you employ now is what?—At the two mines in operation 160 men.

408. You would not anticipate any difficulty in getting this extra number?—We can get 500 tons a day now, and I think the Pit Heath get 250 tons. If I saw a prospect of requiring 500 tons a day, we could bring it up to that in three months. My knowledge of the Pit Heath is the same.

409. Would there be any difficulty in getting men?—No; you won't get men in two or three weeks, but you can in a short time if you lay yourself out to get them. When our output was 1,000 tons a month we had less miners about than now.

410. Is there much demand for firebricks?—Yes. It is a question of price. If we were fit to sell them at prices equal to what the English article costs throughout the colony, we should have a large sale.

411. What price is that?—£8 10s. a thousand.

412. What is your price?—We ship them at £6, but then there is the cost of putting them down where they are required. They import them from England at £8 10s. a ton. When we are in a position to sell at £8 10s. we shall have a large market.

413. *Mr. Bell.*] What would be the cost of sending 1,000 bricks to East Canterbury?—I suppose the rate would be not more than £1 10s. When we get a plant erected we can sell at less money than that.

414. Is there not a large quantity of firebricks supplied from Malvern in Canterbury?—At the Christchurch Exhibition ours took the prize against them. They were submitted to a test at the Christchurch Gasworks, and ours stood the test. The Christchurch Gasworks sent to us for them, and we supplied them. Springfield supplied some gas retorts at Dunedin, but they did not come up to requirements. We have now an order to supply them.

415. Is there a large trade to be done in these articles?—Yes, if we lay ourselves out to do them properly. We could do it with great satisfaction by rail. Firebricks and gas retorts suffer by sea-carriage. They don't suffer by rail, but they suffer very much by sea.

416. *Mr. Wilson.*] Where is the present supply of gas retorts procured from?—From England and Victoria. They have a 20-per-cent. tariff in Melbourne on all manufactured fireclay goods.

417. Have they any fireclay in Victoria?—They have not a fireclay like ours, but a deposit that stands fire very well; but it is not a fireclay underlying the coal strata as ours is. It is a special clay, found in the ordinary way of other clays.

418. *The Chairman.*] Is there any timber exported from here?—None now, but if there was a railway there would be. There is a vast amount of timber in this district inland—black birch, and white and red pine.

419. Is there any matai or black pine?—I cannot speak upon timbers at all.

420. Where does most of the general merchandise come from?—Comparatively none from Christchurch, mostly from Dunedin. No more than one-third comes from Melbourne now, probably not a fourth. Five years ago I think we might say three-fourths came from Melbourne. It is the coal trade which has diverted the trade from Melbourne to New Zealand. Freights that used to be £2 in Dunedin come at £1 and 15s. Coming here in ballast for coal, they bring merchandise at very low rates. That is how the traffic has been diverted from Melbourne to New Zealand.

421. Then we may take the freight at 12s. 6d. from Dunedin?—I think you may put it down at 15s. and £1.

422. *Mr. Bell.*] Then is sea-freight to Lyttelton less than it is to Dunedin?—It is the same rate if you import produce from Lyttelton—namely, 15s. It is more to Hokitika than to Greymouth, owing to the coal trade. These are the rates prevailing during the past twelve months. When they say £1 5s. for grain it is a question whether it would pay them to send it at £1 5s. When they pick up their grain in Canterbury it may be easier to send it here.

423. There is an item of 20,000 tons of general merchandise, which it is estimated would be carried on this railway at £1 5s. per ton?—I think that ought not to be put down at more than £1.

424. Do you think any allowance should be made for three or five years hence?—If that is the quantity imported now, I should say in five years' time it would exceed that. If that is the actual quantity now, I should say there would be 20-per-cent. advance in five years' time, with the anticipated increase of population. We expect the coal trade to develop, and we shall have extra requirements. I think the prospects of the Hokitika District are rather good.

425. *The Chairman.*] Is there any account to be obtained of the passengers who come by sea?—Some go and come without being noted.

426. Have you any idea what the number is?—I have not gone into the question at all.

427. *Mr. Bell.*] You express an opinion in this paper that facilities for travelling would largely increase the number of passengers?—I was instancing our local tramway. Our returns there are £80 a week, and two-thirds of that amount is for passenger traffic.

428. You have no conception what the seaborne passengers are?—No. There is a very considerable passenger traffic, because there is an immense number of boats. There is an average of thirty vessels coming here monthly, fully thirty every month—one a day, ship or steamer. The receipts of the local tramway are £4,500 a year, and two-thirds of that is for passenger traffic.

429. Do you think the estimate given of the passenger traffic in this paper a fair one?—I do not think it excessive at all. I should be inclined to put it at more than that if I were estimating it.

430. This only means through passengers?—Yes. Before the Brunnerton line was opened nobody would think there was a passenger traffic to be got over it. A little coach called the "Gincase" used to pass over daily, and carry three or four people. Now £2,000 a year is derived from the passenger traffic. The same thing applies to every railway in the colony. You would not be

credited if you put down the amount. I believe this line will develop a very large passenger traffic, because numbers will travel who have no idea of travelling now.

431. What are the cattle freights from Wanganui?—The rates from Wanganui to Greymouth are these: Cattle, 30s.; sheep and pigs, 2s. 6d.

Mr. THOMAS RONAYNE, District Manager of the Railway, examined.

432. *The Chairman.*] The Commission would like to have some information as to the maintenance of the Brunnerton line, &c. Would you please tell us what you know on the subject?—The maintenance of the rolling-stock and also permanent-way is exceptionally heavy on all mineral railways. It is at the present time about £650 per mile.

433. *Mr. Bell.*] What is your opinion as to the way in which a large coal traffic should be developed?—We should have no difficulty in working the traffic. The coal wagons would go over to East Canterbury, and would return with produce from the other side. Of course, a large number of empty wagons would have to return, but one-third would come back loaded.

434. Do you think the rates on which these calculations are based should be maintained if three-fifths or four-fifths of the goods go from here, and only one-fifth returns?—I am not prepared to answer that. We have 100 coal wagons. They run back to the mines empty from here.

435. *The Chairman.*] What is your grade?—1 in 60 and 1 in 70.

436. Would a grade of 1 in 50 much increase the cost to the railway?—Yes; you would require heavy, powerful locomotives, and there would be a heavy wear and tear of permanent-way.

437. The cost per mile would be increased?—Yes; all our expenses in shipping the coal is included in this £650. It includes cost of management and all other charges. If I had ten miles, it would be reduced to £300 a mile, perhaps.

438. *Mr. Bell.*] Are you aware that a considerable extra freight is charged on coals brought from Springfield to Christchurch because of the traffic being all one way, as this would be?—No; I was not aware of that.

GREYMOUTH SECTION.—Return of goods imported into Greymouth for four-weekly periods during the year ended 31st March, 1883:—Ending 29th April, 1,011 tons 28 feet; 27th May, 716 tons 22 feet; 24th June, 780 tons 32 feet; 22nd July, 843 tons 11 feet; 19th August, 1,196 tons 37 feet; 16th September, 745 tons 15 feet; 14th October, 836 tons 11 feet; 11st November, 680 tons 12 feet; 9th December, 1,020 tons 32 feet; 6th January, 871 tons 18 feet; 3rd February, 1,093 tons 37 feet; 3rd March, 730 tons 19 feet; 31st March, 1,071 tons 9 feet: total, 11,599 tons 3 feet. For the information of Commissioners, East and West Coast Railway Commission.—THOS. RONAYNE, District Manager. —17th May, 1883.

REEFTON, THURSDAY, 10TH MAY, 1883.

Mr. PATRICK BRENNAN, Chairman of the Inangahua County Council, examined.

439. *The Chairman.*] Is there an accurate account kept of all the quartz which is raised in this district?—Yes.

440. How is that arrived at?—By the trucks that are sent to the battery.

441. The value of the gold raised since 1872 was, you say, £889,000, leaving £305,000 to be divided amongst the shareholders. How do you imagine that the mining industry could be increased by a railway?—In this way: the cost of the carriage of machinery is very high, and there are some comparatively poor mines which would pay if the cost of carriage was less than it now is.

442. Do you know any comparatively poor mines which had to stop work in consequence of that cost of carriage?—Yes; at Rainy Creek the operations were for a long time suspended.

443. What does the stone yield per ton?—The average stone from that district is from 6 to 9 dwt. to the ton, or from 6 to 10 dwt.

444. How many stampers can be employed in that district?—That is incalculable, because there is an immense mass of stone. There are very large bodies of stone, but it is comparatively poor.

445. You say that, if you had better communication, you could work more country?—Yes.

446. How many men could be employed in that district? How much could you increase your production if you had this cheaper communication?—Four pennyweights would pay. It is easily-crushed stone. Between 3 dwt. and 4 dwt. would pay out there. If we had a railway, we could get the machinery cheaper.

447. *Mr. Bell.*] You do not use much machinery? I suppose once a year you bring up machinery that will last for a long time?—Yes; but still for all that there are repairs. Stamper-shoes and bottoms are constantly going.

448. What would pay to work under existing circumstances?—Four pennyweights would pay even now.

449. Then why are the mines not working?—They are working, but under difficulties. They are working them in a kind of a way. The machinery does not leave anything for the shareholders. Under the present circumstances 4 dwt. to the ton would pay, if the railway were here. At present it does not.

450. If the cost of living and machinery were cheapened by a railway, you think a yield of 4 dwt. to the ton would pay?—I do.

451. Would the effect of a railway be to bring down the cost of labour?—Yes.

452. How?—It would bring about more people, and provisions would be cheaper.

453. Would there be so many more claims opened up?—Possibly there may be more opened up.

454. Do you feel quite convinced that the railway would diminish the cost of labour?—Yes. Mr. Collings went into the subject very fully. There is nothing in Mr. Collings's report which is not correct.

455. Are there any alluvial washings now?—A few. The Chinese are getting all the gold from alluvial workings. None of them will work at quartz at all.

456. From your experience, how long do you think the veins will last?—It is impossible to say. You cannot tell to what depths the lodes will go down. In the Keep-it-Dark mine the deeper they get the more substantial the lode looks.

457. How deep is the lode there?—They have got gold to a depth of 2,000 feet and more.

458. Does the gold extend in depth only? Have you to go downward? Can they go deeper than 2,000 feet?—Yes. One advantage they have got here is that there is very little water in the slate country here. They have not the water-difficulty to contend with.

459. Are there many veins of quartz yielding gold?—A great many; hundreds of them.

460. Then, no estimate has been made of how long it will take to work out the yield?—They cannot arrive at that. It is problematical.

461. The Thames worked out in about eight years, did it not?—I never was there. There is a kind of special formation about it. I have been in Victoria, and have seen nearly all the great mining centres there. If you stay here and see all the quartz and coal mines, it would be better than all the speeches that could be made. I would not like to crack up the district at the expense of truth.

462. *The Chairman.*] Is the yield of gold inclined to diminish or not? Do you find, as the district gets older, that they can afford to work poorer stone?—Yes; if we got machinery cheaper we could afford to go into poorer stone.

463. Have you any difficulty about labour?—Sometimes, but as a rule we do not feel it. There is hardly anybody idle on this field.

464. And never has been?—No; the tendency is that we have not sufficient labour.

465. What are the wages at Ballarat?—Forty shillings a week.

466. Then, do not you think the question of working other mines will have to be solved by the introduction of more people?—By the introduction of more people and machinery.

467. Do you know anything as to the quality of the coal in this district?—It is of very fair quality.

468. Has there been any of this antimony sent home to England?—I do not think so.

469. It can be got with the utmost facility?—Yes.

470. Why not work it if it is worth £20 a ton?—It has never been gone into as an industry. The leading industry is gold. There is antimony in large quantities, and close to the surface. In many places in these hilly countries it is a difficult thing to get a road into them.

471. Can you give us any idea why this antimony is not worked if it is worth £20 a ton in its rude state? Is there not room for considerable working in that direction?—You are now talking on the supposition that there is a good road into the mines, but there is not. They have got coal alongside the antimony in many places. Tin in large quantities, as far as I know, does not exist here. The principal trade here is with Greymouth. They got the trade at the start, owing to the laxity of the people of Westport in pushing it. For one ton that comes from Westport, six come from Greymouth.

472. Do you find that the people are occupying the land for agricultural purposes?—The land is not good except in the river-beds, and then it is liable to be washed away by the floods. This is a timber and mining country.

473. Has the idea of communication with Nelson ever presented itself to you?—There is coach communication now. A line of railway was surveyed up this valley nine or ten years ago.

474. What do you think of that line?—I don't think it would be as good as the line to the East Coast. It would be a windabout way of getting to Reefton. I think there are a good many engineering difficulties in connection with it.

475. Then you think the point of most importance is direct communication with Christchurch?—Yes.

476. You think communication by the shortest route is the route of most practical utility to this district?—Yes.

477. And a line down the coast, and then through, you think would not suit you so well?—I don't think it would.

478. *Mr. Bell.*] Is there much good timber around here?—Yes.

479. What quality?—Red and white pine.

480. Whereabouts situated?—There is red pine down the Inangahua River.

481. *The Chairman.*] Have you any totara in this district?—Yes.

482. To a large extent?—Yes.

483. One hundred acres?—I think so; and there is totara up the Buller in the direction of the railway-line you were speaking about a while ago. Totara as a rule grows on sandy soil and close to the rivers.

484. *Mr. Bell.*] Is there red and white pine here?—Plenty of it, close to the town.

Mr. W. G. Collings, examined.

485. *The Chairman.*] You have handed in a certain statement to the Commission. Why have you been selected to supply this information?—There were three business men appointed to obtain these figures. I took the most active part in it, and being a business man in the place they deputed me to bring it forward. The figures are obtained collectively from reliable sources.

486. Have you been here long?—Five years.

487. In what way do you imagine that a railway would vastly increase the number of tons which are carried?—By the increased population, as you will see by comparison of the prices of goods here and in Christchurch. The cost of living is so much higher here. By reduction in the freight I assumed the cost of living would be reduced 30 per cent. at least by having railway carriage instead of the carriage we have.

488. Need that necessarily be with Christchurch?—Yes. The staple articles of food are of Canterbury production. We draw most of our supplies from Canterbury now.

489. If you have cheaper food you would, I suppose, conclude that the men could afford to work for less wages?—Yes; and by that means I consider there are a great number of mines lying dormant that would be worked if labour was cheaper.

490. I notice in the paper put in by Mr. Brennan that the actual yield is about an ounce to the ton. Are there not mines being worked which pay less than an ounce to the ton?—Yes. I am director in a company at Rainy Creek, seven miles from here. We have a reef 20 feet thick, and are now putting up a thirty-eight battery on it. We have gone into the cost of raising the stone, from the experience we have already had. We have crushed 5,000 tons. We estimate we shall be able to make 3 dwt. clear expenses. We can only do that by having such a large reef. It is the largest in the district. A previous crushing yielded from 5½ to 6 dwt. to the ton. There are many mines where the lodes are not so large. There are lodes which will run from 2 to 3 feet thick, and will yield from 6 to 10 dwt. per ton. These are the mines that are lying dormant. By the reduction of the cost of labour 20 per cent. these mines would be payable, and would be re-worked.

491. Have you a difficulty in getting labour here?—At times. The supply and demand are very irregular.

492. How comes that?—The means of communication with other places is so bad that we cannot get men here when we actually require them; but in the course of a few months the demand for labour will be pretty good, for the reason that there are several new batteries going up which must be supplied with quartz.

493. *Mr. Wilson.*] There is always a good demand for labour here?—Yes. Experienced miners can get £3 a week. Five years ago they were getting £3 10s. Companies have to employ men who are not experienced miners. Some men are only learning mining, and are drawing full wages.

494. In this table of prices in Reefton and Canterbury I notice the difference in price is considerably more than the cost of draying can come to?—Our tons are 2,000 lb. in carriage. £8 a ton would be 1d. a pound. That would make 4d. difference on the loaf. The other penny might be arrived at as profit. My estimate of £7 per ton between Christchurch and here is quite a low one. In the matter of meat, travelling over here it loses its flavour, and the meat is far inferior to what they get in Canterbury.

495. Is there no prospect of the meat being grown here?—None. The farmers kill a few of their own raising. I have not computed these. There is very little grown to feed anything with. You will notice it costs nearly three times as much to feed a horse here as it does in Canterbury. These figures can be verified. I can assure you that the price quoted for potatoes is right.

496. Why don't people grow them?—They do to some extent, but it is expensive to clear the land. There is very little cleared. A man has to be a capitalist to clear it. I offered £8 a ton for local-grown potatoes, but could not get them.

497. *Mr. Bell.*] Will potatoes grow here in spite of the wet?—Yes. Oats we cannot grow. They are not grown. They find it more profitable to cut up the oats for hay.

498. *The Chairman.*] Then you have no prospect of agriculture for many years to come?—Not in this immediate neighbourhood. Down the Grey Valley there is a much better class of land.

499. Do the crops ripen?—Yes; all our chaff comes from the Grey Valley.

500. All the calculations we had to-day are based on the assumption that there should be direct communication between Reefton and Christchurch. Which next line would be the most suitable to Reefton?—To be of any practical benefit to us there is no other line which would be of any service except this Cannibal Gorge route. Our goods would be brought a few miles farther than Brunnerton on this route. Any other line would be of no benefit to us. We should require wagons as now.

501. Would not a railway through the centre of the Island and a line up and down the coast suit you? Our idea of the terminus would be Greymouth for the coast, and going through the Cannibal Gorge. That would be more central for Westport and Hokitika. But that is a matter that does not affect us so much, but undoubtedly no railway would benefit us that does not come down the Cannibal Gorge.

502. *Mr. Bell.*] How is that? Suppose the railway were to start from here, and go any other route through the Island, so long as you arrived at Christchurch?—Greymouth has a chance of getting in food-supplies by sea.

503. If the railway ran through this place, how would it not benefit it?—If it came through the place undoubtedly it would. Undoubtedly the main trunk line would be of more benefit than a branch line coming here from the main trunk line. I do not see any other route that we can get a branch line from except that by the Hope Saddle. Any branch line would affect us in that way, that our timber and coal would never be developed. We should be handicapped by extra railway carriage. Greymouth and the West Coast would be benefited by a line going there, but not going to there from Canterbury. I consider that, in the case of an inland town of such importance as Reefton, with such natural resources, there should be a trunk line through this place if possible.

504. Do you know how many miles farther it would be from Reefton by the southern line than from Reefton *viâ* the Ada Pass?—I do not know exactly where we could tap this line with a branch line. I think the actual travelling distance would be found the same.

505. If it is, say, 150 miles by the south and 150 miles by the north, what difference does it make whether it goes by the north or by the south?—We should have a less distance to go to Canterbury by the Cannibal Gorge from Reefton than any other. We look to conveying our coal and timber by the shortest route. If we cannot do so except by going to Greymouth, our resources are shut up.

506. *The Chairman.*] Can you show that you can put your coal and timber into the Canterbury market at a cheaper rate than any West Coast coal can be put into that market?—We can show the position of seams and quality of the coal, and the extent of it; and I think these figures would fortify my assertion that there is a good market in Canterbury for our coal, and that it can be sent over with a profit, and that a considerable number would find employment in getting the coal.

507. Have you any idea at what price you could put coal into Christchurch?—It would all depend on the freight. The coal can be got here cheaper than in any other locality.

508. Have you any idea what it can be put into the trucks here for?—Five shillings a ton, I should think. There are seams 15 feet thick. The coal which the produced sample came from is found seven miles farther on, proving that the best of coal extends for a considerable distance.

509. *Mr. Wilson.*] Is this coal used for steam purposes here?—Yes. Any company gets coal within a mile at least of its battery. That will show the extent of coal in the district. It is procurable within a mile of any mine in the district. The seam from which this piece was taken is 10 feet thick.

510. You were saying just now that the cost of clearing land was so great?—Yes; if we had a market for our timber it would be cleared off and sawn up. That would bring the land into value.

511. But practically we must assume that this is a purely mining district?—Yes. Of course, there are parts of the country suitable for agriculture.

512. Have you thought anything of communication by Tophouse?—We have gone into that proposition, but there seem so many different opinions upon it that we narrowed ourselves down to one proposition, and brought it down to Cannibal Gorge, and we considered it best for the West Coast.

513. Supposing the possibility of a direct line were out of the question, do you think Reefton would be more benefited by the Tophouse route? Would it be better to have the line south-about, or to go to Tophouse, and then to Christchurch?—As far as I recollect distances, it would be to our disadvantage as compared with the Cannibal Gorge route. That is undoubtedly the route we favour, and if it is not possible to obtain that, then communication by the shortest distance with Canterbury. We want to get connected with Canterbury. Greymouth is only useful to us as a port. We want to get connected with Canterbury.

514. Do you place most stress on gold industry or other industries?—The gold will undoubtedly be a permanent industry, because the mines are yet undeveloped. The country being so densely timbered, the outcrop of a reef might pass for 100 years and not be discovered. With the clearing of the country these reefs will be discovered. Often in cutting a track a reef is found. Coal is here to a very large extent, and will be worked at some future time.

515. Do you believe within the next twenty years?—I believe the coal can be worked into a great industry. The timber here can be cut cheaper than anywhere else, because we can get water-power for it. We can get a large water-wheel, and cut it at a nominal cost. In many parts of the colony they have to use steam. The timber here is undoubtedly useful for building purposes.

516. Can you show that you have special advantages in timber or coal over any other district?—By the Cannibal Gorge route we could have coal and timber nearer Christchurch than any other line. It would be only a question of carriage. Antimony is a mineral which people here think has a great future.

517. Do you think anything about the antimony yourself?—I only know it since I have been here. I have seen the various lodes in the district.

518. Assuming that the cost of conveyance to Greymouth would be £5 or less per ton, why should it not be put on board vessels with advantage if it is worth £20 per ton?—If a railway ever does come here, people will undoubtedly come and see the resources of the district and judge of the quality of these minerals. Then we shall get them developed. Even now two-fifths of the mines here are held in Dunedin. A very small percentage of the shareholders have come here for the reason that they cannot do so under a three weeks' journey and a large expenditure. All these minerals would be developed if people could come here and see for themselves. That is the great disadvantage we labour under. I believe antimony will form a great industry.

519. *The Chairman.*] What is timber sold for at the mills here?—About 15s. per 100 feet in small quantities. There is a great deal used at the mines. A great deal of it is hand-cut. As an article of export it is a different thing altogether. It could be produced as cheap here as elsewhere.

Mr. THORNTON, C.E., examined.

520. *The Chairman.*] You are practising your profession in Reefton?—Yes.

521. Not connected with the County Council?—No; in entirely private practice.

522. You were connected with the Provincial Government of Canterbury?—For fifteen years I was Provincial Engineer, and for six years Railway Engineer.

523. From your experience connected with the Canterbury Provincial District, have you formed any definite opinion as to which is the best commercial line from Canterbury itself?—My impression is that Reefton is a more important district than any south of it, for this reason: that south of it the gold-mining is entirely alluvial, and, from my knowledge of mining matters in Victoria, the alluvial diggings are soon worked out, and townships are deserted; whereas quartz-mining industries can be carried on for a great number of years. In fact, the deeper the mines have been developed in Victoria they have certainly not been poorer, but in many cases richer, than when worked at a shallow depth.

524. Assuming Reefton to be the most valuable part of the West Coast, which line of railway do you imagine would be most likely to be of service?—I think the Ada Pass route, or possibly the Lewis Saddle, which is a worse grade. The Ada Pass would be the most favourable for the conveyance of heavy mineral traffic, inasmuch as it is an easier grade than the Lewis Saddle. On the other hand, if the line were made to Arthur's Pass and the Hope Saddle, for instance, the mineral traffic would have to be brought from the extreme end of the line. If you take the line by the Ada Saddle, you will tap the mineral and auriferous district at the Cannibal Gorge, about half the distance between the two coasts.

525. I am right in assuming, am I not, that any auriferous deposits at Cannibal Gorge are problematical?—No; parties have been working on a small tributary of the Cannibal Gorge for years,

and have got very good results from sluicing. I know the parties. They would not have worked for years if they were not getting satisfactory results. Communication is so bad, and the cost of getting provisions is so dear, that the country cannot get properly developed until there is either a railway or a road.

526. Do you imagine that the gold-mining industry in itself would be sufficient to justify the construction of a railway by any particular line?—Certainly not. Practically speaking, a ton of gold is no more value for traffic than a ton of coal.

527. Why do you quote the gold industry?—It will settle a population having aggregate wants.

528. What is the population now employed in gold-mining?—I would not like to say.

529. Have you any idea approximately?—No; I could not say. There are gentlemen here who can.

530. In what way do you think a railway would increase the population?—By developing the coal resources, and, secondly, the auriferous resources of the country and the timber resources also. You would settle population not only along the line, but it would be a base from which to get supplies, and branch lines could be made if necessary. The difficulty at the present time consists in not being able to get about the country for the want of a base in the shape of a railway or road. A railway would of course be the best.

531. Do you know the distance from Reefton to Christchurch?—About 175 miles.

532. By the Ada or Lewis?—The Ada.

533. What by the Lewis?—Somewhat less, I believe.

534. You are intimately acquainted with the country?—I explored the Ada, but not the Lewis.

535. Which do you recommend?—The Ada, because it is a better grade.

536. The Lewis is a shorter route, but not a better grade than the Ada?—Not having been over the Lewis I cannot say.

537. Do you know the difference in grade?—According to the reports published by the Public Works Department the grade of the Lewis is 1 in 25; the Ada 1 in 50. The grades are arrived at from a reconnaissance survey.

538. What is the altitude of the Lewis Saddle?—I believe it is somewhat lower than the Ada. I am not prepared to say what.

539. Then you think that unquestionably a railway by the Lewis or Ada route would serve Reefton better than any other line?—Unquestionably I think so, assuming you can get as good a grade on one as the other, as the mineral traffic will all be from this side.

540. Which do you think the best line of railway for Canterbury, putting Reefton altogether out of mind?—I take it in connection with the resources of the country you pass through. In that case Reefton should certainly not be omitted, if you can get a good grade either by the Ada route or the Lewis Saddle, so long as Reefton is touched by the route.

541. How would it do to bring the line more to the centre of the West Coast, with divergent lines north and south?—You would pass through a lot of country that is not auriferous, and without having the coal deposits Reefton has.

542. Then you think that unquestionably, for supplying Christchurch and the more populous districts of Canterbury, the Ada Pass is the line which should be taken?—I think so.

543. Do you know any other part of the West Coast besides this district?—I have been as far south as Hokitika.

544. Is the timber supply at Hokitika to be compared with that about Reefton?—You have a different class of timber on the coast to what you have at Reefton. The birch predominates on the hills and the pines on the flats.

545. *Mr. Wilson.*] Which is the more useful timber?—They are both useful in their way. There is remarkably fine birch, such as I have not seen anywhere, in the Inangahua Valley, especially in the upper part of the valley.

546. *The Chairman.*] Then, taking it on the whole, do you imagine the timber in this district is better than any other timber on the coast?—I would not say that. I am not sufficiently acquainted with the timber in the Hokitika district to say that; but there is very good timber to be found between here and Greymouth of the same character as Hokitika timber.

547. *Mr. Bell.*] What kind of timber is it?—Principally pines between here and Greymouth. You get some birch on the ranges; on the lower levels pines.

548. Do you know if there is any pine from Cannibal Gorge to Reefton?—None. At any rate, if there are pines they are isolated, and of course the timber towards the Gorge is of a more stunted character than you get further down.

549. I have never seen birch for sale in the markets?—I have used it for the lower beams of trusses. You cannot get any near Christchurch. If you could get it there of proper size it would be used. It is good for any purpose if you get it from the heart of a big tree. I have seen samples of it introduced into Christchurch. The foundations of a saw-mill at Oxford were put down nineteen years ago, and the timber is quite sound to this day.

550. *Mr. Wilson.*] Have they not black birch at Oxford?—Yes; but the best part of the timber is exhausted, and they have to go into the ranges, which are difficult of access. I may mention that some years ago, in constructing the northern railway, there was a cry from the Oxford sawmillers to introduce birch for sleepers. I made a stipulation so as to get the heart of the tree. These people sent at least 25 per cent. of sleepers so sappy that I unhesitatingly condemned hem.

551. *Mr. Bell.*] Do you know whether sleepers of birch are lasting?—I am certain they are, if cut out of a large tree. The heart of black birch is lasting.

552. Do you know whether they are used by the Government?—I could not say, as I have severed my connection with the Government since the abolition of the provinces in 1877. In conection with the durability of birch I may state that the bridge over the south branch of the Waimakariri, about nine miles out of Christchurch, was composed of birch, 18 inches by 9 inches in

the section, and I certainly passed that bridge for traffic. Thirteen or fourteen years afterwards it was repaired, previously to a new bridge being put up, and out of all the lower cords only two were condemned. All the rest were perfectly sound up to that time.

553. *The Chairman.*]. In connection with coal, do you know anything about the value of the coal in this district—I mean its value for steam purposes?—No; but evidence will be brought before you by Mr. Brennan. My report on the coal is merely a general one as to the coal I have seen, the thickness of the seams, and so on. I would suggest that the different seams should be experimented upon by an analyst, for steam or household purposes, for gas, or for smithy uses. The Government workshops at Christchurch use smiths' coal largely.

554. You are not prepared to give information as to the relative value of this coal, Westport coal, or Hokitika coal?—I am not. I don't think there has been any analysis made of any of the seams in the Reefton district.

555. Do you know at what price they are selling Reefton coal?—It is supplied at £2 a ton.

556. *Mr. Bell.*] Is it preferable to firewood?—Yes; it is the cost of bringing down that prevents the general use of it. If it were produced cheaper, more of it would be used.

557. Then, in passing from here towards the Ada Saddle, you have to pass another saddle which is very nearly as high as the main range. Don't you think that would prejudicially affect the traffic —running over two mountains of nearly equal height?—To a certain extent yes, but the grade is nowhere worse than 1 in 50. You have got the same grade on the Weka Pass.

558. *The Chairman.*] Do you think you could compete from Reefton with the seaborne timber and coal from other colonies or ports of this colony?—Unquestionably. The *Engineer* states that in October, 1876, the five principal lines running into London carried 330,000 tons of coal. Those lines belong to companies. They would not take that amount of coals over the lines unless they made a profit. It is dividends they are looking to, and there is considerable competition with seaborne coal in England.

559. In laying down a line *viâ* the Ada Pass or Lewis Saddle, what basis do you take as a point of delivery on the East Coast?—You will commence from the Waiau, and from that point down to Christchurch there is a settled population. As you approach Christchurch, the delivery will be greater.

560. Taking the southern towns of Canterbury into consideration, wouldn't a more southern line suit them much better?—I question whether they would not get their coal cheaper from Newcastle direct to Timaru than with such a long railway carriage as would be necessary if they brought coals from the west coast of this Island by rail.

561. But you think that would not apply to Christchurch itself?—No; because you can deliver coal in Christchurch for about half or very little more than half what is now charged for Newcastle coal.

562. Do you know what the price of Newcastle coal is in Lyttelton?—No; but I can speak with authority about Christchurch. I have been paying £1 18s. and £2 for not less than a ton. A great number of vessels were chartered from Melbourne and Sydney to proceed to Newcastle to bring cargoes of coal to Lyttelton in view of taking cargoes of grain home to England. A great number of these charterers were disappointed in their expectations, and cargoes from 1,000 to 1,500 tons were sent direct to San Francisco, because they could not get freights for them. They had overdone the market.

563. Assuming the evidence we have to be right, Newcastle coal is landed at £1 1s. a ton in Lyttelton. Do you think they would be able to send it from here by railway cheaper? Yes; for this reason: that it will cost, I think, about 5s. 6d. a ton from Lyttelton to Christchurch. That makes it £1 6s. 6d., and then there is the retail profit. We could undersell them by sending direct from here. Assuming that the same price per ton is charged for the through traffic rate to Reefton at 1d. per ton per mile, we could then land the coal in Christchurch at £1 a ton. Five shillings a ton will put it into the trucks, assuming there is a siding alongside.

564. And you think you would also be able to stand the competition of the Greymouth Railway?—Yes; and deliver it for less than they would. If the railway *viâ* Arthur's Pass and Hokitika is extended on to Reefton, I don't see that there will be much difference in the length. I am under the impression that it will be longer.

565. Then it is about the same distance north-about as south-about?—Yes.

566. Then, under those circumstances, would it not be better for the whole of the West Coast if the railway went south-about?—No; because you reach minerals 110 miles from Christchurch by the Ada Saddle.

567. These minerals are not worked?—Certainly not. It would not pay to work them in the absence of communication. That they exist there can be no question of a doubt.

568. Should you be called upon to recommend the construction of a private railway for people to invest their money in, would you do so on such a consideration as you have just mentioned?—I should not hesitate a moment—knowing what I do of the country from Cannibal Gorge westward, independently of this seam of coal which is said to exist on the Ada Saddle—to recommend a private company to make it.

569. Do you know the width of that seam of coal?—It is reported to me by settlers to be 14 feet thick, but I don't know myself.

570. What other minerals are there?—Gold, certainly, from the Cannibal Gorge to the coast and quartz also.

571. Has that reef been tested?—Yes; by a company of miners, but in no other way.

572. Can we get any information as to what the yield of gold is?—I don't think it has been developed to that extent. I have no doubt, from what I have seen of the country, that other quartz reefs can be found in the country. You may certainly look for gold anywhere between Cannibal Gorge and the coast, alluvial and quartz.

573. *Mr. Bell.*] If the line were made from here, how would the southern portions of the coast

be served?—By a continuation of the railway from Greymouth south. If you go the other way you meet with no auriferous country until you get to the coast, and no coal until you reach Greymouth, the extreme end of the line.

574. Then a large part of the traffic is said to be of timber?—You would certainly get a large traffic in timber from either line, but from what I have seen of the two lines as Engineer of the West Coast Road the timber is preferable on the Ada Pass route to that on the Arthur's Pass route.

575. *The Chairman.*] Do you know the timber round the Brunner district generally?—Only as I pass through it on the road. I could not give an opinion about it.

576. *Mr. Bell.*] Where is the coal mine that is said to exist on the Ada Pass?—It is on the Lewis Saddle.

577. *The Chairman.*] It has been urged upon us elsewhere that the traffic to the southern part of Canterbury would be of great importance. What is your opinion of that?—I should take it as of secondary importance as regards the supply to Christchurch and surrounding districts.

578. Will not the seaborne coal and timber to Christchurch compete with coal and timber brought over by a railway?—I know that timber merchants in Christchurch are getting timber from Invercargill, 369 miles, by rail, so that there is not much probability of seaborne timber competing with the railway route.

579. Then you think the railway route would carry the whole of the timber trade?—I think it will carry the bulk of it. Ironbark from New South Wales and kauri timber from the North we cannot compete with.

580. You think the bulk of the through timber would be carried by railway?—I do.

581. Then the bulk of the population being in Southern Canterbury, even including Christchurch, would it not appear that a southern line might perhaps carry the most timber?—I cannot admit that the bulk of the population is in Southern Canterbury. From the official returns, within a radius of three miles from the cathedral you will find a population of 45,000. Sydenham has a population of 9,000, Christchurch 16,000. Then there are the Borough of St. Albans, the suburbs of Addington, Phillipstown, Bingsland, &c., the populations of which are not included in any returns. I have heard it calculated at 50,000.

582. Then you think the Commissioners may put Southern Canterbury out of their calculations in considering the question of carriage?—I could not say that either. I think that a certain portion of timber and coal will find its way down south, but nothing compared with what would find its way to Christchurch and suburbs.

583. *Mr. Wilson.*] Do you know the Springfield coal?—Yes.

584. How does it compare with the coal here?—I should say very unfavourably. From what I have seen of this coal I should not call the Springfield coal a true coal.

585. Do you call Reefton a true coal?—Very much more so than Springfield.

586. *Mr. Bell.*] Is it a fact that all coals up here are brown coals? Mr. Harrison, of Brunnerton, has said so?—I should scarcely take his opinion to be impartial. A brown coal is not a true coal. It is better than a lignite, but it is not a true coal.

587. *The Chairman.*] Then you consider these coals are not brown coals?—If they are, I should consider them of very superior quality. I don't profess to give an opinion upon the different qualities of the coal.

588. Surely you have formed an opinion as to whether it is brown coal or not?—I should not like to say.

589. *Mr. C. Y. O'Connor* (through the Chairman).] Do you hold that the railway would strike minerals when nearer to Christchurch—coal or other minerals—by the Ada Pass route than by the Arthur's Pass?—I am of that impression. I cannot tax my memory as to the exact distances of either route. Considering the other advantages which the Ada Pass route would have over the Arthur's Pass route, I should certainly give the preference to the Ada Pass, as it would settle a greater population than the Arthur's Pass route.

590. *The Chairman.*] Do you know the distance from Christchurch by the Ada Pass at which you first strike coal?—One hundred and forty miles.

591. What distance is it from Christchurch to the Brunnerton line?—I think it is represented to be 142 miles.

592. The only other question I have to ask is, which line of railway would benefit the whole of the West Coast most, should you think, leaving any one particular place out?—I am of opinion that the Ada Pass route would, if continued to Greymouth.

593. How many miles is it from Christchurch to Greymouth by the Ada Pass?—About 218 miles to Brunnerton.

594. How many from Christchurch to Reefton *viâ* Brunnerton?—I could not say the exact mileage. There are no resources on the route for the settlement of population. That is what I lay great stress on.

595. *Mr. Wilson.*] You estimated in your report that the Hurunui-Ahaura line could be made for £657,000?—That is an approximate estimate.

596. Supposing this to be the estimate, what route did you take to the Ahaura?—By the Cannibal Gorge to Reefton, and down to Ahaura. In the absence of a detailed survey, I take it that, as there is an average country, smooth and rough, between the Hurunui and Greymouth, you may safely take the average cost of the whole of the New Zealand railways, which is £7,000 a mile. I think it is a fair inference. I estimate the cost of this railway will be under the cost of New Zealand railways, because prices were 25 per cent. higher than now. There is timber on this line, too, for sleepers, bridges, and culverts. I think there would be no difficulty in getting sleepers at 1s. 6d. each. I am quite convinced £7,000 a mile will amply construct the line.

Mr. J. A. MONTGOMERIE, District Surveyor, examined.

597. *The Chairman.*] Why have you fixed the gold limit between Big River and Alley's Creek? Does not the gold extend on either side of these bluffs?—In some places they find it a mile away.

598. Are most of these mines being worked?—No. There are now only twenty-five in work. Most of them have had a little done in prospecting.

599. Why are the others not working?—I do not suppose there are means of getting to the claims—no road; and they have not sufficient basis to go upon.

600. Is the principal reason because they have not got the capital?—That is the fact; they had to stop from want of capital.

601. Do you think, if they had capital, the rich mines would be worked?—Yes.

602. Have you any idea of the number of claims where they turned out 10 dwt. to the ton?—I think you will get that information from some of the others who are giving evidence on this matter.

603. Are the claims taken up last month new claims?—For one called the Globe they are getting machinery now. It is about 95 chains from here. That is the distance from the river.

604. And what about these ninety-six applications for unoccupied leases?—They are in hand to be surveyed. Some of them are close at hand.

605. Do you take it the population will increase much?—I think so. I always see fresh faces. I cannot speak as to the population.

606. Has population increased?—I think so, but do not know officially.

607. You estimate the field will last from thirty to forty years?—I think Mr. Gordon will give you information on that head.

Mr. H. A. GORDON, Inspecting Engineer for Mines, examined.

608. *The Chairman.*] Approximately, you imagine that quartz reefs may be looked for almost everywhere in this neighbourhood?—Yes.

609. And the probable duration of the field has been estimated at from thirty to forty years. Upon what basis have you made that calculation?—Upon the basis that payable quartz has been found for a depth of 740 feet, and I have taken 600 feet as the basis.

610. *Mr. Bell.*] Are all these veins presumed to go down that distance carrying gold?—They have found gold to a depth of 740 feet, and in all probability they will find it a great deal deeper. There are no indications of its ceasing.

611. If the population were increased, would that not decrease the duration of the field?—It would to a certain extent, but even in quartz mines it is a limited number of men you can get on. You can only work a certain amount out of one shaft.

612. Can you give us any idea of the population that would be employed in quartz-mining?—The only basis I can go upon is this, that, taking the average thickness of the present reefs, they would be about from 4 feet 6 inches to 5 feet thick; but there are considerable breaks in them where there is no quartz at all. I consider a reef to be continuous if 2 feet thick. Taking the number of men it would require to get out the quartz on a basis of 600 feet deep, it would employ on one line of reef 1,100 men for forty years. There are several lines of reef. If one line were continuous, it would take 1,100 men for forty years.

613. Then do you imagine, from your experience, that they would work two lines of reef at one time?—Yes. In several instances they would be working two and three lines of reef.

614. What other number of men would be employed in connection with mining?—I reckon that, to work a reef on the basis of a 2-feet-thick seam, it would take three and a quarter men for every ton of stuff, and, taking the crushing into consideration, it would cost 12 dwt. to get it and put the gold in the market.

615. And you imagine they will get 12 dwt. per ton?—The average yield has been considerably above that.

616. Surely it is quite abnormal?—I think it would go 12 dwt. to the ton. In some reefs you will get large bodies of stone where 5 dwt. would pay. You will never get gold so cheap as on the Australian fields, because the reefs there are far more regular, and it does not cost so much for main levels and shafts. You have not to prospect so much there as here.

617. You estimate altogether that a gold field of 12,800 acres in extent would not employ more than 2,200 men in gold-mining?—That is the basis I have taken.

618. Are these reefs miles in extent?—For six or seven miles you can trace them. They have never traced them to be continuous.

619. What is the actual yield of gold?—For the last twelve months 20,538 ounces.

620. Do you know what it was during the preceding year?—I do not know.

621. Have you any reason to suppose it will be a larger yield this year?—I should think there would be, because they are erecting much more machinery this year than last.

622. Why are not more of the leases worked?—I think it is the want of machinery to a great extent, and a great deal of it is due to no prospecting being done. If one good claim is taken up, very likely twenty or thirty leases are taken up and held in abeyance. They are not worked for want of capital.

623. Why do you imagine that capital will not flow in?—I do not think it will until such time as the mines are worked in that way to continue paying dividends.

624. We heard from Mr. Thornton just now that gold is found as far up as Cannibal Gorge?—I cannot say; I do not know of it; I now speak of quartz. I know that alluvial has been got in Maruia. They are working it now. There are something like 220 men in the Maruia district, from the Maruia mouth upwards.

625. Do you know at all with what average success?—I could not tell you. They are reputed to be making fair wages.

626. What is the rate of wages for labourers?—Ten shillings a day.
627. Is that in excess of ordinary mining wages?—It is 1s. more than they pay at the Thames.
628. Is it necessary that a man should be an experienced miner to get work here?—It is necessary for him to have some knowledge of mining before he is put in charge or can take charge of a drive. Common labourers would be very little good.
629. Why are wages higher here than at the Thames?—Provisions are dearer, and I think that is the cause of it.
630. Do you know what a labouring man can live upon here?—From £1 to £1 2s. per week.
631. Do you know what he pays at boardinghouses?—I think it is £1 5s. a week.
632. What do you pay in freight?—The freight from Greymouth is £5 a ton. The stores and groceries come from Greymouth and Westport. The carriage is the same from each place.
633. Are there mines which will not pay to work with wages at £3 a week, which might be worked at £2 a week?—There is no doubt about it. The poorer mines would be worked if living were cheaper. Wages will not make such a difference when once the country gets good roads. With better appliances, machinery, rock-boring drills, and likewise good roads, and food cheaper, it is possible the poorer mines might be worked.
634. *Mr. Wilson.*] What is the cost per ton to crush?—About 10s. by steam. What is wanted is roads in all directions through these hills. Even if there were a railway, and no roads, it would be of very little benefit.
635. Do you know anything about the quality of the coal here?—From what I have seen of its quality I could compare it to the coal in the Springfield pit. It is similar to that. I have seen no bituminous coal here. I would consider it as good as Springfield. It is brown coal.
636. You are quite convinced all the coal about here is brown coal?—Yes. It burns to ashes. It does not cake.
637. *Mr. Bell.*] Does the coal, when exposed, fall into dust?—It all cracks.
638. Does that cracking characterize the Reefton coal?—Yes, to a great extent. Anything that lies for a long time all cracks.
639. Is there a considerable difference between the coal we saw up here and the coal at Brunnerton?—Yes.
640. In what respect?—The coal at Brunnerton is bituminous coal. It cakes the moment it is put in the fire.
641. Then do you mean that the Brunnerton coal is better than this coal?—I should think it better for steam purposes.
642. *The Chairman.*] Which is best for general household purposes?—This coal would be very good for household purposes. I think it would be as good as Brunnerton for that.
643. And would it be better than Springfield coal?—I don't think so. I don't think there is any difference between Reefton coal and the best sample of Springfield coal.
644. What is the character of the timber?—It is of very good quality. There is black birch, totara, black pine, and silver pine—all durable timber.
645. Is there a large area of ground which could be worked?—Even if there were a railway through, the timber will be difficult to get. What would be easy will be adjacent to the line. The country is so rough and broken that it would be expensive to work the timber.
646. What quantity of totara is there?—There are only isolated trees. Black birch is the prevailing timber.
647. What is it cut for?—For bridge-building, or any other purpose for which durable timber is wanted.
648. Why is not more of it used for building houses?—It twists too much.
649. For inside work?—The slightest heat will twist it.
650. What return per acre would the Government derive if there was a royalty of 6d. per hundred?—I think in an ordinary bush there would be something like 10,000 feet of sawn timber to the acre. That is to say, there is any quantity of trees, but not fit for cutting.
651. *Mr. Wilson.*] Can you give us any idea of the area?—I have no idea of the area of timber-land.
652. How far south do you go?—All over the colony.
653. *Mr. Bell.*] In what capacity?—Inspector of Mines.
654. *The Chairman.*] Can you give us any information about the gold-mining in the South—at Kumara and down that way?—Kumara is a lasting gold field for a number of years.
655. Have you any opinion as to how long it will last?—It will last twenty or thirty years.
656. And the Totara—have you any opinion about that?—Alluvial mining is so uncertain that it is very difficult to form an opinion.
657. Do you know anything about the Ross mines?—There is a considerable amount of ground taken up that will not pay for working at the present rate.
658. Do you know anything of the timber in that part of the district? Where do you consider the richest timber-ground on the West Coast?—The ground between the mountains and the sea-coast. The most durable timber is north of the Teremakau River. There is no black birch; it is principally red pine north of the Teremakau. Red pine is a very good timber, but black birch is valuable on account of its durability.
659. Is not red pine a better timber in the market than black birch? Supposing you were going to build a house, wouldn't you get red pine?—I should get black birch for framing.
660. *Mr. Bell.*] How do you account for it that there is no black birch in the Christchurch market?—It is not so very near the sea-coast. It is pretty well cut, and you have got a long way to bring it.
661. Is black birch used here for house-building?—Yes; wherever they can get it.
662. *The Chairman.*] Is the most valuable land between Greymouth and the Teremakau?—Between Greymouth and Ross there is a large belt of good timber, or between Grey River and Jackson's Bay.

663. Better than in the neighbourhood around Reefton?—It is timber that could be the easiest cut, because it is flatter country.

664. *Mr. Bell.*] Do you know anything of the area that shows coal?—I could not form any idea of the area showing coal here. There is a large area showing coal about Brunnerton and Westport. There is a belt of country that goes seven or eight miles back from the seacoast.

665. Does coal show from Brunnerton all the way to Westport?—Pretty well all the way.

666. Is it a good kind of coal?—Yes. You will get it all the way to the Mokihinui River.

667. In regard to this Reefton coal, is the outcrop extensive?—I do not think the area is so particularly large, but there seems to be a belt of it here and there.

668. *Mr. Wilson.*] Have you any information about the coal said to be in the Cannibal Gorge?—No.

669. You would be likely, we thought, to have information about that?—Officially, it could not be brought under my notice.

670. *Mr. Bell.*] That coal will be of similar quality to this Reefton coal?—I should say so. I should expect it to be so. There is an outcrop of coal near Castle Hill. It appears to be of the same quality as Springfield coal.

Mr. CHARLES MACQUARIE, Engineer, examined.

671. *The Chairman.*] We are anxious to ascertain the value of this Reefton coal. Have you used it at all?—Yes. I have used it for nine years for steam purposes.

672. Whereabouts?—On Murray Creek.

673. Were you accustomed to engineering before you came here?—Yes; in Otago and in the Old Country.

674. What kind of coal is it that you use here?—It is a black coal we get from the Golden Treasure claim.

675. Have you ever used the Westport coal?—No.

676. Which coal have you used?—The Grey coal.

677. Which do you consider best?—The Grey coal; there is more body in it.

678. How much is it better than Reefton coal?—I should say about 23 cwt. to the ton, no more.

679. Do you know whether most coals about here are of the same quality?—They vary.

680. Are the coals about here principally brown, or are they true coal?—Principally true coal.

681. *Mr. Bell.*] Do you know the quality of the Springfield coal?—I have seen it going across the country. I don't consider that good coal.

682. Is it as good as Reefton?—No; it does not resemble it. I have used the Kaitangata coal. We got it in the Molyneux in 1859, but it was very inferior. We called in there to get the coal, and filled the bunkers full.

683. How does this Reefton coal compare with Newcastle?—It is cleaner than Newcastle coal.

684. I mean in strength?—There is more body in the Newcastle coal. I consider the Grey coal far superior to the Newcastle coal. You can run a fire with Grey coal for about four hours, and with Newcastle coal you would have to clean every hour perhaps.

685. Is this coal fit to burn in a locomotive?—Yes; there are no sparks in this coal.

686. Does this coal, when stacked in the open air, fall to pieces like the East Coast coal?—All coal will perish if exposed. The coal round here will keep the whole winter. I have coal I got last winter which is now as hard as when I got it. This coal is not so good for smithy purposes as Brunnerton coal. The Wallsend coal I consider the best smithy coal in the southern hemisphere.

687. *The Chairman.*] You consider the Brunnerton coal the more valuable of the two?—Yes.

688. *Mr Bell.*] Is the coal about Reefton a good househol dcoal?—It is far superior to Brunnerton.

689. Would you call it an economical coal?—Yes. What I have seen of Grey coal does not give such a fire as this. You get a clearer, brighter fire from this coal.

Mr. JOSEPH WYLDE, Mechanical Engineer, examined.

690. *The Chairman.*] We are anxious to get information as to the quality of this Reefton coal. Is it a true coal or a brown coal?—It is a true coal, I believe—an excellent steaming coal. I have experience of the Energetic seam and the Golden Fleece seam. Both are true coals, and very good steaming coals—about the best I have had any experience of; very clean.

691. What other coals have you used?—Newcastle, West Wanganui, and the Brunner.

692. And you consider Reefton better than Newcastle?—Yes, for steaming.

693. In what respect?—It is lighter, and does not require so much stoking. Brunnerton coal is very good. It is better for steaming purposes than Newcastle. I don't think there is much choice between Reefton coal and Brunnerton coal for steaming.

694. Which of them do you consider most powerful?—I think Reefton coal would go rather farther for steaming. For blacksmiths' work Brunnerton is superior to any I know.

695. For household purposes I suppose Reefton is the best?—Yes; it burns away to an ash.

696. Do you know which is most economical?—I could not say. Reefton coal makes a brighter fire.

Mr. HUGH GRAHAM, examined.

697. *The Chairman.*] Are you an engineer?—Yes; I am a mine-owner here. We had a gold mine, and of course a coal mine attached to it, at Rainy Creek, about eight miles from here.

698. You use the coal from your own mine?—Yes; only for our own steaming purposes.

699. Do you know anything of the coal generally about the district?—Yes; I have seen all of it about here. Our coal is very similar to Lankey Creek coal; if anything, ours is superior, I think. Ours is enclosed in a better formation—a rocky roof and floor as well.

700. Is Lankey Creek a brown coal?—No; it is a black coal.

701. Is it good quality black coal?—Yes; for household purposes I don't think it can be equalled anywhere.

702. For steaming?—It is a very good steaming coal.

703. Have you any idea how it would compare with Newcastle?—I have never gone to the trouble of having a proper test. The only way would be to have a certain quantity of each weighed out, and both fired under the same boiler. Some boilers require a greater quantity of coal to keep steam up. I have seen a deal of steaming in all parts, and I reckon Reefton coal quite equal to Newcastle for steaming purposes. But, to look at the two coals, I would consider Reefton the superior of the two.

704. Do you know anything of the Brunnerton coal?—Yes.

705. Which is best—Reefton or Brunnerton?—For certain purposes this is superior to that, and that to this for other purposes. For blacksmiths' purposes, and probably for gas, Brunnerton is superior to Reefton.

706. And for steam purposes?—I would consider Brunner coal superior to this. The Brunnerton is a very soft coal. There is a lot of slack in it. It lies very close. At first, when steamers began to use the coal, they were very proud of it.

707. Then you think, on the whole, that Brunnerton is a better steam coal than Reefton?—I would not like to say that it is. It is very little better, if anything.

708. And for gas?—I could not give an opinion on that. We have never tried this coal for gas purposes.

709. For household purposes you prefer the coal here?—I think it is not to be surpassed.

710. It would warm a house the best?—I should say that this coal here is a much harder coal than Greymouth coal, and can be broken up for a grate much better. It is a fine clear coal, and leaves very little ash.

Mr. James Connolly, examined.

711. *The Chairman.*] I understand you deal in coal?—Yes.

712. Have you ever used coal yourself?—I supply the town principally.

713. Do you import any coals from elsewhere?—No; some years ago I got Brunner coal before the Reefton mines were opened.

714. Can you tell us anything about the quality of Reefton coal?—The coal varies in quality all over the district. For instance, the eastern belt, including Lankey's and Golden Fleece coal, is coal of a superior quality for blacksmiths' purposes; but the coal in the western belt, close to Reefton, I believe is better for gas purposes. A small quantity was sent home to England some years ago; for gas purposes a very favourable analysis came out. In fact, if you put it on the fire you can see the difference.

715. Do you think the Lankey coal would not do for gas?—I do not say that, but I believe the coal nearer town has better gas properties.

716. Which is best for steaming?—I believe both are very good. I have supplied some of the principal mines here with coal. The Energetic claim is a large consumer, and the Golden Treasure also.

717. I suppose you think one is a true coal, and the other not?—I do not say that it is, but I believe one will be better for gas purposes. My opinion of it is that it is a superior brown coal. The coal outside may appear black; inside it is brown-marked.

718. Do you find that this coal weathers badly?—The weather has no effect on the Murray Creek coal; but some coal that has been introduced in Reefton is from the outcrops, and it would not stand the weather. Coal got from under the proper coal-cover is very good for standing the weather. Messrs. McKay and Cox had a very high opinion about the country. The granite is exposed. They considered that was the true cover of coal. The great fault was that we were not far enough in. Coal is taken wherever it is easiest to get at it. There has been no inducement to go largely into the coal trade. You can trace coal measures on both sides of the hill. There would be 1,500 acres on the flat. The coal crops out all along. On the eastern side the seam is larger than on the western side.

719. *Mr. Bell.*] What is the average thickness of the seams here?—Where I am working now it averages from 6 feet to 20 feet.

720. Does the same seam vary from 6 feet to 20 feet?—As far as my experience goes it does. The coal dips into the hill, and gets thicker as we go in. We were on the top of 14 feet of coal. The bottom dipped so deep; we sank down 14 feet and did not get bottom. We went further along, 14 feet underneath, and 8 feet between the tunnel and what was overhead. The coal is about the level that the railway-line would go along. There is nothing to be done but to shunt the trucks to the tunnel mouth.

Mr. Robert James Johnston, Mining Surveyor, examined.

721. *The Chairman.*] Can you speak as to coal, gold, or both, in this district?—No; I have been assessing for the property-tax. I have the selling price of all the mines on a certain date.

722. Can you give us the total value of the mining properties?—The list I have here will show that.

723. *Mr. Wilson.*] Can you tell us the average value?—The Welcome was valued at £5 5s. a share for 20,000 shares.

724. Then you are not able to tell us the total value of mining property?—It is in this list, which has been made out for the Property-Tax Department.

725. *The Chairman.*] Then we cannot ask you for that. Do you know the value of the machinery?—No; the valuation of the mines includes it.

726. Have you been able to form any opinion as to the duration of the mines?—No; I never thought of that. There is a belt of country here about a mile wide. There are reefs through it all.

It extends about seventeen miles to the south and about thirty miles to the north, right to the Lyell. [The witness handed in a list of the Crown lands in the district.]

727. Have you formed any opinion as to what the value of the timber is?—No; I believe the land would sell for the price asked if the communication was better.

728. Has the County Council accepted your assessment?—They have to.

729. Were the Government satisfied with it?—Yes.

730. The reserve price of land, I think, is £1 an acre?—Yes.

Mr. JOHN TRENNERY, examined.

731. *The Chairman.*] What position do you hold?—I am manager of the Golden Fleece Extended Company—one of the first companies that placed machinery in this district. We are down our main shaft 640 feet. We have a winze 100 feet below that.

732. What is the thickness of the reef at the top?—It has been as much as 8 feet. We have now 5 feet in the winze down to 3 feet. From what we know of the district it looks promising, and I should judge that other claims, not nearly so deep, will be payable at a much greater depth than at present.

733. Have you any idea how deep you may be able to go?—The Keep-it-Dark is something like 800 feet. Our shaft is 1,250 feet above Black's Point.

734. Is it the same reef?—It is in a northerly direction. The lodes are principally north and south. We do not consider we are on the Keep-it-Dark lode. Our lode crosses.

735. You imagine you may go down as deep as the Keep-it-Dark is now?—That is what we hope. It has been proved that gold-bearing quartz in other places is below the sea-level.

WESTPORT, SATURDAY, 12TH MAY, 1883.

Mr. W. R. HASELDEN, Mayor of Westport, examined.

736. *The Chairman.*] The object of the Commission is to get evidence as to the cost of construction of a railway connecting the East Coast of Canterbury with the West Coast, and as to what would be the results of such a railway. Are you in a position to give evidence on those points?—Scarcely.

737. Then what do you think of the desirability of connecting the East Coast with the West Coast?—I made careful inquiries amongst the leading men of this town, and, as far as I can ascertain, they all join with me in expressing this opinion—that, viewing the greater importance of harbour works (of which there may be said to be none at present in Westport), and the urgent need of main trunk roads, it would be unwise to divert such a large sum of money as would be necessary to construct a railway from the East to the West Coast.

738. That is to say you think the whole of the West Coast would be better served by harbour works and roads than by a railway?—Certainly. Until harbour works are constructed the railway should be of secondary importance. Putting it concisely, I should say a man should have a front door to his house before he has a back one.

739. And supposing there was a possibility of constructing a line of railway, which do you consider would be best for Westport, a line to the East Coast or to Nelson?—Decidedly to Nelson.

740. Commercially?—Commercially.

741. Why so?—Because the string of towns and districts lie in that direction; and, as far as I can learn, the route is easier and cheaper.

742. Would Nelson form a port for Westport, or would not Westport hope in time to import largely enough for itself from the large markets, wherever they may be?—As it is, Westport imports chiefly from the larger markets in New Zealand and Melbourne. I don't think that Westport would ever import from Christchurch, for instance.

743. You have not, I suppose, any direct acquaintance with business?—No; I am a solicitor here.

744. We have heard it alleged that it would be a great convenience to the West Coast if there was any direct communication with the larger towns on the East Coast, so as to avoid keeping larger quantities of goods in store?—It is better for me to speak from a Westport point of view. What I should say of Greymouth and other places would be of very little value. Westport's point of view is that she would not be benefited simply by a railway from the East to the West Coast.

745. With no line that could be made?—I do not think so. Westport thinks it is not at all likely that the main line would be made down the Buller; so she would get no benefit from the East Coast.

746. Do you think, then, that no communication can be made with Christchurch which is of material importance to Westport?—Not at all. It is a question of money. If you were to give us, by the stroke of a magician's wand, a railway from here to Christchurch, we should accept it as an enormous boon. It would afford us facilities for going into the interior of the country. It would be a shorter way to Christchurch. The question is, would that be commensurate with the outlay, and going without more important works?

747. Then you think harbour works are of more importance to you than the railway would be? Yes.

748. *Mr. Wilson.*] No railway that can be made would be bad for Westport?—No; it must do us a certain amount of good. If it was merely through Reefton to Grey Valley and Greymouth it would not make any difference, except that it would take away any trade that we do with Reefton.

749. *Mr. Bell.*] Supposing the line to Christchurch was of equal length to the one to Nelson, would it be any difference?—By going to Nelson we take in the Lyell and all the length of our county up the Buller River to Hampden.

750. Are there many people there?—For the West Coast a good many.

751. What are they engaged in?—Gold-mining chiefly. At the Lyell it is quartz and alluvial,

752. *The Chairman.*] Are you in a position to speak as to the population of the Buller County?—I tried to look up statistics, but should not like to make a statement as to the number.

753. You don't know whether it is increasing or decreasing?—I know it is increasing.

754. Is the population larger now than it has ever been?—With the exception of the time when the railway first started, and for a year after that, it is larger than ever, I think. All that population you saw at Waimangaroa is new during the last two years, with the exception of a hut or two.

755. *Mr. Wilson.*] And at top of the incline?—It is all new.

756. *Mr. Bell.*] Does this place produce much timber?—A good deal.

757. Of good quality?—I cannot call it first class, but it is of good quality. It is red pine. The following is the railway return [return handed in]. When the Koranui Company gets to work it will be greater.

758. *The Chairman.*] Do you export coal from here to Nelson?—Yes; to Nelson, Wellington, and Dunedin.

759. Can you give us any information as to the meat supply?—It comes from Wanganui chiefly.

760. Do you know at what freights?—No; the butchers buy in Wanganui, charter vessels, and bring the sheep and cattle down.

761. *Mr. Wilson.*] Does any of the imported meat go to Reefton?—It comes overland, I think, from Christchurch. Reefton, I think, is supplied by the breeders under the hills on the Canterbury side. They come through the Hurunui and other passes.

762. *The Chairman.*] The main trade of Reefton is done with Greymouth?—Yes.

763. Do you think that with a line from here you would be in a position to supply Reefton cheaper than Greymouth, if they, too, had a line, supposing the carriage was equal?—Yes. The shipping facilities are better here. There is no extra insurance for crossing the Buller bar, whereas 1 per cent. is charged for crossing the Grey bar.

Captain LEACH, examined.

764. *The Chairman.*] In connection with the East and West Coast Railway, one point we have to consider is, what effect good harbours would have upon the traffic of the railway? What can you tell us about the prospects of this harbour here?—I can give you the history of this place for the last nineteen years. The old channel was deeper then than this one has ever been. It was 17 feet deep at high water. It was so all the time I was connected with it. The river was then in its natural state. I find that all these rivers are deepest when they are so.

765. Have the harbour works undertaken had any effect upon the bar?—Yes; the works along the river bank have kept the channel steadier than it used to be.

766. Has the depth of water on the bar increased at all?—Of late it has shoaled, but that is due to an unprecedented spell of dry weather.

767. Do you imagine that the effect of the harbour works will be to deepen the bar materially?—I think so, if carried out.

768. What depth do you hope will be attained with the money that is likely to be available?—If Sir John Coode's plan were carried out, I have no doubt over 20 feet.

769. What depth of water do steamers draw that come in here?—The greatest depth they draw is 12 feet 6 inches.

770. Is there a sufficient quantity of coal got out to fill all the steamers that can be brought here?—No; the steamers have to wait sometimes.

771. Are there many occasions during the year when the bar is not practicable?—Very few.

772. Do you know the Greymouth Harbour at all?—I used to run there in 1864 and 1865.

773. Which do you consider the best harbour?—The Buller. There is no comparison between the two. We are sheltered by Cape Foulwind. But for that, I believe we should have a large river. It shelters us from the south-west wind and swell.

774. Do you know anything of the relative merits of Westport coal and Greymouth?—Opinions vary; some say one is better, some say it is worse. I think it is about equal. Engineers say the Westport coal is better for steam. The Greymouth people say, No. Westport coal is said to have greater specific gravity than Greymouth coal. More of it will go into a similar space. I would take them to be about equal. The Woolwich Arsenal tests in 1863 give the better result to Westport coal.

775. *Mr. Bell.*] Is this the only place where coal is found in this neighbourhood?—There is some at Ngakawau and at Mokinui. Some people say the coal is the same as this coal.

776. What is the seam at Ngakawau like?—It is a slip. I think it slipped from the hill.

777. What is the coal at Mokinui like?—It is black.

778. Is there coal south of Westport?—Yes, at Charleston; but it is lignite or brown coal.

779. *Mr. Wilson.*] Have you any experience of Reefton coal?—No. I think it is bituminous coal.

780. *Mr. Bell.*] What are the freights of coal from here to Lyttelton, for instance?—I think about 14s. a ton; 10s. to Wellington.

781. If there were a large trade here would the freights be lowered?—I think so. The larger the ship the smaller the freight.

782. To what extent could freights go down and be profitable?—In large ships it might go down 20 or 25 per cent. That would be 7s. 6d. for Wellington instead of 10s., and 12s. to Lyttelton. I think it would still be profitable with vessels of 600 or 700 tons. If the bar were deepened, there is no doubt vessels of 1,000 tons would call for coal.

783. What depth do you calculate to get by the present workings?—They are only carrying out the first part of Sir John Coode's plan. To deepen the bar they would need to have a wall on the south side too.

784. Is the water deep from the coast?—It does not deepen quickly.

785. Is there a strong coast current?—Yes; a northern set and drift of shingle and sand, especially during westerly gales.

786. Is there any difficulty anticipated in getting a deeper entrance?—I think not if Sir John Coode's, or similar works, were carried out. I consider that the mouth of the Buller only wants narrowing to get a depth of 20 to 25 feet at high water.

787. What is the range of tides?—Nine feet 6 inches at springs and 5 feet 6 inches at neaps. An average tide is 7 feet 6 inches. We have a 12- and 11-feet rise now and again, but that would be no good for commercial purposes. The main for the last month was 12 feet 7 inches, and 10 feet 8 inches for April.

788. What are the prevailing winds here?—South-west.

789. From what direction are the heaviest gales?—From the north-north-west; heavy seas from the north-west. We get heavy south-east gales.

790. *The Chairman.*] We have heard it stated that steamers of an improved build are being ordered for this port?—Yes.

791. What will they carry?—Five hundred tons, drawing 11 feet 6 inches. The "Omapere" carries 700 tons, and draws 13 feet 6 inches loaded. She goes away from here drawing 12 feet 6 inches, with about 580 tons. She went out all right. Sometimes she touches, but sometimes not.

792. You are not in a position to judge whether sea traffic in coal can ever be eclipsed by land traffic?—I think it is always understood that sea traffic can never be eclipsed by land traffic. Of course there are cases where it may be, but not so as a rule. Under certain conditions land traffic might be the cheapest, but I have always understood that sea traffic is cheapest.

Mr. JAMES POWER, examined.

793. *The Chairman.*] You are agent for the Westport Coal Company?—Yes.

794. Can you tell us the output of the present year? This year about 4,000 tons per month from the Westport Coal Company, which is the only company exporting coal. Last year the output was 47,000 tons.

795. Are you taking any steps to increase that?—Yes; we are spending £10,000, and the works will be finished in three months, to put down 500 tons per day.

796. *Mr. Wilson.*] Will you have a market for that quantity?—We have a market for any quantity if we can get it to Australia. They are trying hard to get it over there, the coal is so well liked, but, owing to the shallowness of the bar we cannot get large enough bottoms to come here.

797. You are taking steps, I understand, to get other vessels?—We have three new steamers. One has arrived, and another we are expecting daily.

798. Will these vessels take the coal to Australia?—No; they are only for New Zealand. They are not large enough for the Australian trade.

799. Do you imagine you will be able to get vessels of a larger tonnage over the bar?—If the Government would push on improvements, I have no doubt we could get 2 feet more water, even by carrying out the present half-tide wall.

800. Then, supposing the bar to be improved, will you be able to sell all the coal you can produce?—Yes; for steam or for household purposes there is nothing to equal it.

801. Are you at liberty to say what is the lowest rate of freight you can ship at, at a profit?—We are shipping from here to Lyttelton at good profit for 13s. per ton; and as the depth of water increases, and we get larger vessels, we can also reduce the freight.

802. Are you aware that grain vessels come to Lyttelton from New South Wales and are able to deliver coal for £1 1s. a ton?—I am, but this is only for three months in a year. They would have to come in ballast if they did not carry coal.

803. What is the lowest-paying price for your coal in Lyttelton by sea?—I could not tell you. Ours are all contracts. We put it free on board here at 13s. 6d. That makes it £1 6s. delivered in Lyttelton.

804. Suppose a railway were made to the Brunner Mine from Christchurch, and the Brunner Mine was able to deliver coal in Christchurch at £1 1s. a ton, would that affect your trade?—If they could do it at that price it would affect it, but I doubt whether they could carry it at that price. Our coal for steam purposes commands 1s. more per ton than Brunner coal. My opinion is that a railway for that distance can never compete with the seaborne freights. With the vessels that are being built we can put 500 tons into them in four hours. The vessels heretofore in use are not adapted for carrying coal on account of the time and expense incurred in trimming.

805. What price do you get in Melbourne?—We only sent a trial cargo. New Zealand consumes all we can give them.

806. Is the Koranui mine likely to start?—Yes; we expect it to start in a month.

807. Have you any idea what their output will be?—They say the line is capable of lowering 400 tons a day. They say their line is capable of doing that, but it has to be tried.

808. *Mr. Bell.*] I understood that the new survey and design made by your company are for putting out of one mine 1,000 tons a day. Is that in addition to the 500 tons?—Yes; that is at Granity Creek.

809. Then your company would put out 1,500 tons per day?—Yes; supposing the harbour improvements are sufficient to get larger bottoms in.

810. Are you of opinion that you could sell 1,500 tons a day?—I am not a bit afraid of it. We should have the supplying of the Orient or any other line. They would carry less of our coal, and get better results than from Newcastle.

811. *The Chairman.*] You consider your coal trade is independent of railway communication?—Decidedly.

812. Can you give us any information about the cattle traffic?—The cattle traffic is simply, I should fancy, the consumption from Wanganui, which is not more than thirty-five head per month.

813. Do you know what the average freight would be?—Cattle, £1 5s. a head.

814. Are these live cattle delivered?—Yes.

815. Do you know what the percentage of loss is?—We have only had to do with it for the last eight months. In fine weather the loss has been almost nil.

816. *Mr. Bell.*] Do you consider there is much loss in the weight or quality of the meat?—No; because they have always made quick passages. There is only one instance where they exceeded twenty-four hours.

817. Are sheep brought over in that way too?—Yes, on deck. We get 2s. a head.

818. Do you know anything about the other coal mines in this neighbourhood?—There are no others, except the Koranui. The Ngakawau is subsiding, I am told. I don't think they will work it.

819. *The Chairman.*] Do you know anything of the Reefton coal?—It is something after the Kaitangata coal. It is not a true coal. I have not seen any true coal there.

820. Do you know the Lankey Gully coal?—No; I have only noticed it at Dawson's Hotel. It was just the same kind, and burnt away very quickly.

821. What is the difference in value between Westport and Kaitangata coal?—About £1 a ton difference in the retail market. You will buy Kaitangata for £1 5s., and Westport and Brunner for £2. You have to burn twice as much of Kaitangata.

822. Is not Kaitangata coal pleasanter for household purposes?—No; it contains a lot of sulphur.

823. What proportion should you imagine would be sold in the market for domestic purposes?—I believe that when we get into our hard coal there will be no other used. That is my opinion; I may be prejudiced. We have to send coal to Reefton and Lyell for blacksmiths.

824. Do you consider there are no coal deposits on the coast of any commercial value but your own and Granity Creek?—I believe there is some half-way up the Buller, but then there is the cost of getting it down. We have millions of tons here.

825. Supposing it were the same distance to go to market from Reefton and Brunnerton, which would command the readier sale?—The Brunnerton coal is the coal for gas, and ours is very nearly as good, but not so good. But for steam, household, and blacksmiths' purposes there is nothing to excel ours. As far as I know, Brunner coal is worth twice the money Reefton coal is worth.

826. What price do you pay for your coal at the pit-mouth?—We pay 4s. a ton.

827. And for putting it into the ship?—We give the railway 2s. 6d. a ton from the foot incline to the sea, about nine miles.

828. And supposing you had a thousand-ton ship, could you put the coal at another 8s. into the market?—If we had a thousand-ton ship we could safely say 3s. a ton. If the railway were pressing us, we could also come down. We do run to Wellington for 10s.

829. *Mr. Bell.*] Do you think it can be done to Lyttelton for 10s., if necessary?—Yes; if pushed, and we had a vessel to carry more.

830. *The Chairman.*] Then you think you would be obliged to put coal into Lyttelton at 10s.?—I could not say that, because we are getting 13s. 6d. here.

831. *Mr. Bell.*] Supposing the freights are lowered, as you say they might be by competition, what would be the selling price of your coal in Lyttelton?—I have no idea. It all depends upon the supply and demand, like other things. But 10s. would be a low freight for Lyttelton. Sailing vessels from Lyttelton for coal will bring cargo at 10s. a ton, getting a return freight.

832. Usually vessels would have to come here empty?—Supposing we could give a vessel a charter, she could bring freight from Lyttelton at 10s. a ton.

833. The fact of your having no return freights to give such a large number of vessels as you contemplate would tend to keep your freights up?—Yes, of course.

834. Under these circumstances, do you think it possible to carry coals to Lyttelton at 10s. a ton?—Yes; I am speaking of our own boats.

835. Your company does not calculate to carry 1,500 tons a day?—No.

836. *Mr. Wilson.*] You have no royalty to pay on your coal?—I believe not.

837. What is the freight from Newcastle to Melbourne?—I believe from 8s. to 10s. a ton.

838. Is that a greater distance than from here to Lyttelton?—I think it is.

Mr. Thomas Bailie, examined.

839. *The Chairman.*] Are you able to tell the Commission in what way you think a railway would benefit this part of the West Coast?—I think the railway proposed would not benefit this part of the West Coast—the railway we hear spoken of so much, connecting Canterbury with the Brunner Coal Mine and Reefton.

840. You think that any railway which came up the Brunner would not benefit Westport?—It would certainly not benefit this part of the West Coast.

841. But supposing it were carried on through Reefton to Westport?—That might be of considerable benefit. I don't see what would pay a railway between here and Reefton for some time.

842. Do you know the amount of tonnage which goes from here to Reefton?—Now it would average about 12 tons weekly. I am not including the Lyell, but to the junction there would be perhaps 30 or 40 tons weekly, part going to Lyell, and the rest towards Reefton and Boatman's.

843. And supposing a line were made connecting Westport with Christchurch, do you imagine that the whole of the trade would be done with Christchurch, or would remain in its present channels?—I think the greater part of the trade would be done with Christchurch.

844. Why would the present channels be upset?—The reason of it would be that Christchurch is a larger market, and they import from Home direct. What makes the great bulk of the carriage to Reefton is the flour, which, for the greater part, comes from Christchurch or Lyttelton, or the East Coast somewhere, by steamer here, and taken by wagon to Reefton and other places. Flour,

oats, and wheat are the heaviest items, and, of course, the flour, grain, &c., would come direct by train.

845. What is the freight on produce?—One pound a ton, about 6d. a bushel, by steamer. By sailing vessel we get it for 10s., and we have had it for 5s. We have had small vessels coming for coal, and if they get a handy load of grain they take it very cheap.

846. Assuming that Westport will always do a trade by sea, wouldn't the cheap return freights by these vessels prohibit the importation by land?—I think that to supply the inland places it would almost all come by train. I don't see what probability there would be of its ever being as cheap by sea, reckoning the freight here and the freight from here on. The expense incurred in insurance, wharfage, &c., would be avoided by rail.

847. Would a line of railway to Nelson be of as much or more value to Westport than a line to Christchurch?—I don't think a line between here and Nelson would be any great advantage. We have got such splendid steam communication, and the country appears to me to be so inaccessible for making railways, that I don't think it would pay. There would not be sufficient traffic to pay where we have such advantages by steamers.

848. Do you imagine a line from Westport through Reefton, and then by Northern Canterbury to Christchurch, would be likely to pay?—I think it would be very doubtful. I cannot see that the population of Reefton and district is likely to increase a very great deal.

849. Have you been long in Westport?—About sixteen years.

850. Is the population increasing steadily, or is it stationary?—It has been stationary for the last year or two, but it has decreased very largely in former times. We had Charleston, with a very large population. They have decreased down to a fourth of what they were ten years ago.

851. What was their population employed in?—In alluvial mining. At Brighton, twelve miles farther on, there was a population of 2,000 people ten years ago; there are not 150 there now. On the northern terraces here we had a large mining population, about 1,000 miners on them; now perhaps 150. Of course there is a much larger population about Lyell than there was in those days.

852. Do you think the population of the district has not increased?—I think it has decreased.

853. Will increased energy in coal-mining increase the population?—No doubt it will. The coal mines have added at least 500 people to the population.

854. *Mr. Bell.*] What is the reason of all those miners having left?—Just the same that occurs with alluvial gold fields. They get worked out, and the miners have to go to other places. A great part of the population went off to Sydney a few years ago, when there were new discoveries there.

855. They told us at Kumara that they expected their fields to last for centuries?—They will keep a certain population, but they will not hold a population. In the case of an alluvial gold field that would keep 2,000 men, say, for two or three years, you will find that in four or five years a great many of them are gone from there. As their claims get worked out they must leave. We have now a population of 100 miners in Addison's Flat. It will hold perhaps 100 for the next century, but it will not take any more, because they have monopolized the available water, and there is not room for others to come in. I don't think Addison's Flat will be any worse than now for the next thirty or forty years.

856. What about the timber trade?—There is no export yet. We have only had one saw-mill at work, and it has been pretty constantly at work for local use. But there are two others going up. They will have to export timber.

857. Do you know what price timber is at the mills?—Red pine is about 8s. a hundred. At one time, when there were two saw-mills, it was down as low as 6s., but, since the trade has been in the hands of one, it rose to 8s. Black birch they charge 12s. and 14s. for.

858. *Mr. Wilson.*] For what purpose is black birch used?—A good deal for sleepers, but not for building purposes. It is apt to warp. They prefer the pines. For anything like bridge-work black birch is used.

859. *Mr. Bell.*] Is there much rimu, white pine, and matai about?—There is a good deal in the different districts along the line of railway beyond where we went to-day. There is a new saw-mill going up there—one that has been about the Sounds.

Mr. R. A. Young, examined.

860. *The Chairman.*] Have you been engaged in this colliery long? Have you examined the coal fields all round?—I have been on the coal fields, but have not examined them so as to be able to give any expert evidence.

861. Have you got any idea of the extent of the coal field?—There is one coal field at Granity Creek, between 3,800 and 3,900 acres. I believe it is all coal field, except where eaten away by cracks.

862. What is the thickness of the seams there?—I have seen them 20 and 30 feet; 30 feet is the thickest.

863. What extent of coal deposits has this company at Waimangaroa?—About 1,200 acres. I cannot speak exactly.

864. Is most of that coal?—Yes.

865. What is the thickness of the seams there?—It varies from 10 to 12 feet thick. The seam they are now working is not so thick.

866. How much coal does your company expect to be able to produce and ship?—I could not speak on that point.

867. Are you acquainted with any other coal deposits about here?—No.

868. *Mr. Wilson.*] Are you acquainted with Greymouth?—Yes; I have been through the Brunner and Pit Heath Mines, and made surveys of them.

869. What is the extent of the output of the Westport Coal Company?—As far as I am aware, about 50,000 tons a year.

870. What is the possible output with the present works?—They are making arrangements to have an output of 500 tons every day of eight hours. The inclines will be altered, and arrangements made for extra siding accommodation. At present they have to wait. There is only one 4-foot screen at present. It is the screening that hinders. When the two 6-feet screens are up they will be able to screen at the rate of 500 tons in eight hours.

871. *Mr. Bell.*] Have you any difficulty in getting rid of coal at present?—There is a great want of capacity for storing coal. Sometimes the incline is idle; at other times it is difficult to supply, according as the ships come. When the trucks and bins are full the mine is idle for a day or two. To keep 500 tons a day going you would require storage accommodation for 2,000 tons.

GREYMOUTH, MONDAY, 14TH MAY, 1883.

Mr. FREDERICK JAMES GLEESON, examined.

872. *The Chairman.*] We shall be happy to receive any evidence you are in a position to give respecting the timber trade. Do you know much about it?—I have resided about forty years in New Zealand and about eighteen on the West Coast, in connection with the timber trade all the time. I served my time as a carpenter and joiner, and have been building on my own account both in Auckland and here.

873. Do you know anything of saw-milling as a trade, or do you simply use the material afterwards?—I know nothing of a saw-mill through working it. I am not a saw-mill proprietor, but I have worked a circular saw.

874. Have you any idea of the cost of putting timber on board ships here?—Yes; I know, with regard to Wilson's mill, that a man takes a contract to cut the timber and get it out of the bush at 4s. per hundred; another shilling a hundred would bring it on the wharf; so that I should say that, for 6s. a hundred, red and white pine can be put on board.

875. And black birch?—No; it is more expensive to cut, and you would have to go farther for it. There is no black birch until you come to the coal mines.

876. You are directing your evidence more to a shipping than to a railway trade. What could it be put into a railway-truck for?—Black birch, I apprehend, could be put into railway-trucks at 6s.

877. And the pines?—At 4s. I am supposing that you put your mill along the line where the timber is. I am certain it can be done for that.

878. Whereabouts is this timber plentiful?—There is a belt of it near Nelson Creek, between Nelson Creek and No Town. I have seen it going up. It is very plentiful on the Squaretown Road, about six or seven miles from Reefton, just as you enter the Reefton bush.

879. Do you know anything of the timber between here and Lake Brunner?—Yes; there is some very superior timber between here and Lake Brunner not generally known, called cedar. It is described in Mr. Kirk's "Woods of New Zealand." It is a timber I have had in my mind's eye to introduce. It would be the best, except kauri, for joiners' work. There is a belt of that towards Maori Gully, between Lake Brunner and the Grey, what they call the Arnold Flat. There is also another timber, superior for sleepers, called silver pine.

880. *Mr. Wilson.*] Is there much of that here?—There is a very good belt of that on the Arnold Flat.

881. *The Chairman.*] Have you any idea where the best timber lies? Is it to the northward, or to the east on the line to the Brunner, or towards Reefton?—

881A. Where would the timber be the most durable to cut?—I have been to Christchurch by the road, and I have heard there is no black birch after Hokitika; so I apprehend black birch runs out as it comes this way. I should say to the north. I have been through the Paparoa Ranges, where there is very good birch; and all up the Little Grey there is splendid birch. In my spare time I have been studying mineralogy, and in Moonlight Creek I have found galena ore, and millions of tons of the best iron ore.

882. Have you any idea how many feet of timber you could get to the acre?—You could get an immense quantity to the acre. We have not made a calculation, but will do so. There is no difficulty in getting 100,000 feet to the acre in a thin bush.

883. Have you any idea how many acres of timber there are available?—I have no idea, but I should say you could allow two-thirds of the whole area.

884. Would you be able to bring that timber to a mill?—Yes. In Auckland the hill-sides are much worse for kauri timber. Of course it would add to the cost, but the flat country is of such an extent that by the time that is used up the other timber would be more valuable. The reason why this has not been used is on account of the difficulty of getting it. The mills on this coast are very poor; business has not been sufficient. At Wilson's I suppose the engine is about 10-horse power. That is a poor mill. The contractor has given the timber to him for 3s. 6d. when the bush was closer, but he has cut round the mill for a radius of half a mile, and he now gets 4s. For a mill to cut 24,000 feet a day it should be supplied for 2s. at the saw, in a place where it is so thick. If I were exporting timber, I should put it on the truck.

885. But would you get a truck right down to the saw-mill?—Yes; you could get a siding. Mr. Wilson has got a siding, and could have taken it into his mill if he wished. The Government allow these sidings. There are other timbers than those I have mentioned which are very handsome for cabinet-work; hinau, for instance.

886. *Mr. Wilson.*] Is there any extent of it?—No. It is mixed up with birch and other stuff. This silver pine has not been mentioned by Mr. Kirk in his "Woods of New Zealand." Mr. Ronayne s very much pleased to get it for sleepers. There is a good bit of it used here. Mr. Ronayne prefers it to any other timber. It is better than black birch in one sense. There is about half an inch of sap in a tree which may be a foot through.

887. You do not use black birch for household purposes?—We use it for sleepers, but not for general purposes.

888. Why do you not like it?—It is a timber that gets very crooked. If left in the sun it cracks and twists about. It is not suitable for house purposes, except in a large thick piece. It is suitable for plates and sleepers, but very bad for weatherboards. It would split and shake all to pieces.

889. There would not be any great quantity of it used for house purposes?—No; except for plates in the ground and sleepers.

890. And the fact of the pines being thicker would indicate that these timbers would be better for general purposes?—Yes; birch makes good railway sleepers, and is splendid for wharf and bridge building; but is unsuitable for joiners' work. I have seen small bits of birch used in cabinet-work, but I don't think it would do generally. I don't think it was the black birch.

891. *The Chairman.*] Do you know how long it lasts in the ground?—It is not known. I should say it would last more than twenty or thirty years.

892. Which is the more durable timber, black birch or totara?—I should say heart of totara. I don't think anybody is in a position to say how long heart of totara and kauri will last. I have seen them oxidized a bit from the surface, but quite fresh inside. Mr. Kirk mentions an instance of kauri weatherboards being in use for thirty-five years, and also black pine for thirty years, and there appeared to be no decay in either of them. Silver pine would be a similar timber.

CHRISTCHURCH, THURSDAY, 17TH MAY, 1883.

Mr. ALLISON D. SMITH, Locomotive Superintendent, examined.

893. *The Chairman.*] Can you speak as to the relative merits of brown and black coal?—Yes.

894. *Mr. Bell.*] Have you used the Springfield coal in your locomotives?—Yes.

895. With what result generally—is it economical to use it?—Yes, at the price we get it.

896. What price is that?—Our last contract was 10s. 6d. a ton, to which had to be added the cost of haulage from the mine to our different depôts, Christchurch principally.

897. Have you tried the Grey coal or the Westport coal?—Yes; we have used both—Westport principally. We have large contracts with them.

898. What is your opinion of that coal for steam purposes?—It is an excellent coal.

899. In what proportion is it better than the others, and of what value?—Roughly speaking, 1 ton of Westport will go to 1 ton 15 cwt. of Springfield.

900. How does it compare with Newcastle coal?—There is very little difference. If anything, the Westport coal is the best for locomotive fuel, and it is greatly superior for smithy purposes.

901. Have you any means of knowing whether it is a good gas coal?—Only from what I have been told from the gas managers throughout the country. They speak very highly of it.

902. At what cost do you get the Westport coal?—£1 6s. delivered into trucks at Lyttelton, Timaru £2 6s. 5d., and Oamaru £1 7s.

903. You have not seen the Grey coal?—I have seen and used considerable quantities of it, but my opinion of it is that it is not quite so good as Westport; but it is the same class of coal.

904. What kind of coal is it you use on the railway besides the Springfield coal?—We are using a brown coal from McIlraith's Glentunnel Mine, brown coal from Austin and Kirk's mine in the Malvern Hills, Westport coal, Shag Point coal, Kaitangata coal, and Nightcaps.

905. Do you use any Newcastle coal?—Not now.

906. *The Chairman.*] Which is the cheapest of all these coals?—We are paying least for Homebush (McIlraith's) and Austin and Kirk's coals; 10s. per ton is the present contract for these coals.

907. *Mr. Bell.*] Would there be any advantage in having Westport or Grey coal over the coal you are now using, seeing the price?—It would depend entirely on the cost. At the price we are giving, the Malvern coals are the most economical.

908. That is £1 6s. in the trucks at Lyttelton against 10s. for Malvern?—Yes; we don't take the freight into consideration; the cost of haulage is small, as the coal all comes down hill, and we get back-carriage up to these mines by having centres of population there. We take that into consideration in reduction of the cost of bringing the coal down.

909. *The Chairman.*] Do you know what regulates the brown coal at 10s.?—I think it is the competition. I don't believe that any of the mines are making money out of the railway contracts.

910. *Mr. Wilson.*] Suppose you had an offer of Westport at £1 delivered in Christchurch, how would that compare with Springfield coal at 10s. at the mine?—Then the Westport would be the cheaper.

911. *Mr. Bell.*] Mr. Back gave some evidence to the effect that it was more economical to use Grey coal instead of Newcastle, because of greater hauling power. I think he said you could haul ten more trucks in a train?—Mr. Back must have made a mistake. [A portion of Mr. Back's evidence was read.] He is wrong, because if we can keep a boiler maintained at full steam pressure it does not matter what sort of coal is used; on the other hand, from these Malvern mines we sometimes get brown coal of an inferior quality, because the mines are not opened out. Sometimes we have to use coal of worse quality than we are entitled to get by contract; sometimes we get short of steam, but that is only a question of the construction of boilers. If you make boilers large enough and with special fire-boxes we could burn straw.

912. *The Chairman.*] You use nothing but New Zealand coal?—Nothing else.

913. Did that emanate from the department, or is it political?—From the department. During the first experiments considerable outside pressure was brought to bear in the direction of adopting it for railway use.

914. *Mr. Bell.*] Do you know what is the average price which you can get Newcastle at?—I think we had it under offer at £1 2s. at Lyttelton.

915. *The Chairman.*] At one particular period, or throughout the year?—At one particular period; but I believe they could be got at that price throughout the year, if used regularly.

916. *Mr. Bell.*] Then the Westport coal is considerably dearer?—It is.

917. And would there be any object in your taking Westport coal when you could have the other 5s. cheaper?—It is a slightly better coal; but the object of getting New Zealand coal instead of Newcastle is to a great extent political. Political pressure would be brought to bear if we used Newcastle coal in preference to it.

918. Can you get as much Westport coal now as you wish, and regularly?—This year we have been able to do so, because the contracts are not very large; but last year the Westport Company failed several times, and we had to purchase elsewhere at their expense.

919. *The Chairman.*] Have you any statistics as to the relative values of Springfield and West Coast coal?—We have got the statistics, but not in tabulated form. I will furnish you with them. A great deal is said about the tremendous lot of coal traffic there would be for the railways, but the whole quantity used for the year 1881–82, including Hurunui to Oamaru, only amounted to 14,500 tons, with a cash value of £10,819.

920. *Mr. Bell.*] What do the Government use for their locomotives in this neighbourhood?—At the present time the brown coal from the Malvern District.

921. What quantity?—Last year the quantity was 15,124 tons=£12,259.

922. Does that include Christchurch to Dunedin?—No; it only goes as far as Oamaru.

923. *Mr. Wilson.*] That is exclusive of freight, is it?—This £12,259 worth is exclusive of freight. The average is 16s. 2d. per ton.

924. *The Chairman.*] Is it in your province to speak of the cost of haulage over certain grades?—I have got the actual cost to the locomotive department compiled for three divisions of road: first, from Waikari to Oamaru (a level road); secondly, from Oamaru to Clinton, which includes the heavy grades from Oamaru to Dunedin, and the heavy grades on the South Road, including the Lawrence branch; and, thirdly, from Clinton to Invercargill, including Kingston and western lines.

925. What is the grade?—One in 50 is the steepest grade, except on the Lawrence line, where they run to 1 in 40. Over the Hurunui–Oamaru division the cost of haulage in 1881–82 was ·081d. per ton per mile, and ·105d. the cost on the rougher route, namely, Oamaru-Clinton. In the published figures for the same year the Invercargill section showed the highest cost per ton per mile, but that is accounted for by the fact that they had allowed their engines and stock to get into a very bad state of repair, and during this year a large amount was spent in bringing the stock up to proper condition. This includes maintenance, cost of stores, fuel, wages, &c.—the total cost of working the engines.

926. Does that include guards and stationmasters?—No; only the locomotives. I have got the figures for 1882–83. The cost in pence per ton per mile on the Hurunui–Oamaru section was ·097d., and on the Oamaru-Clinton section ·117d. The cost for maintenance of the locomotives per mile run is—for the Hurunui-Oamaru section, 2·152d.; and for the Oamaru-Clinton section, 2·586d.

927. *Mr. Bell.*] But, seeing this difference in cost of traction, is there any difference made in the rates at which produce is carried?—No.

928. Then, if a large quantity of material were carried over a rough road, the department would lose by it?—Yes; unless the general rate was high enough to cover the cost on the worst roads.

929. *The Chairman.*] Do you know how many miles of 1 in 50 there are?—I could not tell. A piece of information which I fancy would be of value to you I wrote out. It takes, with a shorter road (Oamaru-Clinton), a great deal more power to move the trains. The average weight of trains is very much the same, but in order to work the traffic we have to supply tractive power equal to about two and a half times per mile of road between Oamaru and Clinton—that is, employed on this Hurunui-Oamaru division. On the level roads the engines are not worked up to their full power, but we have to run a certain number of trains in order to accommodate the public. These are not fully loaded. On the Oamaru-Clinton section we run a greater number of trains, and each train is fully loaded. The average weight of the full-loaded trains and the lightly-loaded trains on the Canterbury roads come to very nearly the same thing. There is only a difference of 5 tons; but we have to keep engines with an aggregate tractive power of two and a half times the amount per mile of road for the mileage between Oamaru and Clinton. That is to say, we have bigger engines and more of them. There is more capital sunk, but not more wages to be paid, because we pay the same wages with a large engine as with a small one. It is the horse-power I am speaking of, or pound of tractive power per mile.

930. *Mr. Bell.*] Then, over a rough road, with frequent curves and grades up to 1 in 50, what weight of trains can you pull with the present engines?—We can work about 120 tons gross load, but that is with our most powerful engines.

931. What have you to take off for the conveyances?—That includes the conveyances.

932. I want to arrive at the net load?—Those statistics are not yet worked out. Mr. Maxwell has, I believe, got the information in his office in Wellington.

933. Can you give me the information in truck loads up 1 in 50? Can you tell me how many trucks you can take?—About seventeen up a crooked road of 1 in 50. Roughly speaking, the trucks weigh 3 tons; the engine and tender 43 tons. Then the loads in the trucks average, I suppose, not quite 5 tons.

934. Are you sure they can take seventeen trucks up a crooked road of 1 in 50?—Yes; with the consolidation engines we can work that number.

935. *Mr. Wilson.*] Do the figures you have stated include cost of wear and tear?—They include the cost of making everything good in repairs, but nothing for interest or depreciation.

936. *The Chairman.*] Can you give us any information as to the probable cost of taking a heavy load through snow-country?—It is very costly. I could not give you any figures.

937. You think it would be a very perceptible amount if the line was liable to snow?—It would be most expensive if the line got blocked with snow frequently, so that the train could not get through.

938. *Mr. Bell.*] Would you call 18 inches on the rails blocking it?—Yes.

939. *The Chairman.*] Do you know how much and how little snow is a block?—I think that 6 inches would be apt to block up the road. The snow drifts into the cuttings and fills them right up.

940. Do you know how little snow affects the bite of the wheels in adding to the cost of haulage?—The engines could not get along at all if the wheels got greasy.

941. Would you be able to proceed up a heavy grade with a quarter of an inch of snow on the rails?—No; it would have to be taken off first. In America they have to clear the snow from the rails by fixing switches to the pilots of the engine, or by the snow-plough if the snow is heavy; and so great a nuisance is this snow that in the Sierras the Central Pacific Railroad Company has gone to the expense of erecting some forty miles of iron sheds to keep the line clear.

942. *The Chairman.*] And you feel no doubt it would increase the cost of haulage if there was any snow?—Yes; if it were a lasting thing it would. The Highland Railway in Scotland is frequently blocked with snow.

943. Have you any opinion as to the possibility of heavy railway traffic competing with sea traffic?—No; I can give no information on that point.

944. Do you know whether the traffic in merchandise has been much increased between Lyttelton and Dunedin owing to the opening of the railway through?—I believe it has not increased the through traffic to any great extent.

945. *Mr. Bell.*] Do you know anything about the passenger traffic, and what it amounts to?—Except in holiday times the through traffic is not considerable.

946. *The Chairman.*] Why so? Is it on account of people preferring to go by steamer?—I think it is owing principally to the people preferring steamers.

947. Because it is cheaper?—Not so much that, as because the steamers go at night. A great many people are afraid of the road, and it is very rough, too. Many are afraid of the dangers of the road.

948. *Mr. Bell.*] If the West Coast coal were delivered here freely at reasonable rates—say, £1 1s. to £1 2s.—is there anything in the coal that would lead you to suppose that it would take all the supply to itself—that other coals would not be used?—It would greatly damage the other trade, but I do not think it would take all the trade by a long way, because it is not a good household coal.

949. What is the principal direction in which coal is used on this East Coast?—For household purposes.

950. But it is far more economical, is it not, to use West Coast coal than these light-brown coals for household purposes?—I suppose it would be. Westport coal does not burn very well in a grate. If they brought it over at reasonable prices, people would get into the way of mixing it with brown coal.

951. Then you consider the best of brown coal a good household coal?—They are not first-class, by any means.

952. *The Chairman.*] Are you able to speak as to the relative values of Springfield coal and the brown coals of the East and West Coast?—I do not know anything of the brown coals on the West Coast.

953. Do you know anything about Reefton coal?—No; I do not know the coast at all.

954. *Mr. Wilson.*] Is there more wear and tear through using a larger quantity of Springfield coal than Westport coal?—There is a certain amount more labour in handling—a little more cost, of course, but not very appreciable.

955. Is there any more work caused to the Government?—No more.

956. *Mr. Bell.*] Have you ever seen the Picton coal?—No; I know nothing about it. I may say I have been told by Mr. Stone, the manager of the railways there, that it is a finer coal than Westport.

957. Have you heard anything as to the extent of it?—I believe they are boring to find out the extent of the field. It is supposed to be a large one.

958. Does your department use much New Zealand timber?—Yes; I suppose we are the largest consumers in the country.

959. What timber have you used?—We use kauri, white pine, and rimu, but we would use New Zealand hardwood, such as puriri, if we could get it in quantity and at lower prices than we have hitherto paid.

960. Is black birch of use to you?—Not much. We have used it. It does not last.

961. Is it useful for the planking of wagons?—No; it does not last well.

962. Do you use rimu?—Yes.

963. White pine?—A little. We use a great deal of rimu.

964. What for?—Wagon sides, floors, and ends, and carriage-building.

965. I suppose your buildings are built of it?—Yes.

966. We have it in evidence that the mines on the West Coast could supply the Government with small coals at 6s. a ton. Do you know what would be understood by that?—Coal nuts are the best thing that we could have—coal about the size of a walnut.

967. Then you don't necessarily require coal in large lumps?—No; it must not be in blocks.

968. *Mr. Wilson.*] Is the coal you receive at Springfield small?—No; we get large blocks. It must be riddled or screened through a three-quarter inch mesh, so that we get no dross.

969. The Springfield and other brown coals will not stand the weather?—Not well.

970. Will the Westport coal do so?—All coal depreciates to a very large extent by exposure, but it is very much more noticeable with the light coal.

971. It is a source of enormous loss, is it not?—Yes.

972. Perhaps that is a feature that would influence the use of West Coast coals, if they did not rapidly destroy?—It might, but no coal should be left outside exposed to the weather.

973. *The Chairman.*] Do you think it possible to take heavy traffic across the Island over the

rough road at the present tariff rates?—I think it would not be profitable at 11s. 10d. for 150 miles. My information is derived from the report of the General Manager for the Railways for 1882, in which he says that the average cost of goods moved per ton per mile is as follows: Auckland, 2¼d; Wellington, 2·74d.; Wanganui, 2·31d. I suppose that includes all sorts of goods.

974. *Mr. Bell.*] Do you know what the average percentage of working cost to revenue is on these New Zealand railways?—For the year 1881-82 the percentage of expenditure to revenue was 57·69 per cent. for the whole of the New Zealand lines.

975. Have you any means of knowing what would be the cost on a piece of rough road like the contemplated West Coast line, with grades nothing over 1 in 50 and nothing under 7- or 8-chain curves—something like between Oamaru and Dunedin?—It is 52 on that section, but it is scarcely a fair comparison, because there is passenger traffic, and the district is comparatively thickly populated. The Lawrence branch works at 91 per cent.

976. Is that a very rough road?—It has got 5-chain reverse curves and 1 in 50 grades. There is a good deal of traffic on it.

977. What is the large percentage of cost on the Lawrence line due to?—Maintenance of road and stock, on account of the curves principally. Last year the Hurunui-Bluff line paid over 5 per cent. Our principal source of revenue at this end is the grain.

DUNEDIN, TUESDAY, 22ND MAY, 1883.

Mr. WILLIAM NEWSHAM BLAIR, Engineer in Charge, Middle Island, examined.

978. *Mr. Bell.*] You went over the various proposed routes, did you not?—I practically went over the whole of them.

979. With the object of selecting the best?—Yes. Previous to 1879 there had been a number of survey parties out all over the northern districts of the Middle Island; but they were surveying without, as I understood it, any definite instructions where they were going, either to north or west. My object was to make, with the information already collected, a general report on the whole thing as to what could be done. That report I submitted to the Government in 1879; it was called, "Report on the Proposed Railways in the Northern Districts of the Middle Island."

980. Had that any connection with Mr. Carruthers' proposed routes, amalgamating the Picton route with the West Coast route?—I understand that there had been no definite instructions given. The surveys that were made were practically mere trial surveys, to see where it was possible to make lines. Until that was done I don't think the Government had laid down any definite scheme. This is what I understood from Mr. Carruthers, and he said as much in the last memorandum he made to embody in my first report after I became Engineer in Charge, Middle Island.

981. I was informed that Mr. Carruthers had laid down a very definite scheme of connection, which should combine north and west?—I don't think he laid down any definite scheme. You will find his last utterance on the subject in my report on "Railway Surveys in the Middle Island" of the 1st July, 1878, in a memorandum which he made at my special request.

982. That being so, do you approve of the idea that the most direct route across the Island is the best, without reference to any scheme for the combination of the northern route?—I am of opinion that you cannot make a combined scheme north and west without deteriorating from both.

983. I noticed that great stress was laid on lines to the extreme north of Christchurch. Was the Ada Saddle route any idea of combining with the northern route?—No; the Ada Saddle, we hold, is merely a deviation upon what we call the Cannibal Gorge route. It only came up lately. We had a line which we call the Cannibal Gorge route; possibly that was originally intended as a line to combine both. You will find that I refer to the point specially in this report of mine dated the 21st June, 1879. I will read extracts to show my views on the subject.

984. Have you formed any idea as to the best engineering and economical route from the east to the west? Did you make up your mind on the subject?—Yes; I have made a recommendation in favour of the Arthur's Pass route, simply on this ground: that the traffic would be solely from the extreme end of the line, namely, from Greymouth. There would be very little intermediate traffic, and the main object in making the line would be to bring the coal from the West Coast to the markets on the East. Consequently, the shortest line was the best; that was the ground on which I went in for the Arthur's Pass route. I state in this report that it lay between the Arthur's Pass and Hurunui Slope routes. The difference is only about eight miles as regards Christchurch, but the difference to all the southern parts of Canterbury which would come into the market for the coal is very considerably more. I may state, however, that since that report was made we have had a survey made of the lower portion of the Waimakariri, and this survey shows the country to be very wild, very rough indeed.

985. You found the lower part of the Waimakariri very wild and rough?—Yes.

986. Did you notice that all the other rivers have a similar rough gorge where they escape into the Plains?—Yes; but the Waimakariri is the roughest of the lot.

987. What do you think of the gorge in the Hurunui?—It is not nearly so bad as the Waimakariri.

988. Did you notice a very high summit which has to be pierced to get out of the Hurunui into the Waitoi?—The original proposal was to follow the Hurunui all the way to the plains; the line by the Waitoi was an alternative. We have a detailed survey of those lines here, which we can consult.

989. Looking at the summit it struck me it would take 60 chains of tunnel?—That was not the route originally selected. We were to follow the rivers. The survey we have was made in the olden time by the Provincial Government. Having that survey was the reason why we did not follow the rivers in going over the ground.

990. I suppose the Arthur's Pass is a costly route?—Yes.

991. Probably considerably more costly than the other?—Yes; particularly if you go down the Waimakariri.

992. Is there anything to recommend it in view of that excessive cost?—Only its shortness to the market for this coal.

993. Is there any shortness of running over and conveying materials?—Yes.

994. Which has the advantage of shortness to be constructed?—The Hurunui, by about five miles.

995. There are some engineering surveyors up the Waiau. What route is that?—What we call the Cannibal Gorge and Reefton route.

996. What part of the West Coast do you consider to be the centre of traffic?—Greymouth. I always held that Greymouth is practically the centre of the West Coast.

997. Then does it not appear a roundabout route to go round by Reefton to reach Greymouth?—Certainly. Even to Reefton it would be nearly as short to go to Brunnerton by Arthur's Pass on the Hurunui and then up the Grey Valley. I think you will find that point brought out in Mr. O'Connor's last report.

998. You will have noticed in the routes, whether by the Ada or the Lewis Saddle, that they both lead to Reefton?—Yes.

999. Did you notice that they have to cross another range?—Yes.

1000. Did it not strike you that the second range was more difficult of access than the first range?—Yes; I never contemplated that as a line at all. We proposed, after going through the Cannibal Gorge and Maruia, to come down the Grey or the Ahaura.

1001. Don't you think that would be still more roundabout?—No. You will see by the map it would be much shorter to get to Greymouth this way than by Reefton.

1002. You will notice there is a very great roundabout in that route to get to Greymouth?—Yes.

1003. And if the line were extended still further south it would form a complete semicircle, say, to Lake Brunner, or south of it?—Yes; it would by the time it reached Greymouth.

1004. Then did you see any country that would warrant such a roundabout?—No. In my opinion there is no country there worth opening up by railway.

1005. The country is nothing but sheep-country, is it?—On the eastern side sheep-country, and on the western nothing but timber. There is no agricultural or pastoral land at all, except the Maruia Plain, and one or two little patches. The Maruia Plain is the largest of the lot. It is about fifteen or sixteen miles long, by a couple of miles broad.

1006. Did you not notice that in most places it is not more than 50 or 60 chains wide?—I noticed that the river took possession of the whole of the upper part. The river has been silting up, and the higher it gets the more it affects the land.

1007. Do you think the sheep-country on the Arthur's Pass route is as good as the sheep-country on the Waiau-Hurunui route?—It is very much the same after you leave the Hurunui or Amuri Plain. There is pastoral land in the vicinity of the Hanmer Plain (apart from the plain itself), and very good sheep-country all the way to Tophouse, right up the Clarence country.

1008. The railway already constructed as far as Red Post serves that region pretty well, does it not?—Yes. It is proposed to make the line to near the Red Post. That is contemplated immediately, and will serve that country pretty well. We might perhaps go to the Wairau Township, and then the whole gravel country would be thoroughly served.

1009. Did you notice the roughness of the valley of the Waiau, which leads towards the Lewis, Ahaura, and Ada Saddles respectively?—Yes.

1010. Did it not strike you that that was an exceedingly rough piece of country for about twenty-seven miles?—Yes, from the junction of the Hope to the Doubtful, and below the Hope to the Glenwye Station. It is, however, nothing to the Waimakariri. The Waimakariri is the worst of the lot I have seen.

1011. *Mr. Wilson.*] Having seen the Waimakariri Gorge, are you inclined to alter your opinion with regard to the Arthur's Pass route?—I still think the balance is in favour of it, particularly as there is an alternative which would bring the line farther south. We could come by Lake Lyndon into the Rakaia, and so avoid the heavy work. That would make it longer to Christchurch, but would shorten the distance to Timaru. The Lake Lyndon route is about twenty miles longer to Christchurch than the one right down the Waimakariri.

1012. *Mr. Bell.*] Do you think that extra length, with its earthworks, rails, and sleepers, would not pay for the rough work in the Waimakariri Gorge?—I don't think so; we estimate the Lake Lyndon line to be cheaper by £400,000. I think it is possible, however, that we might get a better line by keeping on the southern side of the river all the way down. That is a point I had determined to settle, but have not yet had time.

1013. How have you located the line—on the top of the terraces?—There is no well-defined terrace down the Waimakariri. The mountain-slope rises from the river-bed. It is nearly all rock, with occasional shingle-slips.

1014. Would you not construct the line on the river-bed?—There is no river-bed. It runs in a fearful gorge all the way.

1015. How did you pass it?—We did not pass it at all; we could not do so. We came to the Staircase Gully, which stuck us up, and we went back to Cragieburn, and came up again from Springfield. I believe we could have gone down on foot, but it was not worth while trying, as we could see the country from the other side.

1016. Have you any reliable survey-section and plan of the summit at Arthur's Pass?—Yes, a tolerably good one, made for the purposes of the road. There has been a section compiled from the information that we had. I think it gives a very good idea.

1017. Did you notice a very immense rock-slip which blocks the gully from the west side?—Yes; the great difficulty on the saddles would be that they are nearly all moraines or slips.

1018. Would that interfere with the construction?—Very much. It would be very wet to tunnel.

1019. Do you propose to tunnel into the slip?—No; I should avoid it altogether, and go into the solid hill.

1020. How would the slip affect the tunnel?—It would cause us to make a longer tunnel into the solid rock.

1021. What length of tunnel have you found would be necessary?—About three and one-eighth miles; that is with gradients of 1 in 50.

1022. Does that tunnel overcome all the difficulties, and land the road at the bottom of the river-bed?—No; there would be some grading beyond that, particularly on the western side.

1023. You would still be on the hill-sides?—Yes, for about sixteen miles.

1024. Are the difficulties in the Arthur's Pass route centred in the summit at Arthur's Pass?—Yes, practically; always excepting the lower Waimakiriri Gorge.

1025. The hills leading down from Arthur's Pass to the Teremakau are shingle-slips?—They are nearly all shingle-slips on the surface.

1026. Would your line keep so low down to the river-bed that it would be out of danger of shingle-slips?—Yes, after getting out of the Otira Valley.

1027. If so, there would be no difficulty?—Except getting down to the level of the Otira Valley.

1028. On the east side of the pass would your line be low down?—Yes; it gets into the valley of the Bealey in a comparatively short distance—almost at once.

1029. It won't have to be one or more hundred feet up the hill-side?—No; we can follow the Bealey Valley.

1030. Then if the line were near the river-bed it would be very safe?—Yes.

1031. Did you notice in your travels on the West Coast where the best timber is situated?—The best timber I saw was in the Buller Valley and in the Matakitaki, a tributary of the Buller. But there is a lot of good timber in the Grey Valley and round about Lake Brunner.

1032. As far as my observation went, the timber all about Maruia and Inangahua, and all that about Reefton, is very inferior?—I didn't pay much attention to that, but took a special note of the timber at Matakitaki. There is not so much there as around Lake Brunner, but it is particularly good. There is very good timber up the Kopura Lakes, which is an extension of the low country from Lake Brunner northwards,

1033. I noticed the timber to be birch all round Reefton on the sides of the proposed railway?—Yes.

1034. What kind of birch is it?—It is *Fagus fusca*, what is called red birch on the West Coast. The birch on the east side of the range is all *Fagus solandri*, black birch. On the saddles you get silver birch, *Fagus menziesii*.

1035. Is the large birch growing on the West Coast useful for commercial purposes?—It is very good for general purposes. It shrinks considerably, but that is the only objection to it. It is durable.

1036. Can you build houses with it?—Yes.

1037. How do you account for the fact that there is none of it in the market?—There is in the North Island, but very little here. They used to sell it at Nelson to some extent.

1038. Do you think the forests of the West Coast would supply timber traffic for a good many years?—I think so. Timber and coal would be the main products from the West Coast.

1039. Did you notice a coal mine burning on the West Coast, near Point Elizabeth?—I did not see it. I know about it.

1040. Do you know what quality of coal is on fire?—I do not, but understood it was bituminous coal.

1041. Have you any idea about the thickness of the seam?—No.

1042. How long has it been on fire?—A long time.

1043. Do you know what it would cost to put it out?—No. The subject came up several times, but I do not know any particulars of it.

1044. Did the Government ever contemplate putting it out?—I think there was some proposal made on the subject.

1045. You have no idea of the rate at which the coal is burning?—No.

1046. Did you notice from the sea the vast column of smoke going up?—No; I passed it at night.

1047. *The Chairman.*] You said just now that you thought the Arthur's Pass line would probably cost more money than the line by the Hurunui and Teremakau?—Yes, I think so; but we have not yet made an estimate of the Hurunui line. We estimate the Arthur's Pass line by the Waimakariri at £2,040,000, and by Lake Lyndon at £1,640,000. These estimates are for lines with long tunnels at the summit.

1048. Is that the total cost of completing the line?—Yes; the total cost. We have got some information on the subject, which will be furnished.

1049. Then you mean to say that the total cost of completing by Arthur's Pass would be more than the total cost by Hurunui and Teremakau?—Yes, decidedly so, by the Waimakariri line; but I am not sure as regards the Lyndon one.

1050. Do you know how much the difference would be?—I do not yet know; it will be given in the tables to be furnished the Commission.

1051. Will you be able to tell us the difference of building a railway with no grade exceeding 1 in 50 to Brunnerton, and the cost of bringing it right over the summit with a stationary engine?

—The difference, which will be much in both cases, will amount to about £250,000 in favour of the line with a stationary engine.

1052. Did you propose to get over the summit by a stationary engine?—There were three propositions made—one, to have a low tunnel and a grade not exceeding 1 in 50; another, to have it like the line over the Rimutaka, with 1 in 15; and the third, a stationary engine, with 1 in 7 on each side, I think; but the tables will tell us.

1053. How do you propose to work this—with engines?—With engines, if we did it on that plan; but nothing is fixed in reference to it.

1054. Would you recommend a tunnel, even at a very heavy cost, in preference to a heavy grade?—It all depends on the cost, and what the traffic is expected to be. I believe the traffic would be very light for many years to come. My notion would be to lay off a line so as ultimately to have a long tunnel, but in the meantime either to work it with a stationary or a Fell engine.

1055. Why do you expect the traffic would be light for many years to come? Would they not carry coal?—They can carry coal so much cheaper by sea. It is a fact all the world over that, for long distances, coals can be carried cheaper by water than by rail.

1056. That would no doubt usually be the case, but then you must consider the difficulties and delays caused by a bad harbour?—I am assuming that the harbour at Greymouth would be finished.

1057. *The Chairman.*] You have said that you consider Greymouth the centre of traffic?—Yes.

1058. Why fix on Greymouth in preference to any other point?—Geographically, it is the centre of the country in which there would be any settlement; the settlement country begins about Jackson's Bay and goes northwards. If this is assumed as the commencement of the country, it will be found that Greymouth is the nearest place to the centre.

1059. You appeared to lay stress on the advantages that would be derived by the Arthur's Pass line on account of the trade with the southern portions of Canterbury?—Yes.

1060. Why lay stress on that?—Because it is more densely peopled.

1061. Is that likely to continue?—Yes; we have Ashburton and Timaru. These are large centres of population, and will remain larger centres than anything north.

1062. *Mr. Wilson.*] Were you aware that, the Hurunui line being thirty miles longer, the cost would only be 1s. a ton more going to the people south of Rolleston?—At the reduced tariff that would be the cost. I have not looked at the question in that light. I believe, however, that the tariff is too low.

1063. *The Chairman.*] Is it possible, with the information already derived, to say what the cost of constructing these railways through the mountains will be?—Only approximately.

1064. And you imagine that the cost of constructing any one of these lines through the mountains will be much in excess of any railways already constructed?—The piece through the mountains will certainly be more than any other. If we take the line from Port Chalmers to Blueskin, that cost some £20,000 a mile for the first ten miles.

1065. Take from Springfield to the bottom of the Otira. Have you any idea that it would be as expensive as the Blueskin section, or more so?—By the Waimakariri it would cost about £25,000 a mile, and by Lake Lyndon about £15,000 a mile.

1066. Is there any means of arriving at any estimate of the maintenance of these mountain routes?—No; we have no similar experience, there being no portion of the lines on which maintenance will be so high as in these mountains.

1067. Is it likely to be 50 per cent. more than any other railways; I mean on account of mountain-slips, torrents, and so on?—Suppose we take it from the Bealey to the mouth of the Otira, I have no doubt that section would be 50 per cent. more than any other line, that is, for the portions not in tunnel.

1068. Is it possible to find any basis on which we might calculate the probable revenue from that railway?—I do not think so. There are so many contingencies that it is very difficult to say what the traffic will be.

1069. Have you gathered that railways have affected the diggings in Otago?—No, I have not.

1070. Neither quartz nor alluvial diggings?—Not to any appreciable extent. I do not think they have increased the population.

1071. *Mr. Bell.*] Have you formed any idea as to the permanency of the gold diggings on the West Coast?—I do not think the gold industries are very permanent, particularly the alluvial ones. I do not know so much about the Reefton quartz reefs, but I think the others are not of a very permanent character.

1072. *Mr. Wilson.*] You say you consider the Lake Lyndon line a preferable one to make?—Yes; it is the easiest.

1073. But that would have the disadvantage of lengthening the line?—Yes.

1074. What would be the probable cost?—About £1,640,000, as against £2,040,000 for the Waimakariri line. Making a railway along the Waimakariri Gorge would be a particularly difficult thing to do.

1075. *Mr. Bell.*] Do you mean that the line when constructed round by Lake Lyndon would be longer than the Teremakau–Hurunui to Christchurch?—Yes; longer to Christchurch by ten miles, but shorter to Rolleston by twenty miles.

1076. Do you think the Hurunui route down the Teremakau would be much easier country in general than the Waimakariri route?—The Hurunui is much easier than the Waimakariri, but it is much on a par with the Lake Lyndon line.

1077. Have you estimated for a long tunnel through the summit at the head of the Teremakau?—Yes; nearly three and a half miles.

1078. Then they are of much the same length?—Yes.

1079. Even going round by Lake Lyndon?—The Lake Lyndon way is ten miles farther to Christchurch. The difference between the direct Arthur's Pass and the Hurunui is some eight or

nine miles in favour of the Arthur's Pass line. Going directly by Lyndon adds nineteen or twenty miles to it.

1080. *Mr. Wilson.*] And the only difference in the lines is that the distributing point of the lower line is better than the distributing point of the upper line?—Yes; that is so.

1081. Practically, as far as the two lines are concerned, they would be of equal value?—Yes; except as regards that point. You will find, by my report of 1879, that I made a suggestion that we should run a branch to reduce still further the distance to the southern districts. I suggested that we should make a branch from the Selwyn to the Rakaia River, and take that angle off the Arthur's Pass route.

1082. Did you ever study the question of traffic, and the products of the West Coast?—Only in a general way. My views on the subject are given in my report of 1879.

1083. Do you think the estimate of the West Coast Railway League a fair one?—I saw this document before. At that time I thought it was too high.

1084. Some of these items are actual quantities. That of goods, for instance, is the actual tonnage, I am told. Considering that the consumption of timber in Christchurch is about 20,000,000 feet, does that not seem a reasonable estimate?—I should not like to give an opinion on this estimate traffic. I thought in a general way that it was too high. In 1879 I took the probable timber traffic at 3,000,000 superficial feet.

1085. Can you give any idea of what would be the proportion of working expenses on such a piece of line?—I should say that it would be considerably higher than the average of New Zealand lines—probably 20 per cent higher.

1086. What is the present average of the New Zealand lines?—Something like 60 per cent. I think the working expenses of such a piece of line would be 20 per cent. more than the general average.

Mr. Blair subsequently telegraphed from Dunedin, as follows:—

Captain Russell, Railway Commission, Christchurch.

IN my evidence *re* Arthur's Pass route, posted to you last night, I stated that the Lake Lyndon line was nineteen or twenty miles longer than the Waimakariri Gorge line, and this would be the case if it follows the best route for the authorized Canterbury interior main line to near the Rakaia below Lake Constance. Considering the East to West Coast line only, however, there is a shorter route from Whitecliffs line to Lake Constance by the Wairewa Valley, If it were adopted, the length of the Lake Lyndon route would be only sixteen miles longer than the Waimakiriri Gorge route in the tables which Mr. O'Connor has now prepared for you. This shorter route is adopted; so, in order to agree with them, it might be as well to alter my evidence to that extent, viz., making the difference sixteen miles instead of nineteen or twenty miles. WM. N. BLAIR.

Dunedin, 26th May, 1883.

CHRISTCHURCH, FRIDAY, 25TH MAY, 1883.

Mr. THOMAS PAVITT, examined.

1087. *The Chairman.*] You are acquainted with the coal and timber trade?—Yes.

1088. In Christchurch or Lyttelton?—In Christchurch for the last twenty-five years.

1089. Where does most of your timber come from?—The rimu comes principally from Picton.

1090. And at what freight?—The common timber at 3s. For anything beyond the ordinary small sizes we give 4s., and with larger beams we may have to make a special arrangement. We have given as high as 5s. a hundred.

1091. For how long has freight been as low as 3s.?—I think I may say for two years at any rate.

1092. And what price was it before?—It has been as high as 4s. 6d., and then came down by degrees until it reached 3s. That is a losing freight, and vessels hardly care for taking it.

1093. *Mr. Wilson.*] What is the cost of timber?—At the present time it is 6s. 6d. at Picton for the common timber. For anything beyond that you have to make a special arrangement; and for heavy birch, that can be procured on the ranges here—I am speaking more particularly of the northern route—we give 14s.

1094. Can you tell us what brought the freight down from 4s. 6d. to 3s.?—The competition amongst these small crafts; but so many of them have been lost that if there was any other employment they would give it up.

1095. How much timber is there to the ton?—A vessel of 100 tons should carry between 50,000 and 60,000 feet. The average trip would be from six to seven weeks, to earn £90.

1096. I suppose there is an unlimited supply in Picton at these rates?—Their timber has gone so far back now that it is costing them a great deal more to get it to the water's edge than it used to when growing close down to the water. As far as we can understand, the saw-millers are not making much.

1097. *The Chairman.*] Do you import from elsewhere besides Picton?—Sometimes we get it from Invercargill. If we have to supply promptly, at a given date, we have to get it up by rail; any special heavy beams we have to get in that way.

1098. What freight do you pay from Invercargill by rail?—I think it is 7s. 2d. by rail.

1099. And by sea?—Four shillings. I think the higher rate has to provide you with an additional truck.

1100. Do you import kauri?—Yes.

1101. What is the freight from Auckland?—From Kaipara, where nearly all the timber comes from, we are giving 4s. 6d. freight.

1102. *Mr. Wilson.*] What other expenses are there from Lyttelton?—The haulage and wharfage make it 1s. 2d.

1103. *The Chairman.*] What timber do you sell most of?—Red and white pine.

1104. Is black birch used in buildings or for stringers?—It is used for stringers.

1105. If you can get it from large trees it can be used for other purposes than stringers?—Yes; it is of a similar character to the Picton birch, and they look on that as really valuable. There is a large quantity of that on this side of the ranges.

1106. Why, practically, is there little birch in the market?—Because we have no railway communication to it. The Oxford Bush is all small timber. If you want timber anything beyond twelve inches wide, you get bark on each side. The best class of red-pine timber we have had was that from Hokitika years ago, when Canterbury used to supply the West Coast with most of its provisions, and the vessels got return cargoes. We never had so good red-pine timber from any other place. That from Invercargill is inferior to it.

1107. Does trade fluctuate very much?—I think twelve months ago fully more timber came in than now.

1108. Does trade go from Picton to Auckland, or from Auckland to somewhere else?—We get about the same amount each year. There is a large amount now coming from Carterton, which is hauled over the Rimutaka.

1109. *Mr. Wilson.*] What does that cost to put down here?—It comes from mills that are getting Government contracts. They get 17s. for totara for telegraph poles and railway sleepers, and the off-cuts come down here, and are sold at Lyttelton for 9s.

1110. *The Chairman.*] Suppose a railway were made to the West Coast, do you imagine the necessities of trade would not keep the sea trade going, or would the railway exclude it?—It would exclude the whole of the imported timber. It would be so much less. In former years the West Coast people were satisfied to get 4s. 6d. at the mills. If a railway were running through, I imagine the mills would be placed in close proximity to the line.

1111. How do you account for getting the bulk of Invercargill timber by sea and not by rail?—Not much comes by sea. Special orders come by the railway. If you want it at a particular date, you must get it by rail. Not much comes at all by either way; the price is too high. The most of it comes from Invercargill by sea. With very small exception, the whole of the red and white pine supplied up to the Ashburton, and nearly all supplied up to the Rakaia, comes from Invercargill.

1112. Are you also connected with the coal trade?—Yes; our sales have been equal to about 12,000 tons a year.

1113. Where does it mostly come from?—From Newcastle.

1114. What is the average freight from Newcastle?—In vessels carrying from 600 to 800 tons the average freight would be 16s. Up to last year it has run up to £1 1s. a ton freight; but, taking the average cost of coal delivered in Lyttelton by the larger ships that call at Sydney and coal at Newcastle, and by those that come down through the remaining portion of the year, it is from £1 7s. to £1 8s. a ton. For about three months in the year vessels take the round freight, and coals are sold to the coal merchants from £1 1s. to £1 2s.

1115. What becomes of the colliers?—There have not been half a dozen here for the last three months. It would be utterly impossible for them to bring coals down and sell them at that price, unless they got freight. It is very difficult to get captains to accept less than 16s. during about eight months of the year.

1116. How much coal would a vessel of 100 tons register carry?—About 140 tons.

1117. And how long would the all-round passage take from Lyttelton to Newcastle and back?—Two months is considered to be the average passage.

1118. Do you deal at all in the New Zealand coals?—Yes.

1119. Which do you find are most used by the poorer classes?—The Newcastle. The quality of coal we get from the Malvern Hills is so indifferent.

1120. What is the retail price?—The Malvern coals are retailed here at £1, and the Newcastle coal would be retailed at £1 18s. and £2.

1121. Don't you find that the poorer classes are tempted by half-price?—No. It is generally used in steam-engines. It cannot be used for threshing purposes on account of its lightness, and at one time insurance offices would not insure if they found that Malvern coal was being used.

1122. You think the ordinary householder would prefer using Newcastle at £1 18s. to local coal at £1 per ton?—We find that is the case.

1123. *Mr. Wilson.*] What about Greymouth coal?—It is now the same price as Newcastle. For blacksmiths' purposes they prefer it to anything.

1124. For general purposes which is the better coal?—I think there is more economy in using the best quality of Greymouth coal. They are a cheaper coal at the same price as Newcastle.

1125. *The Chairman.*] Which does the trade make most out of?—They make more out of the Newcastle, because they have an opportunity of laying in a large stock at a certain period of the year.

Mr. Daniel Reese, examined.

1126. *The Chairman.*] What evidence are you in a position to give to the Commission?—The only evidence I could give you would be as to the suitability of timbers in building.

1127. You are a builder and contractor, I understand?—Yes.

1128. Do you supply the timber yourself?—I generally import my own timber.

1129. Which timber do you use most of?—For building purposes red and white pine; for joinery work it is principally kauri.

1130. Which do you use most of?—Red and white pine. Red pine is preferable, and we use it the most.

1131. Why do you use that?—It is preferred by the architects. It is considered more durable than white pine. White pine is only allowed for match-lining and flooring.

1132. Which is the cheapest?—They are about the same. Matai and black pine are used for plates. If you get the heart of matai, it costs about 3s. a hundred more than the red pine.

1133. Do you use much birch?—There is really no birch used in the building trade.

1134. Why?—Because it is a timber that warps, more especially if you cut it into small scantling. There is a great consumption of birch for railway sleepers, but it is only what can be procured from Oxford. If taken from Picton the freights would be too much.

1135. Do you think that, when people know more about saving and preserving timber, birch will come into use?—The timber by its nature would not be suitable for small-sized timber.

1136. Suppose you could get black-birch scantling and weatherboards 2s. cheaper than white and red pine, do you think it would be used?—Oh, yes. Timber in building costs in labour from 8s. to 10s. If you get birch at 2s. less, you would have to add the 2s. extra labour to it.

1137. What do you consider to be the relative values of pine and birch?—For building purposes birch could not be entertained at all. I have seen birch sold at 2s. 6d. a hundred.

1138. Then, practically, for household purposes birch is not admissible?—The birch in Oxford Bush is very little used in the district. If we got good birch, such as is used in England, there would be an extensive demand for it. I have seen samples that came from the neighbourhood of the Amuri Pass and along those ranges. The sample I have seen from there is very fine timber, but we have never had it in quantities. I have simply seen little pieces of it. It seemed similar to fine cedar.

1139. *Mr. Wilson.*] Would that be of value?—Yes. It is a fine, close-grained timber. From what we know of birch from Oxford, there is similar timber on the West Coast.

1140. *The Chairman.*] Do you know anything about freights of timber?—Three shillings is the usual freight from Picton.

1141. Suppose you have to pay 3s. in a vessel of 100 tons, could a vessel of 500 tons bring it any cheaper?—No; for this reason: there is no place convenient to the saw-mills where large vessels could get to their wharves. There is one mill at which vessels from 60 to 70 tons can load; but in the case of a vessel of 100 or 150 tons she has to lie out in the stream. The Picton timber country is nearly exhausted.

1142. Would a large ship bring timber much cheaper from Auckland than a small one?—There is no timber in New Zealand that will ever shut out the Auckland timber, because it is timber that furnishes the supply for joinery work, skirtings, architraves, match-lining, &c. The price of the Auckland timber is such that you cannot attempt to use it for ordinary building purposes. There is no market for the refuse of the Auckland timber.

1143. Do you not imagine that great competition would reduce the price of Auckland timber?—No. Auckland with kauri can find a market in Melbourne and Sydney when there is any competition here. The only timber we have to compete against the Auckland timbers is the American timber. Red pine is not suitable for joinery work, and is never attempted here; and it is expensive to manufacture.

1144. You think that, whatever the price of other timber may be, Tasmanian, totara, and kauri would still remain in the market?—The kauri will still remain in the market. There is no necessity for the Tasmanian timber. In New Zealand they can produce timber now at cheaper rates, and it is more easily sawn. There is 2s. put on Tasmanian timber, and that keeps it out. Probably, Tasmanian blackwood, Huon pine, and some blue gum will not be kept out. We use totara from Foxton.

1145. *Mr. Wilson.*] What is that worth?—It is sold at 18s. There is a Masterton firm here, but their totara is just the refuse from the heart of totara.

1146. Do you know anything with regard to building stone?—We have had a shipment from Brunnerton, and have had nothing in this country like it. It can be seen at Oakley and Taylor's, plumbers and gas-fitters, Tuam Street.

1147. What kind of stone is it?—It seems to be a stone similar to Yorkshire freestone—a blue, substantial, and durable stone. They quarry stones 30 feet long.

1148. *The Chairman.*] Do you use stone and brick?—Extensively.

1149. Which is cheaper?—Brick is considerably cheaper.

1150. Then stone would be only used for ornamentation?—Yes. We get considerable quantities of stone from Port Chalmers for the basement storey of buildings. We also use Oamaru stone for the upper storeys. This Greymouth stone is suitable for basement floors or for the whole fronts. Then there is Castle Hill Stone, which is acknowledged to be the finest limestone to be found in New Zealand, and equal to any in the world.

CHRISTCHURCH, MONDAY, 28TH MAY, 1883.

Mr. JOHN DICKENSON, examined.

1151. *The Chairman.*] What is your position on the railways?—I am Locomotive Foreman, Christchurch.

1152. What are your duties?—To look after the locomotives.

1153. What kind of coal do you use?—Of late we have had rather an inferior brown coal from Austin and Kirk's, and it has not been nearly so good from McIlraith's Glentunnel Mine. There are some faults in the mine. We have had to stop a good bit.

1154. How long have you been using these brown coals?—About five years, to the best of my knowledge.

1155. But not entirely? You have been using other coal at the same time?—There was one time when we were using nothing else but brown coal.

1156. Have you used the Westport or Greymouth coal?—We have used the Westport.

1157. Do you use it now?—Yes; we mix it: 1 cwt. of Westport to 3 cwt. of brown, and we find that answers splendidly. In fact, we prefer it to all Westport, or all brown. They can work the fires better, and there is less trouble on the road. They can steam better than with all brown or all Westport.

1158. Are you able to say which is the more economical coal to use, the Westport or the brown

coal?—If we could get good brown coal, it would be the cheapest for us according to the price, but you would be able to get the items from the Locomotive Superintendent's office. Things are there made out in detail.

1159. In practice, if you were going to drive a locomotive, say a distance of 100 miles, can you tell us the amount of coal you would have to put into the tender, if you were using brown or Westport coal?—It would be about half of Westport as nearly as possible.

1160. Can you drive an engine equally fast?—Providing we get a good brown coal, we could steam equally as well with either coal.

1161. And that means, of course, that you can drag equal weight?—Yes.

1162. It does not matter which coal you use, so long as you have enough of it?—It does not matter, so long as you can get your steam in the boiler. The great difficulty we have had with this native coal is that they have been going through some faults, and it is inferior. It has clinkered the fires up, and we have had to clean often.

1163. Does that involve much extra labour in the handling of the coal?—No; we have not to engage more men for it.

1164. Then, as far as the money part of it goes, it does not involve extra cost for labour?—No.

1165. Do you know the difference between any of the brown coals? Which is the best of the Malvern coal?—Our contract at present is for Malvern and Glentunnel. The better of the two is McIlraith's, on account of the faults in the other mine.

1166. Which do you consider can hereafter turn out the best coal?—It is a question I could scarcely answer.

1167. Does the coal improve as it goes down?—In places it is bad, and then they get into a good quality again.

1168. Does the consumption of brown coal injure the boilers much?—No; I don't think so.

1169. There is practically no difference?—I should almost say Westport would be severer on the fire-boxes than brown coal would be.

1170. Why so?—We find that our smoke-boxes go much quicker with Westport coal than with the other.

1171. Have you used Greymouth coal?—No; or very little.

1172. *Mr. Bell.*] Is that deterioration of the fire-boxes due to the sulphur?—Yes; when you burn nothing but Westport coal the iron roofs of sheds go very fast.

1173. *The Chairman.*] With the same engine can you draw a heavier load with one coal than with another?—No; providing you can get sufficient steam. With Westport coal you would not have to clean your fires, while with brown coal you would have to clean every twenty or twenty-five miles.

1174. Could you take a load to Dunedin equally well with good brown coal as with any other?—Yes. There would be more time taken at stations, cleaning your fire. That would be the difference.

1175. Then there is some loss in using the brown coal?—Yes, in the time taken for cleaning the fires.

1176. *Mr. Bell.*] Do you know anything about the Springfield and Shag Point coals?—We have used a little Shag Point coal.

1177. Is there any difference between these?—Not a great deal; it is very trifling.

1178. Do you consider Shag Point a good brown coal?—Yes. In fact, there was one portion of the contract the year before last when we used nothing but Springfield and Shag Point coal.

1179. Then these two mines contain large quantities of coal?—I cannot say for certain.

1180. They are said to be large deposits?—I think the Shag Point coal runs out a good bit.

APPENDICES.

APPENDIX No. 1.—East to West Coast, Middle Island, New Zealand.—Estimated Cost, &c., of Various Routes.

Route.	Description of the Line proposed to be followed.	Distance still to be constructed.				Remarks.	Distances to Travel.								
							Brunnerton to Christchurch.				Brunnerton to Rolleston.				
		From	To	Length.	Estimated Cost.		Length.	Tariff Rate on Coal per ton.	Tariff Rate on Timber per ton.		Length.	Tariff Rate on Coal per ton.	Tariff Rate on Timber per ton.		
				Miles.	£		Miles.	£ s. d.	£ s. d.		Miles.	£ s. d.	£ s. d.		
1 **Lewis** Saddle: **Reefton** line	From Brunnerton to Grey Junction; thence up Little Grey River, and over Reefton Saddle to Reefton; thence up Inangahua River, and over Rahu Saddle to Maruia Plains; thence up Maruia River, through Cannibal Gorge, and over Lewis Pass; thence down the Lewis, Boyle, and Waiau Rivers, passing near Hanmer Plains to a point on main line, near "The Red Post," on the Amuri Plains; and thence along main north and south railway to Christchurch and to Rolleston	Brunnerton	The Red Post	137	1,624,000	This provides for summit tunnel—Length, 3 miles	206	0 13 8½	0 4 3		221	0 14 2½	0 4 5	
1A Ditto ..	Ditto	Ditto ..	Ditto ..	137	1,400,000	This is exclusive of summit tunnel, but provides for rope-traction line over dividing range. For the extra cost of haulage thus involved 2s. per ton has been added to the tariff rate on coal, and 6d. per 100 ft. to the tariff rate on timber	206	0 15 8½	0 4 9		221	0 16 2½	0 4 11		
2 **Hope** Saddle: **Kiwi** line	From Brunnerton to Nelson Creek; thence up Nelson Creek to Kopara Lake; thence down Kopara River to Kopara Flats; thence along Ahaura, Tutae-kuri, Hope, and Kiwi Rivers, to Lake Sumner; thence along north side of Lake Sumner and along Hurunui River to Waitohi Saddle; thence along Waitohi River to a point on main line near Horseley Downs; and thence along main north and south railway to Christchurch and to Rolleston.	Brunnerton	Horseley Downs	98	1,849,000	Remarks same as for Line No. 1. Length of tunnel, 4 miles 30 chains	151	0 11 10	0 3 8		166	0 12 4½	0 3 10		
2A Ditto ..	Ditto	Ditto ..	Ditto ..	98	1,470,000	Remarks same as for Line No. 1A	151	0 13 10	0 4 2		166	0 14 4½	0 4 4		
3 **Hurunui** Saddle: **Lake Brunner** line	From Brunnerton up Arnold River to Lake Brunner; thence along west side of lake to Teremakau River; thence along Teremakau and Hurunui Rivers to Lake Sumner; thence along south side of Lake Sumner, and along Hurunui River, to Waitohi Saddle; thence along Waitohi River to a point on main line near Horseley Downs; and thence along main north and south railway to Christchurch and to Rolleston	Brunnerton	Horseley Downs	98	1,641,000	Remarks same as for Line No. 1. Length of tunnel, 3 miles 35 chains	151	0 11 10	0 3 8		166	0 12 4½	0 3 10		
3A Ditto ..	Ditto	Ditto ..	Ditto ..	98	1,340,000	Remarks same as for Line No. 1A	151	0 13 10	0 4 2		166	0 14 4½	0 4 4		
4 **Arthur's Pass**: **Waimakariri Gorge** line	From Brunnerton up Arnold River to Lake Brunner; thence along west side of lake to south side of Teremakau River; thence along Teremakau, Otira, Bealey, and Waimakariri Rivers to Goldney's Saddle; thence *viâ* Sloven's Creek and Broken River to north side of Waimakariri River; thence down north side of Waimakariri River to a point on the Oxford to Malvern Railway, adjoining Waimakariri Gorge Bridge; thence along the Oxford to Malvern and the Malvern Hills Branch Railways to Rolleston; and thence along the main north and south railway to Christchurch	Brunnerton	Waimakariri Gorge Bridge	98	2,030,000	Remarks same as for Line No. 1. Length of tunnel, 3 miles 10 chains	140	0 11 6	0 3 7		125	0 11 0	0 3 5		
4A Ditto ..	Ditto	Ditto ..	Ditto ..	98	1,780,000	Remarks same as for Line No. 1A	140	0 13 6	0 4 1		125	0 13 0	0 3 11		
5 **Arthur's Pass**: **Lake Lyndon** line	From Brunnerton up Arnold River to Lake Brunner; thence along west side of lake to south side of Teremakau River; thence along Teremakau, Otira, Bealey, and Waimakariri Rivers to Goldney's Saddle; thence *viâ* Lake Pearson and Craigieburn to Lake Lyndon; thence *viâ* the Acheron River and the Hororata Plains to a point on the Whitecliffs Branch line near Glentunnel Station; thence along the Whitecliffs and Malvern Hills Branch Railways to Rolleston; and thence along main north and south railway to Christchurch.	Brunnerton	Glentunnel	116	1,587,000	Remarks same as for Line No. 1. Length of tunnel, 3 miles 10 chains	156	0 11 11	0 3 9		141	0 11 5	0 3 7		
5A Ditto ..	Ditto	Ditto ..	Ditto ..	116	1,337,000	Remarks same as for Line No. 2	156	0 13 11	0 4 3		141	0 13 5	0 4 1		

Attached to the Report of the West Coast Railway Commission.—W. R. Russell, Chairman.

C. Y. O'Connor, Inspecting Engineer, Middle Island, 26th May, 1883.

APPENDIX No. 2.

The GENERAL MANAGER, New Zealand Railways, to the CHAIRMAN, West Coast Railway Commission.

SIR,— Railway Department, Head Office, Wellington, 14th June, 1883.

I have the honour to furnish you with an estimate of the revenue and cost of working of a new line of railway, as verbally requested at an interview with Mr. C. Napier Bell and yourself, and based on the data supplied by you.

The estimated revenue has been computed with the classified scale rates now current on the New Zealand Railways, the sums you named for passenger and parcels receipts being added in, and an additional allowance of £10,000 made for passenger revenue, because, if there is so large a goods traffic between the two coasts *viâ* rail as you have assumed, the item for passenger traffic seems disproportionately small. The total sum thus arrived at is, in round numbers, £120,000.

On the other hand, from the tonnage and distances furnished, the cost of working has been estimated, basing the estimate on the cost of working other New Zealand railways, but at lower rates. It has been assumed that the line would have 1 in 50 grades, and no features to make the cost of maintenance unduly high, and that the rates of wages and materials for working remain about the same as now prevail in New Zealand. The estimated cost of working arrived at is £120,000. The bulk of the traffic indicated, viz., coal, agricultural produce, sheep, and cattle, being carried at rates which are unremunerative, or entail a loss, leads to the inference that, under the conditions stated, the line with the traffic indicated would probably not pay, but, with increasing traffic, it would no doubt do so; and if, as you assume, the quantities of traffic of all kinds should double, we might anticipate an expenditure of £165,000, and a revenue of £240,000, always assuming that you can levy the current New Zealand scale rates as they now stand.

I have, &c.

The Chairman, West Coast Railway Commission, Wellington.

J. P. MAXWELL, General Manager, New Zealand Railways.

INFORMATION supplied by the Chairman, West Coast Railway Commission, as basis for estimating the revenue and cost of working a new railway:—70,000 tons coal, 127 miles; 15,000,000 feet timber, 100 miles; 7,000 tons general merchandise, 127 miles; 14,000 tons agricultural produce, 127 miles; cattle, 3,500, 120 miles; sheep, 16,000, 120 miles; parcels, value £3,000; sundries, value £3,000; passengers, value £10,000.

APPENDIX No. 3.

Dr. HECTOR to the CHAIRMAN, West Coast Railway Commission.

Memorandum re *Grey Coal Fields.*

I FIND no description or explanation of the sections given by Mr. Harrison in the *Colliery Guardian*, and the sections themselves are so exaggerated and diagramatic, that I fail to recognize in them any of the structural features of the district, with which, I may point out, I am very familiar. In 1868 I described this coal field, giving a sketch plan and section, which you will find in Vol. II., "Transactions of the New Zealand Institute," p. 380. My estimate at that time was as follows: "Provided that no fault occurs in the strata, on the most moderate computation, that portion of the field then leased should yield 5,000,000 tons of coal."

At that date only the Brunner Mine was opened. It has now an extent worked of 36 acres, the total area of the leasehold being 1,280 acres. The yield has been at the rate of 6,000 tons per acre, while the pillars were left intact; but a very serious fault has been encountered, cutting off the extension of the levels westward, so that in order to get coal it has been necessary to impair the stability of the works by the extraction of the pillars on a false system of mining.

A second mine was opened by the Coal Pit Heath Company in 1875 on the same seam followed to the dip, the leasehold having an extent of 750 acres, of which about 10 acres has been mined with a yield of 60,000 tons. The same fault also cuts off the westward extension of this mine, and all attempts to get hold of the coal beyond the fault in the deep levels has been futile so far. It was expected that the coal would be steady in the low levels of the Coal Pit Heath Company's mine if followed to the eastward, but this has not been tested, as the levels would have to pass under the Grey River, and the experience of the results of very expensive explorations on that side of the river by the Greymouth Company being very discouraging. The structure of the coal field on the south side of the river is very complicated, consisting, as may be seen from my survey in 1873, of a succession of faults, which are on the whole parallel with the great western fault, which I have already mentioned. These faults throw the coal rapidly to a great depth, and generally reduce the available area.

In the opposite direction, towards Point Elizabeth, some extensive leaseholds have been taken up in consequence of the discovery of outcrops of various irregular coal seams, but no mines have yet been opened. North of Point Elizabeth a small seem of pitch coal crops out in the beach, and can be followed round the cliffs to the Nine-Mile Bluff, where it has been on fire for many years. At that point it is only 3 to 4 feet thick, and of no economic value under the circumstance of its occurrence. From the coast at this place the conglomerates of the coal formation can be traced, rising in an easterly direction to about 2,000 feet on the Mount Davy Range in a distance of about two miles. This may be taken as the width of that part of the coal field, which is level free, and its length is about seven miles. Several sections have been made of this area (about 14 square miles), and coal has been found to crop out at the surface at many points. From these sections it appears certain that extensive faultings of the strata like that which has embarrassed the working already opened are exceedingly prevalent, and that the dip of the strata is so much steeper than the slope of the surface, but in the same direction, that only the lower and barren portion of the formation reaches to the higher levels on the mountain, and that the area in which coal can be reasonably expected is not more than one-third of the above amount. To this may be added the area of coal seams that may extend to the dip, and be yet within reach of the surface, in the country lying between the coast range and the Mine Gorge.

Taking the experience of the field up to the present time we can therefore obtain the following rough estimate of the probable yield of the whole field: Area of present leasehold, 9,000 acres; area worked in ten years, 40 acres; output, 250,000 tons=6,250 tons per acre.

It may be assumed that the country now under lease includes all parts of the field that have decided indications of coal, and that at least one-third of the area thus secured will prove barren or unworkable owing to faults. This gives the available area at 6,000 acres, which, on the foregoing basis will yield 37,500,000 tons of coal.

The Greymouth coal field is cut off to the eastward by slate and granite rocks, which compose the mass of the Paparoa Range. Small outliers of the newer formation with unimportant coal seams exist on the west side of the range in the vicinity of Fox River, and probably extend for many miles inland, as outlying patches of coal-bearing strata have been reported up to an altitude of 5,000 feet, resting on the surface of the granite; but this is no evidence of the existence of any coal that would be accessible from the east side of the range.

The next coal field of importance, which is that which commences near the source of the Inangahua, and extends to the sea-coast in the Kuramea Bight, must therefore be looked on as a separate area. This is decidedly the largest coal field in New Zealand, and includes the coal mines at Reefton and those on the Mount Rochfort Plateau. That part of this coal field which is included in the Reefton district crosses the valley of the Inangahua obliquely. The formation, as at the Grey, comprises four members—namely, (1) chalk marls, (2) grits and sandstones, (3) septaria clays, (4) brown micaceous sandstone and conglomerate with coal seams. The lower group skirts the east side of the valley and generally contains coal seams where natural sections afford facility for excavation. Seven small mines have been opened, from which a total of about 8,000 tons of coal have been extracted. The total extent of the coal field at the surface is about 3,000 acres, but much of the country is still unexplored. The relative value of the coal from the Greymouth and Reefton Districts may be judged of from the following table, to which I have also added the evaporative power of the coals from the Buller district for comparison.

JAMES HECTOR.

Colonial Museum of New Zealand, 12th June, 1883.

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