

any case, should even this river not prove rich enough, the country about the Greenstone Creek proper will offer room enough for several thousand diggers."

The Hokitika Fields.

Dr. Haast next visited the Hokitika district, and gives, in a letter dated May 4th, 1865, his impressions of the prospects. After describing in detail the geological conditions, he writes: "It is evident that under these circumstances the boulders, gravel, and sand, by which, as before mentioned those alluvial deposits are mostly composed, must contain a great deal of gold, but which, nevertheless, would not be worth being extracted, had not Nature herself, by the subsequent changes in the configuration of the country, concentrated the precious metal in numerous localities by sluicing the original accumulations on such a gigantic scale as can only be effected by natural physical forces. This plateau, besides being intersected by those large rivers, is nearly separated from the higher mountains forming the outrunning spurs of the Southern Alps by streams running either north to the Terepakau, or south to the Arahura rivers. The consequence is, that for a long period it has remained almost intact, till smaller watercourses, derived from the surface drainage, began to form channels, of which the two principal ones are the main branches of the Kopitea and of the Waimea, which both take their source on that plateau itself, having the character of a swampy plain covered with manuka scrub and other vegetation peculiar to moist localities. I have already stated that the older alluvium covered the highest young tertiary ranges which are of an altitude of 800 to 1000 feet, reposing unconformably upon older tertiary strata near the Grey. Of this fact I met numerous instances during my various journeys across these gold-fields, where sharp razor-back ridges have been formed, still having a distinct capping of sub-angular boulders of older rocks on their summit. Following down the main sources of both rivers from the plateau, we soon arrive at that barrier, consisting of young tertiary strata, through which the waters have cut their way, showing by the terraces, that the process of denudation has been a very gradual one or been accelerated or retarded according to the physical changes in operation.

"As in many localities no denudation has taken place on the upper part of the plateau, the sluggish water-courses meandering through swampy or boggy ground, no gold is to be expected there, and only descending for a few miles, where the alluvial capping has been extensively removed and the gold contained in it has become concentrated in the present watercourses or in the terraces, formed by previous channels, gold in payable quantities is to be expected. But by far the richest creeks are those which take their rise in the claymarl hills themselves. Those creeks which have a moderate fall with an appropriate breadth are those which yield the richest harvest to the miner. Owing to the favourable nature of the bottom, the greater part of the gold has been retained in them, and even the terraces yield a large quantity. Thus, for instance, the creeks take their rise in these clay marl hills, as Fox Rush, Greek Gully, Nos. 1 and 2, falling into the Arahura, the southern and northern branch of the Waimea, the Maori and German gullies, forming tributaries of the Kopitea, have proved to be very rich, giving a fair remuneration to the mining population. But also the terraces on both sides, which owing to their peculiar nature, present generally some difficulties in obtaining water, so that the miner is often obliged to wait for rainy weather (or which generally he has not long to wait) before he can strip his ground, are extensively worked with advantage, and will be still more lucrative when some new appliances are introduced, so that an ample supply of water can be

brought to his assistance. It is true that the terraces are more or less patchy, but their fall being less than that of the present water channel, the gold is heavier, and many claims were pointed out to me which are considered to be extremely rich.

"The gold in all these creeks, like that in the Greenstone, is of the same fine, scaly nature, which, considering the deposits from which it is derived, having travelled so far in a former large river, is easily accounted for. When the gullies are short and steep the force of the water has been so great as to sweep away the larger quantity of the gold, passing through the natural sluice, and I may only, as an example, instance Categhan's Gully, falling into the Kopitea, in which the yield of gold in comparison to other neighbouring creeks has been insignificant. In that creek only very large boulders are generally found, between which the gold has been retained, whilst the terraces above, descending with less slopes, are giving a far better yield and much heavier gold than the bed of that gully itself.

"As soon as the rivers lose their gorge-like character, approaching the sea, the extraction of gold begins to be not so remunerative as in their upper course, which is easily understood, if we consider the breadth of the river bed, and of the terraces bounding it; the gold becomes finer and lighter, and although everywhere prospectors, to use a mining expression, obtain the colour, its working is no longer payable. This is the reason why the Kopitea, flowing in a broad valley, has hitherto not given satisfactory results, but, nevertheless, I have no doubt that some of the lower terraces in that river will yield ultimately a fair remuneration to the miner.

"In many other localities, where the lower terraces are too poor to be worked with advantage, smaller creeks, traversing them, having again concentrated the gold contained in the alluvium by which they were formed, occupy a population of several hundred miners. Such gullies are found for instance in the Waimea about four or five miles from the sea. It is evident that a range which has furnished the material for such enormous auriferous accumulations must, since the formation of that gigantic fan, and even at present, the denudation going on uninterruptedly, set free large quantities of gold.

"Thus we may fairly expect that above the gorges of the rivers Hokitika, Arahura, etc., new goldfields will be discovered where the precious metal, not having been subjected so much to the action of running water, will be of a coarser and more nuggety nature, and, in fact, the gold obtained in the rivers south of the Hokitika, where the ranges approach nearer the coast, is of that character, and may be considered as another proof that such a theory is more than a mere supposition.

Very Favourable Prospects.

"Therefore we can anticipate that the goldfields will eventually reach not only along the coast for a long distance, but also far back towards the central range behind the granitic axis, and that rich finds will reward the enterprise of our hardy mining population when it has once fairly penetrated into the interior. The circumstance that our present goldfields are what is technically termed "poor man's diggings" carries with it the internal evidence that they will be of a more permanent nature than many other mining districts in New Zealand, because the gold being deposited, as it were, almost equally everywhere, a great deal of country besides the terraces will be found which may be considered to be more than only payable, the more so when roads of a more passable character will reduce the cost of carrying provisions inland.

"In summing up the evidence obtained during this journey, in which I have visited all the principal diggings, crossing several times over the clay marl ranges, and following some of the principal valleys from their very source to their junction, experiencing all that time a continuance of very rainy weather, I may state as my conviction that these diggings for several years to come will afford for a limited number of miners (several thousands) ample and advantageous occupation. It is true that many of the principal gullies will soon be worked out, but the terraces remain, which, when once extensive races will be brought into operation to work them hydraulically, will yield satisfactory results, and many leads will be discovered in those terraces at present unknown.

Owing to the dense character of the forest vegetation, and the absence of roads, many gullies are, without doubt, still in existence which hitherto have escaped the exertions of the mining population to find new ground. Besides one and the principal consideration has not been lost sight of, namely, as soon as possible roads will exist, present ones being only channels of semi-liquid mire, intermingled with roots of trees, provisions will become much cheaper, and in consequence a great deal of auriferous ground, which hitherto has been reported not payable owing to the high prices of provisions, will become remunerative as soon as good and substantial roads reduce them to a reasonable standard. With one word, the future of the West Coast goldfields depends in a great degree on the nature of the roads the Provincial Government thinks fit to have constructed. Great are the exertions of the miners, those pioneers of civilisation, who struggle manfully against all the disadvantages which the nature of this coast, its climate and vegetation, has placed in their way, so that every well-wisher will join me in urging upon you to assist them as much as it is in your power to change a wilderness into a flourishing country, which in many other respects possesses so many advantages, so that the Province of Canterbury will one day be proud of its western portion."

THE BIG WORK.

SOME FACTS AND FIGURES.

Length: Five miles 25 chains 18 links.

Grade: One in 33, or 2ft per chain.

Rise from Otira to Bealey End: 850ft.

Level throughout, with 12in concrete blocks, except in places where country is bad, and 18in work is used.

Contract signed: August 9th, 1907, by John McLean and Son.

Amount of contract: £599,794.

Time stipulated: Five years.

Tunnel taken over from contractors: December 28th, 1912.

Public Works Department commenced operations: January 8th, 1913, at Otira; January 13th, at Bealey end.

World's Longest Tunnels.

Tunnel.	Country.	Miles.	Yards.	Altitude.
Simplon	Switzerland	12	458	2313
St. Gothard	Switzerland	9	564	3783
Roischberg	Switzerland	9	55	4077
Mont Cenis	France-Italy	7	1730	4248
Arlberg	Austria	6	404	4800
Riech	Switzerland	5	610	1650
Otira	New Zealand	5	554	2495
Canera	Austria	5	545	4020
Ronio	Italy	5	277	
Tonda	Italy	5	56	3260

World's Highest Tunnels.

Tunnel.	Country.	Feet.
Caldora	Peru	1 320
Trans-Andine	Chile	15,774
	Argentina	1 551
		10,500

HISTORY OF THE MIDLAND RAILWAY.

The Press, Aug 4, 1923

A LONG STRUGGLE

SIXTY YEARS' AGITATION.

AN INTERESTING REVIEW.

At the present day the people of Canterbury and of the rest of New Zealand are apt to think that they have made a great discovery—a discovery of the vast resources and latent possibilities of Westland. As a matter of history, this discovery was made over sixty years ago, and became the basis of a great movement to secure railway communication between Nelson, Westland, and Canterbury. Most significant of all, this early impression of the potential wealth of Westland was made before the discovery of gold, and the charm of the precious metal was not working a spell upon the minds of the men who desired to throw open the lands of Westland to the world. Sixty years ago men preached the gospel contained in the slogan "To the West Coast!" Right through the years the slogan has been heard, sometimes resonant and hopeful, sometimes faint and discouraged, but never wholly silenced. And time at last brought its reward. The Railway Leagues of yesterday have passed away, and the Progress Leagues of to-day have taken their place, but the work has gone on, and the Midland Railway is a memorial of the many men who were gifted with sufficient imagination and vision to prolong what must have seemed on many occasions a hopeless struggle.

Nelson Leads the Way.

The great scheme of establishing railway communication with the West Coast originated in Nelson, and a manifesto of the Christchurch Railway League, published in 1886, says that the honour of the first attempt to burst into the regions of Westland by means of a railway is wholly due to the political foresight, acumen, and enterprise of the men of Nelson. Even as early as 1860 the illimitable resources and capacities of the district had struck the imagination of the leaders of that province. In 1870 Sir Julius Vogel placed before Parliament the great Public Works policy which had such far-reaching effects, and it was then that the project of railway communication with the West Coast came prominently into practical politics. The Nelson Provincial Council gave the matter earnest consideration, and the public showed a keen interest in the project. An "Inland Communication Committee" collected and distributed statistical information and fomented the agitation. In 1873 there were potent reasons why Nelson should give such a scheme its most careful consid-

eration. Nearly all the land available for cultivation and settlement in the immediate vicinity of Nelson was occupied, and the stream of immigration had dwindled almost to nothing. This promised to be fatal to the prosperity of Nelson, and new elements of strength had to be found to rejuvenate the colony. Then the slogan "To the West Coast!" resounded through the land, and all parties and all classes in Nelson responded as to a clarion call. The Provincial Council repeatedly affirmed the desirability of undertaking the construction of a railway to the West Coast. So great was the enthusiasm of the Nelson people that they resolved not to wait for the action of the General Government, which would assuredly be slow.

The Nelson people decided to set aside two million acres, comprising the Brunner and Mount Rochford coal-fields, as a bonus to any company undertaking the construction of the line. The General Assembly of New Zealand, by the Nelson and Cobden Railway Acts, 1866, 1867, 1868, and 1869, repeatedly gave its consent to the proposal of the Nelson Provincial Council, and was evidently satisfied even at that early date that the construction of a railway to the West Coast would be advantageous to the colony in general.

The Nelson Inland Communication Committee pushed on, collecting masses of evidence and thoroughly testing the reliability of the data laid before it. Its comprehensive report was adopted, and a company floated. Shares were eagerly applied for by all classes of the community, and the Nelson colonists appeared to be about to reap the reward of their enterprise and self-reliance.

The Government Intervenes.

At this crisis in the history of the East and West Coast and Nelson railway, the Government stepped in. It is probable that there was some idea of possible injury to a colonial loan, if a local scheme were floated for the carrying out of a work that was practically a part of a main trunk line, to the construction of which the Government was pledged. In any case there can be no doubt but that a proposal was submitted to the Nelson people to the effect that if they consented to abandon the formation of the proposed company, the work of constructing a line from Nelson to the West Coast would be undertaken by the general Government, the line being recognised as portion of the main trunk railway of the South Island. The committee accepted this proposal, and the Nelson efforts ceased.

Sir Julius Vogel, in the course of his Financial Statement of 1873, stated that the Government would ask "for authority to fill up the three gaps not yet provided for in the main line between North Canterbury and the Bluff, and to make a survey with a view to deciding upon a main line which will bring Nelson and the West Coast into communication with Canterbury, and also, if it should be found expedient, into communication with Marlborough." Later, Sir Julius Vogel said: "What I desire to establish is this—that every part of New Zealand is in our charge; that we want every district to be improved. We don't seek for a few splendid and isolated examples of prosperity, with depression and stagnation elsewhere—silk on the surface, rags beneath."

By the Railway Act of 1873, the railway from Nelson to Westland and thence to Canterbury, with a branch to Pictou, was adopted as part of Sir Julius Vogel's Public Works policy. The Government did not carry out that policy, and the effect on Nelson was little short of disastrous. The pledges given to her were not kept, and her people were betrayed. Nelson could have held her own with Wellington if she had obtained the railway which she had projected. All the resources of the Golden West would have flowed through Nelson instead of Wellington. Instead of this, Nelson has languished for half a century, and has not yet been given the railway for which she fought so hard years ago.

Canterbury Takes Action.

The definite beginning in Canterbury of the agitation for the construction of a railway uniting Canterbury with the West Coast appears to be a motion passed at a meeting of the Selwyn County Council on February 8th, 1878. The following report of the proceedings appeared in "The Press" of February 9th:—

"Dr. Turnbull said there was one question he desired to bring before the Council which was of considerable importance—that was the branch railways in the county, which were enumerated in the Canterbury Branch Railways Land Reservation Bill. The pushing forward of these branch railways was a matter of considerable importance, and though not able to pass a formal resolution on the subject, he felt sure they would all agree with him as to the desirableness of having these lines surveyed at once. . . . He would suggest the following as an expression of opinion from the members of the Council:—"That it is, in the opinion of this Council, of great importance to the interests of the County of Selwyn that the branch railways in the county enumerated in the Canterbury Branch Railways Land Reservation Bill, which are urgently required with a view to the development of the resources of important portions of the country should be surveyed without delay, so as to enable plans and estimates of cost to be laid before Parliament at its next session."

"The chairman (Sir John Hall) said that in other provinces—notably Otago—the branch railways, the Bill for which was in the same position as the Canterbury one, had been surveyed. If the proposition laid before the Council by Dr. Turnbull met with the approval of the members, he would bring the matter before the Government.

"Mr Rolleston, while agreeing with Dr. Turnbull as to the advisableness of these branch lines being pushed on, did not think that they should be done so at the detriment of the speedy completion of the trunk lines. There was the northern line, for instance, which ought to be finished as speedily as possible, so as to connect us with the West Coast. This was essentially what was now called a national work, and was one which he had always strongly advocated. In his opinion nothing would tend so much to advance their commerce and extend their trade as the opening up of the West Coast by means of railway communication.

"The suggestion of Dr. Turnbull was then adopted."

Nothing further of interest in connexion with railway communication to the West Coast is reported in the papers until the following telegram from Wellington was received on July 22nd, 1878:—

"To-day a deputation, consisting of Mr Seymour Woolcock, the Hon. W. Gisborne, and Mr Woolcock, members of the House of Representatives, waited upon the Government to urge the construction of a railway from the West to the East Coasts of the Middle Island, and from Greymouth to Hokitika.