HISTORICAL GEOGRAPHY

OF WESTLAND

BEFORE 1914

Thesis Submitted for the
Degree of Doctor of Philosophy
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by Murray McCaskill

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This thesis is presented
in three volumes.

Volumes 1 and 2 contain the
text, the plates and figures
14c and 14d. Volume 3 contains
the remaining figures. The
endpaper to Volume 1 is a
general reference map cov-
ering the central portion of
the South Island and including
the Westland region.
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ABBREVIATIONS

The following abbreviations are used in footnote citations of various journals:

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<tr>
<td>A.J.I.C.</td>
<td>Appendices to the Journals of the Legislative Council.</td>
</tr>
<tr>
<td>A.J.H.R.</td>
<td>Appendices to the Journals of the House of Representatives.</td>
</tr>
<tr>
<td>C.P.</td>
<td>Canterbury Papers. Inwards Correspondence, Superintendent's Office, Canterbury Provincial Council. Unpublished Manuscripts in Canterbury Museum, Christchurch. (In the citation the letters C.P. are followed by the office record number of the document and the year.)</td>
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<tr>
<td>N.P.</td>
<td>Nelson Papers. Inwards Correspondence, Superintendent's Office, Nelson Provincial Council. Unpublished Manuscripts in Dominion Archives, Wellington. (In the citation the letters N.P. are followed by the office record number of the document and the year).</td>
</tr>
<tr>
<td>N.Z.J.S.T.</td>
<td>New Zealand Journal of Science and Technology.</td>
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</table>
INTRODUCTION

New Zealanders have long recognised the distinctive qualities of the long and narrow strip of inhabited country on the west coast of the South Island. In this study the area is termed 'Westland' although others have preferred the designation 'West Coast' and would argue that there is little fear of confusing it with any other west coast in New Zealand. The uniqueness of Westland as a region of New Zealand scarcely needs emphasis. Indeed, the peculiarities of the land and its people are often exaggerated and the popular image of the present day West Coaster tends to be an amalgam of the romantically-conceived characteristics of the nineteenth century frontiersman - a hard-drinking, hard-working and free-spending pioneer, generous and friendly yet distrustful of authority. In Westland the modern New Zealander likes to see a home-grown 'wild west', albeit a more orderly one than its North American prototype. In an area where man's conversion of the primitive landscape is so obviously incomplete, pioneer characteristics are supposed to have persisted longer than in other parts of the country.

It remains for the sociologist or the social historian to define the distinctive traits of the West Coaster, if indeed these do or ever did exist. There can, however, be less room for dispute about the distinctive nature of the land itself and of the manner in which man has used its resources. Westland is the wettest of the inhabited regions of New Zealand. Its economy has been based on a unique combination of extractive industries and the course of its settlement has been unlike that of any other part of the country. Human activity has always had a scattered and highly-localised pattern of distribution with an
intensive utilisation at a few points. The consequences have been incomplete clearance of the forest, even in the long-settled lowlands, and a predominance of clustered rather than dispersed forms of settlement. The isolation of Westland, although now largely dispelled, has been a persistent theme in its history and geography. The imprint of past exploitation is seen on the face of Westland as in few other parts of New Zealand and geographies of the past weigh heavily upon the geography of the present. Studies in historical geography, therefore, might be expected to give insight into the character and problems of the region at the present time.

When the writer first embarked on this project, at a time when detailed studies in historical geography had scarcely begun in New Zealand, it was intended that the historical treatment should lead up to a geographical assessment in the mid-twentieth century. For some years field and archival work proceeded hand in hand until it became apparent that the wealth of source material relevant to past geographies was much greater than had been presumed at first. Further, it became apparent that precise locational data could be obtained over a longer period of time and at a greater degree of detail for mining areas than for agricultural areas in New Zealand. Accordingly, the objective was limited and attention was focussed on the first fifty years of European settlement in Westland.

Objective:

The aim of this study is to analyse the human geography of Westland at a number of significant periods before 1914. It is hoped that it may advance comparative knowledge of the geographical regions of New Zealand in the past and that it may add to our understanding of the varied processes of settlement which have fashioned the New Zealand landscape. Since F. J. Turner propounded his 'frontier'
hypothesis in 1894 there has been a substantial literature dealing with its application to the settlement of the 'empty' lands of the New World.¹ Yet, as has been recently pointed out, few historians have dealt reasonably specifically with the varied frontier environments, the morphology of settlements and the management of resources.²

This study of Westland has not been organised around the frontier theme but, by showing how one empty region came to be occupied and by examining the resultant spatial patterns of human activity, it is hoped that it may contribute to comparative studies on this theme.

The discussion of each period begins with a review of the source materials, proceeds to a study of the distribution, composition and movements of population, then analyses significant elements of landscape and economic activity. Finally in this study, various component sub-regions which were significant in the historical geography of Westland before 1914 are defined and their contribution assessed and some general conclusions are made relating to the settlement of the region as a whole.

There have been some critical periods in the development of the Westland landscape when new features were introduced and new relationships established between man and the land. These have been followed by periods of retrogression or of development along lines already established. The periods of development can be defined as follows:

(1) 1864-1867. This period of the gold rushes was the most significant of all for it established the initial

patterns of human activity over a wide area of Westland. It saw the influx of the only large group of settlers ever to come to the region and the abnormal characteristics of that community were reflected in the age and sex structures of the population at least until 1911. Although the landscape relics of this period have been all but obliterated, enduring features are the siting of the main commercial towns, the fixation of several important lines of communication and the giving of a distinctive nomenclature to the gold country. On a less tangible plane, the folklore which grew out of the experiences of this period has coloured the outsider's view of Westland and the West Coaster and the West Coaster's view of himself.

(2) 1875 to 1885. This period witnessed a rapid extension of the hydraulic sluicing technique of alluvial gold mining with its much greater destructive effects on the face of the land. It also saw two attempts to establish groups of small farmers in areas not settled by the gold miner and, most important of all, it saw the development of the Greymouth and Buller coalfields with the attendant railway and harbour construction.

(3) 1900-1905. Between 1900 and 1914 there was a concurrent boom in four primary activities, coal and gold mining, sawmilling and farming but most of the new developments were initiated in the first five years. This period represents the high tide of extractive industry in Westland and it saw a modest but important influx of new population. The major new development was sawmilling and the location pattern and operating methods then established continued with little modification until about 1950.

(4) 1935-1943. The main changes were the rise of large-scale gold dredging after the incorporation of Westland in the South Island electric power grid, the linking of the Buller district with the South Island railway system, the construction of new main highways and the
beginning of open cast coal mining.

(5) The 1950's saw progress in two fields, firstly, a revival in farm development which was reflected in a tidier farm landscape and, secondly, a new philosophy of forestry which was reflected in new methods of logging and in the first attempts at sustained-yield forest management. By contrast there was also retrogression in that the gold mining industry became virtually extinct and difficulty was encountered in marketing some kinds of coal. A new raw-material processing industry, cement manufacture, was established near Westport, but despite this, there was a greater awareness than at any other time of Westland's 'problem' status as an area scarcely able to maintain a stable population and falling well behind the national rate of development.

The present study is concerned with the first three stages of development and with the times of relative stability which followed each cycle of changes. Each period saw the rise of a new extractive industry, in turn, gold mining, coal mining and sawmilling while each period also marked a change in the character and distribution pattern of the older extractive industries. Agriculture, which would be a principal item in any similar study of almost any other region of New Zealand plays a subordinate part in the Westland story. At all stages it was a minor accompaniment to the main theme of extractive industry. For the gold rush period the geographical consequences of administrative boundaries and of political behaviour seemed sufficiently important to justify a treatment of the area's political geography at some length. This does not imply that Westland had no significance in the political geography of later periods, but with the establishment of a unitary form of government in New Zealand in 1876 the importance of local political action diminished. Although the role of Westland in the later
electoral geography of New Zealand could well be an illuminating theme it would be better pursued from a national rather than a local standpoint.

The chart on the following pages sets out the main periods of occupation in Westland before 1914, lists the chapters dealing with each period and records some significant events which might serve to mark the beginning and end of each period.

Viewpoint:

It is not surprising that students of historical geography, working in a field whose subject matter ranges so widely in place and time, have found it necessary to devise several different methods of approach. Three principal methods can be recognised. The first is the cross-sectional approach by which features are studied in their spatial relationships at some point of time. The second is the modified cross section or 'sequent occupancy' approach, first proposed by Whittlesey and employed in a large number of American studies, most recently and perhaps most exhaustively by Meyer. An area is studied during a period of time when geographical patterns remained relatively stable or when developments of a similar kind were taking place. Some practitioners of the sequent occupancy approach would restrict such studies to those elements of the past that have survived to the present. The third method is the study of changing geographical patterns through time as illustrated by Darby's study of the changing English landscape. Each method has its particular advantages and limitations but the three

3. As for example in Ralph H. Brown: Mirror for Americans, Likeness of the Eastern Seaboard 1810, New York, 1943.
approaches are not mutually exclusive within a particular study, indeed samples of all three treatments can be found in Ralph H. Brown's *Historical Geography of the United States*.

The standpoint of the present study is basically the 'sequent occupance' approach but it includes treatment of conditions at particular points in time and studies of geographical changes. Many of the maps depict 'point of time' situations, others plot changing patterns over a period of time while a few maps show cumulative patterns containing features which could not have been seen together in the landscape at any one time. The variety of treatment is an attempt to meet the problems raised by the nature of the region itself, an area of extractive industry whose fluctuating fortunes made for rapidly-changing patterns of human geography. A series of cross sections coming after rather than during periods of rapid change, say 1868, 1886 and 1911, while having the merit of methodological tidiness and being impeccably geographical, could be criticised on practical grounds. The historical geographer depends on the chance compilation and chance survival of his source materials. In an area undergoing few changes there may be little objection to using a traffic census of 1870 and a street directory of 1866 for a geographical reconstruction for 1868. However, this assumption cannot be made for gold rush Westland and a more realistic solution was to treat the geography of a period taking the evidence of varying dates. A reconstruction for the census year of 1911 could not have employed, without strong reservations, the detailed inventory of the sawmilling industry made in 1907. The pattern of gold dredging in 1911 is best appreciated as the shrunken remnant of an activity which reached its climax in 1902, while the pattern of dairy factories in 1911 gains significance if it can be seen as a stage in a very rapid growth of dairy processing plants.
<table>
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<tr>
<th>General Character of Period</th>
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</tr>
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<td><strong>THE COAL AGE.</strong></td>
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<td>1875 to 1890</td>
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<td>Few new developments apart from a slow expansion of sawmilling</td>
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reaching a numerical peak in 1915.

**Definition of the Area:**

The Westland region of this study has been defined arbitrarily and does not coincide precisely with administrative divisions along the entire length of the boundary. In essentials it comprises the four present-day counties of Buller, Inangahua, Grey and Westland, although the mountainous and uninhabited north and northeastern part of Buller County has been excluded. In the four places where it crosses lines of communication the boundary has been drawn in the 'watershed' between the present commercial tributary zones of towns within the Westland region and those outside it. The regional boundary begins in the south at Awarua or Big Bay, follows the old provincial and present land district boundary to Mount Aspiring, then follows the main divide of the Southern Alps to Lewis Pass. There it turns west to include the upper part of the Warua Valley, runs north on the crests of the Victoria and Brunner Ranges, then northwest to include the catchments of Lyell Creek, the Orikaka and Ngakawau Rivers and the lowlands and lower hill slopes of the Karamea district. It does not include the whole catchments of the westward flowing Mokihinui, Wanganui and Karamea Rivers which may better be regarded as forming part of the mountainous, uninhabited region of Northwest Nelson.

This boundary could be criticised in detail but it is one of several acceptable alternatives. In most places the boundary could be moved at least five miles seawards and still call for no alteration to any statement made in

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7. Except for a slight curve southwards to include the whole of the catchment of the Arawata River.
the chapters that follow. Indeed if the delineation of a boundary line admits of argument there can be little dispute about the presence and nature of a boundary zone - an unsettled mountain area difficult to penetrate. The Murchison district has some features in common with the Westland region and the present area of Murchison County once formed part of Inangahua County, but the area was settled overland from Nelson and its commercial and social ties have always been with Nelson.

The Westland region thus defined extends for three hundred miles from Karamea to Big Bay. For the greater part it is about twenty five miles wide from seacoast to mountain divide and the maximum width is 58 miles at Lewis Pass. From the Taramakau River southwards there has been virtually no settlement further than ten miles from the coast while the southernmost twenty miles, from Big Bay to the Cascade Valley, has had no permanent settlement. North of the Buller Valley there has been no settlement more than five miles from the coast but in the Grey and Inangahua Valley there has been fairly close settlement twenty five miles inland. The attenuated form of the region and its spread over three degrees of latitude and four degrees of longitude pose considerable cartographic problems. If the region is to be shown as a whole, detail has to be sacrificed or the map becomes inordinately long and reproduction in published form becomes unduly expensive. By altering the conventional alignment of north at the head of the map one can go some way to solving this problem but segmentation of the area, which inevitably distorts appreciation of space relationships, has sometimes been found necessary.

Acknowledgments:

A work of this length involves a considerable debt of gratitude to many individuals and organisations. In the first place thanks are due to the Research Committee of the University of New Zealand for a grant which sustained most
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In a small country such as New Zealand where one may be the sole geographer studying a large area or topic, stimulus is more likely to come in conversation with workers in fields outside one's own discipline. I therefore owe a special debt to Mr. P. R. May, historian, and Drs. N. P. Suggate, K. Gage and H. W. Wellman,
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II
THE SETTING

'... a densely-timbered Alpine wilderness... a savage gloomy country, silent desolate and dreary...'
   - Charles Hursthouse in 1857

'Having paid three visits I have much pleasure in stating that it deserves a better character than has hitherto been accorded to it.'
   - James Mackay in 1860

To the various groups of immigrants, both Polynesian and European, who arrived in New Zealand before 1860 Westland must have seemed one of the least promising environments for settlement that the country had to offer. Its isolation discouraged close inspection and the few Europeans who landed on its shores or traversed the barrier ring of mountains before 1860 found little to excite interest. The approaches to Westland by land and sea were fraught with difficulty. The only harbour offering a safe anchorage was at Jackson's Bay in the far south. From there the coastline sweeps northeastwards in a series of wide arcs for 340 miles to Cape Farewell. Sandy beaches alternate with cliffs of morainic rubble and ironbound coasts of hard rock and, although this great length of coastline is broken by the occasional promontory, there was no inviting landfall until Whanganui Inlet, only a few miles south of Cape Farewell. Shingle bars guarded the river mouths and heavy surf swept up on to the steeply-shelving beaches. By land the approach to Westland was even more formidable. From the north the coastline between Whanganui Inlet and the Karamea lowland is virtually impassable on foot and fifty miles of high mountain country separate Karamea from the lowlands of Golden Bay. Between Lake Rotoiti, at the head of the Tasman Bay lowlands, and the mouth of the Buller River lay about seventy miles of the most fearsome gorge and river travel that New Zealand explorers have had to undertake. Between the inner margin of
the plains of Canterbury and the lowlands of Westland there was a fifty-mile-wide zone of high mountains, the western half being densely timbered, while in the southern half the passes were snow-covered throughout the year.

Within Westland the country below the timberline between 3,000 and 4,000 feet was covered in a dark green forest. Here and there it was interrupted by a number of gleaming lakes, occasional dull-brown swamps and grey ribbons of open riverbed. The dominant impressions of the first European visitors to Westland were of the frequent and torrential rain, the numerous rivers which flooded quickly to become raging torrents, the tangled undergrowth of the bush, the threat of hunger and the clouds of sandflies and mosquitoes. With no open grasslands for sheep, no land which could be readily ploughed for agriculture and lacking natural harbours or safe anchorages, Westland had nothing to offer the European settler in New Zealand until the discovery of payable gold in the mid-1860's. Overnight the gold discoveries effected a complete revaluation of the economic worth of the region and virtually set at naught the physical obstacles which had hitherto checked exploration and settlement. The course of European exploration and the assessments made of its physical character by those who first travelled in the area are treated in chapter 4. The present chapter describes from the standpoint of present day knowledge some of the main characteristics of the physical geography of Westland which are relevant to a study of its settlement.

The view of Westland from a coastal vantage point on a fine day is one of rare beauty. The bold architecture of the land is tempered by soft colours - greens, greys and blues. Behind the surf-fringed beaches the sombre green forest spreads a uniform mantle over coastal flats and terraces, undulating hills and outlying mountain masses. The backdrop to the view is the unbroken rampart of blue mountains with their glistening snowfields. The colour of the Westland landscape is thus in profound contrast to the starker browns and tawny yellows of Canterbury and Otago.
The physical pattern of Westland can be seen in three broad divisions. From Greymouth southwards there is an almost continuous lowland, from five to twenty miles wide, composed of river flats, gravel terraces and morainic hills. Above it rise occasional detached mountains which stand out 'like sentinels along the western margin of the Southern Alps'. The lowland passes abruptly into alpine Westland, the second broad division, at the Alpine Fault. This major northeasterly-trending earth fracture is of remarkable length and regularity. It marks the boundary of the schistose rocks which form the western margin of the Southern Alps. Within a few miles the schists pass into the greywackes and argillites which make up the core of the Southern Alps for most of their length. The third broad division, north Westland, lies to the north of Greymouth and is more complex in pattern. It consists of a parallel sequence of synclinal depressions and northward-trending anticlinal mountain ranges. The terraced coastal plain of the Buller and the Punakaiki Tertiary hill country is succeeded by the Paparoa Range and its northern extension into the Buller coalfield. Then follow the wide depression of the Grey and Inangahua Valleys, the uplands of the Victoria and Brunner Ranges, and finally the depression of the Maruia Valley. Within this northern division the types of lowland terrain are similar to those of the lowland south of Greymouth. The mountains are lower and are composed of different and more varied rocks compared with those of alpine Westland and they include some valuable deposits of economic minerals.

The Climatic Environment.

Of the physical features which distinguish Westland from other parts of New Zealand climate is probably the one which comes most readily to the mind of most New Zealanders. But in the popular estimation only one aspect of its climate, its wetness, is considered. Westland is often regarded as a land of practical unceasing rain, yet there are frequent spells of calm and clear

anticyclonic weather when conditions are as pleasant as could be experienced anywhere else in New Zealand. Three descriptive accounts of the Westland climate have recently been published so a brief summary will suffice here.2

Westland has the heaviest rainfall of any inhabited area in New Zealand although totals as high or higher than those recorded for Westland stations are experienced in Fiordland, in parts of the uninhabited high country of the North and South Islands and on Stewart Island. The recorded mean annual precipitation varies from 69 inches at Totara Flat in the Grey Valley to 222 inches at the Stockton Line at an altitude of 2,600 feet on the Buller coalfield. As snow seldom falls below 2,000 feet 'precipitation' in Westland in fact means rainfall. Only in comparatively small areas - the Karamea lowland, the Buller coast plain and the central part of the Grey-Inangahua depression - are annual totals less than 100 inches.3 Most of the population has lived in areas receiving between 70 and 125 inches annually, whereas most other inhabited areas of New Zealand receive less than 60 inches year. Herein lies a measure of Westland's wetness as popularly conceived.

The mean number of days with rain ranges from 162 per annum at Totara Flat to 213 at Rewanui, values of between 175 and 200 days being the most widespread. These are high figures for New Zealand yet, in relation to total rainfall, the number of rainy days is not excessive. Invercargill receives its annual rainfall of 43 inches on 201 days whereas Hokitika, with almost three times the rainfall, receives 110 inches on 196 days. New Plymouth as 61 inches on 186 days whereas Whataroa, close to the foot of 8,000 foot mountains, receives 108 inches on as many days


See the map of mean annual rainfall 1921-50, prepared by N.Z. Meteorological Service in Report on Land Utilisation Survey, op.cit.
Thus, for many stations at least half an inch can be expected every day it rains. Daily showers of up to three inches can be expected at least once a year while the highest recorded 24-hour totals range from 5 inches at coastal stations from Hokitika northwards to 8 to 10 inches at lowland stations near the base of the mountains and 16.25 inches at Otira near the main alpine divide.

The exposure of the region to warm, moist, northwesterly air streams combined with the orographical effects of mountain ranges rising from 5,000 to 8,000 feet, accounts not only for the abundance of precipitation and its intensity but also for its reliability. The mean annual variability is less than 12 percent of the mean annual rainfall and Westland shares with Fiordland and coastal Southland the most reliable precipitation in New Zealand.

Areal differences in precipitation patterns may be considered from two standpoints - variations with altitude and variations within the lowlands. The increase in precipitation with altitude is large and rapid, as can be seen from the following examples of closely-distributed stations, yet there is not

<table>
<thead>
<tr>
<th>Station</th>
<th>Elevation in Feet</th>
<th>Miles from Coast</th>
<th>Mean Annual Rainfall (Inches)</th>
<th>Mean Annual No. of Days with Rain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westport</td>
<td>10</td>
<td>0</td>
<td>78</td>
<td>187</td>
</tr>
<tr>
<td>Millerton</td>
<td>955</td>
<td>1</td>
<td>131</td>
<td>182</td>
</tr>
<tr>
<td>Downerton</td>
<td>2,500</td>
<td>3½</td>
<td>222</td>
<td>199</td>
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<tr>
<td>(Stockton Mine)</td>
<td></td>
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</tr>
<tr>
<td>Greymouth</td>
<td>10</td>
<td>0</td>
<td>101</td>
<td>187</td>
</tr>
<tr>
<td>Rewanui</td>
<td>1,300</td>
<td>3½</td>
<td>153</td>
<td>213</td>
</tr>
<tr>
<td>Otira</td>
<td>1,255</td>
<td>30</td>
<td>201</td>
<td>167</td>
</tr>
</tbody>
</table>

a significant increase in the number of days with rain. Otira, one of the wettest places in Westland, has almost the lowest record for rainy days. Variations in the amounts of rainfall recorded at lowland stations are of a very large order, ranging from about 70
inches in the central Grey Valley to 188 inches at Whataroa and Jacksons Bay. Nevertheless, these differences are not nearly as significant to the landscape or to human activity as would be a difference of between 30 and 60 inches in some other part of New Zealand. Three trends in rainfall totals within the lowlands may be noted. Firstly, there is a gradual decrease in the rainfall totals of coastal stations from South to North (e.g. Jacksons Bay, 188 inches; Hokitika, 110 inches; Westport, 78 inches). Secondly, the total increases from the coast inland (e.g. Hokitika 110 inches, Rimu 124 inches, Lake Kaniere 169 inches); and thirdly, a rainshadow effect is produced by the Paparoa Range making the central part of the Grey-Inangahua depression the driest area in Westland. Kaimata in the Arnold Valley, lacking the shelter of a range to the west, receives an average of 118 inches whereas Totara Flat, 20 miles to the north receives only 69 inches and Reefton 76 inches. The Victoria and Brunner Ranges probably have a similar effect on the climate of the Maruia Valley but there are no recording stations to confirm this.

Coastal stations from Hokitika northwards record a slight rainfall minimum in February (about 12 percent less than the mean monthly precipitation). At the other stations there is a slight mid-winter minimum in June and July but these seasonal variations in the rainfall regime have had little human significance. At long intervals less than two inches of rain may fall in a month. Such an event is regarded as a 'drought' and it may be a minor calamity. In rural areas domestic water supplies fail if rainwater tanks are not frequently replenished; dairy farmers on porous soils find that shallow wells for livestock water dry up; low levels in the Buller and Grey Rivers mean reduced scouring of silt and gravel on the bars and the harbours may have to be worked at reduced capacity while a few weeks of dry weather induces a highly-inflammable condition in the cut-over bush and in standing beech forests. In the late winter of 1952 there were 55 conse-
cute fine days. Drinking water was carted in lorries and
sold to some three thousand people in rural areas and sawmills
closed because of the lack of water for the boilers of steam
winches. During the gold rush period the severest drought was
in September 1867 when only 1.8 inches were recorded at
Hokitika. Nearly every mining race in the district dried up
and water for washing down the sluice boxes became so scarce
that in the following month the quantity of gold shipped out
of the port dropped to two-thirds of the average for the previous
three months. Then, in October the heavens opened and in 20 day
22 inches of rain fell. The sluicers revelled in an abundance
of water and were able to dispose of such an accumulation of
wash-dirt that during the next month twice the quantity of
bullion was exported.

Apart from rainfall data the statistical interpretation
of Westland's climate depends on the record of five climatolo-
gical stations, Westport, Greymouth, Hokitika, Haast and
Jacksons Bay, which are located less than a mile from the sea.
These stations have a remarkably high number of hours of bright
sunshine in relation to total rainfall. Westport, with a mean
annual total of 1996 hours has 16 hours more sunshine than
Christchurch where the rainfall is only one-third of Westport's.
The 1840 hours recorded at Hokitika closely approaches the mean
for Palmerston North (1890 hours) while Greymouth, the least
sunny of the West Coast stations, receives 1765 hours, more than
either Dunedin (1770 hours) or Invercargill (1670 hours).

Temperature conditions along the seaboard of Westland
are the most equable in New Zealand. Mean monthly winter
temperatures are warmer and summer temperatures are cooler than
on the eastern and southern coasts of the South Island. The
annual range of temperature between the means of the warmest and
coldest months is only 15 degrees F. at Hokitika compared with
20 degrees at Christchurch and 25 degrees at Alexandra. Only

4. West Coast Times, 1 November 1867. Rainfall figures are from
Meteorological Office archives, Wellington.
in Northland is there such a small annual range as in Westland and both the mean daily range of temperatures and the range in extreme temperatures ever recorded are the lowest for any part of New Zealand.\textsuperscript{5} Between 30 and 60 ground frosts are recorded annually but they are not severe and screen frosts are almost unknown at Westport. From a subjective impression, Westland does not seem to be an area of strong winds, despite its westerly exposure. This is borne out by the limited anemometer records of the Westport and Hokitika aerodromes where the mean wind speeds of 7 miles per hour are less than those recorded at most aerodromes on or near the west coast of the North Island (Chahes and New Plymouth 11 m.p.h.).\textsuperscript{6}

Thus from the standpoint of pasture and timber growth the records indicate that Westland has many climatic advantages and few climatic handicaps. Nevertheless, it should be remembered that the frequency and severity of winter frosts increases inland while sunshine diminishes inland and with elevation. The sunshine record of the central Grey Valley may well be as high as that of the coastal stations while its maximum summer temperatures and minimum winter temperatures are undoubtedly more extreme.

Local differences in climate may have had a bearing on the historical geography of two areas in Westland. The comparatively low rainfall of Karama (about 75 inches) and the excessive total for Jacksons Bay (about 190 inches) may partly account for the modest success of the Karama special settlement and the complete failure of the Jacksons Bay settlement, both of which were established in 1875. The lower rainfall of the Grey Valley may have facilitated the growing and harvesting of oats in the 1860's and 1870's to a degree that would not have been possible elsewhere in Westland. Certainly, the soils of the lower terraces there are less severely leached than

\textsuperscript{5}See Garnier, \textit{op.cit.}, p.65, for a table of mean ranges of temperatures in different regions of New Zealand.

elsewhere and they are now in process of being reclaimed for intensive agriculture. The lower rainfall of the Grey and Inangahua Valleys meant that the beech forests there were more inflammable and that they suffered more extensively at the hands of the gold diggers than the forests elsewhere.

In only one place in Westland has a local difference in climate been reflected in the movement of population to more congenial conditions. Over the past fifty years the mining townships on the Buller plateau have declined steadily and some have been completely abandoned as miners established their homes in the drier, warmer and sunnier climate of the townships on the nearby coastal plain or at Westport. But the retreat from the cloudy, rain-drenched plateau did not begin until the 1920's when motor transport gradually extended the coal miners' range of daily travel.

In summary, the main disadvantages of the climate of Westland have been, in the long run, the podsolisation process by which all but the youngest soils have been leached of minerals and, in the short run, the liability of communications and capital equipment to destruction by frequent severe floods. On the credit side the climate is more favourable to grass and tree growth than in almost any other part of the South Island while in the past it provided the alluvial gold miner with an adequate supply of water except in rare spells of drought.

The Geological Resource Base.

Rock type and terrain have been the most important elements of the physical environment in conditioning the kind and location of human activity in Westland while the soil pattern bears a very close relation to the age and slope of the surface deposits.

Westland contains as full a range of rock types and geological structures as could be found in any comparable area of New Zealand. The greywackes and argillites of the Waiuta and Greenland groups, which are probably of Pre-Cambrian age, may be the oldest rocks in New Zealand.7 Granites, schists, 

ultrabasic intrusives and a wide range of sedimentary rocks of varying age and lithology are all present. Indeed, the volcanics are the only important New Zealand rock type not represented. A considerable diversity of landforms results from the lithological variety and complex structural history. There are mountains of even crestline and mountains of serrate summit profiles, dissected tablelands and hill lands where successive outcrops of hard and weaker rocks have resulted in adjustment of drainage to structure. Landforms, developed on gravels vary from the flood-plains of the present rivers to high level terrace surfaces, low undulating hills and higher hills with razor-backed ridges, steep slopes and a fine texture of stream dissection.

The Triassic greywackes and argillites which form the core of the Southern Alps and the schists which make up the western slopes are disposed in regular alignment on the eastern margin of Westland. The Victoria and Brunner Ranges and the central part of the Paparoa Range are composed of granite and gneiss but apart from these formations the geological map reveals a most irregular distribution of rock types, none of which dominates over large areas. Some of the older rocks contain or contained valuable mineral deposits. The Pre-Cambrian(?) greywackes west of the Alpine Fault were intruded by many quartz veins which were worked for gold, notably in the foothills of the Victoria Range and at Lyell but also on a smaller scale in scattered outcrops of 'undermass' rocks on the Buller coalfield, near the southern end of the Paparoa Range and on Mount Greenland at Ross. These ancient greywackes generally form subdued summits in contrast to the serrate outlines of the mountains developed from granite. Much of the alluvial gold which has been recovered from the gravels must have come from the denudation of these quartz lodes but it is unlikely that they supplied all the lowland deposits and a source may be presumed in the alpine schists. The ultrabasic rocks which are intruded in the schists in the Griffin Range, between the Taramakau and Arabura
Rivers, were the ultimate source of nephrite, the pounamu of the Maori, and the first mineral to be worked in Westland.

A limited area of late Cretaceous coal measures occurs at the southern end of the Paparoa Range and has been worked since early in the twentieth century. Early Tertiary coal measures outcrop more extensively. They occur at the southern end of the Greyhounds coalfield, in the Reefton district where they are adjacent to or overlie the quartz-bearing greywackes, in scattered patches in the Buller Gorge and at Charleston and, most extensively of all, on the Buller coalfield where they form a partial veneer over a plateau of basement granites and greywackes. The resources of lode gold and coal both occurred in mountainous terrain, a circumstance which has made both for advantages and difficulties in the course of mining but which has made high-altitude settlement relatively more important than in any other area of New Zealand. Apart from these limited areas of older, mineral-bearing rocks, the economy of Westland has been dependent on the resources of the gravel deposits - fluviatile, glacial and marine. Detrital gold was found in the marine gravels and sands, in river gravels and fluvio-glacial outwash and in the seaward margins of the morainic gravels. Gravel terraces and moraines carried the heaviest stands of timber, while the only soils suitable for agriculture have been the youngest alluvium of the river flats and the consolidated beach sands.

The Pattern of Terrain and Soils.

Six contrasted types of terrain are mapped on Figure 2a. The first three, river flood plains, gravel terraces and moraines, are distinguished basically by the age and kind of the deposits although each category has characteristic surface forms. The other three types of terrain are classified according to elevation and local relief. The dissected hills, (group 4) have a local relief between summits and valley floors of between 300 and 1000 feet but they have a close pattern of streams and little
residual summit surface. Some areas of moraine would come under this category in terms of local relief but they have a more widely-spaced stream pattern and extensive summit surfaces of smooth profile. Low mountains (group 5) have a local relief ranging from 1,000 to 3,000 feet while in the high mountains (group 6) it is in excess of 3,000 feet. Summit profiles in areas mapped as low mountains are generally subdued and in the case of the Buller coalfield there are extensive plateau-like surfaces. In areas mapped as high mountains the summits have generally been fretted by cirque glaciation and in many cases are strongly serrate.

The soil pattern is closely related to variations in the terrain. Shallow, freshly-weathered soils cover all the steep land on both hard rock and Tertiary sedimentaries. Although the soil forming process tends towards podsolisation the steepland soils are closely related to the parent rocks from which they are derived. The tough quartzose sandstones of the lower Tertiary coal measures in the Buller and Greymouth districts weather slowly and form such sterile soils that the upper limit of tree growth is generally about 2,000 feet, and in places only 1,000 feet, compared with the regional timber line of 3,000 to 4,000 feet.

On the lower lands three broad groups of soils may be recognised, the recent soils, the yellow-brown earths and the gley podsol. The degree of leaching varies with the age of the deposit and the slope. The youngest deposits of the river flats are still subject to occasional flooding and despite the heavy rainfall these recent soils are not markedly leached. They owe their soil profile characteristics to the deposition of freshly-weathered sands and gravels rather than to processes of soil formation. Although deficient in lime, some of these recent soils are of moderate fertility and are the only soils in

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Westland which have been successfully farmed in the past.

The yellow-brown earths are formed on the lower terraces in the Grey Valley, the dissected gravel hills and the steeper margins of the morainic hills in South Westland. These soils are moderately leached, well-drained and of lower fertility than the recent soils. On the low terraces of the Grey Valley where leaching has been less severe about 45,000 acres of this group, described by Gibbs and Mercer as the 'Ahaura stony sandy loam', have been cleared from forest and grassed. Although much has reverted to fern and blackberry, re-development is now proceeding and it is likely that these 'Ahaura' soils represent the only potential frontier for agricultural expansion apart from the river flats.

The third soil group, the gley podsols, occupy about 850,000 acres of high-level terraces and undulating or gently-sloping moraine. These are the waterlogged counterparts of the podsolised yellow-brown earth group. They have a peaty topsoil, a brown-grey or blue-grey structureless subsoil and rest on an impervious pan of gravels, cemented by iron and humus. These soils are exceedingly deficient in plant nutrients and are poorly drained as the iron pan impedes downwards percolation and the poor structure checks lateral movement. Although wet, the gley podsols supported a heavy forest vegetation except in excessively boggy sites. Here the plant cover in European times has consisted of umbrella fern, sedges, peat moss and stunted manuka. Such openings in the bush were called 'pakihi' by the Maoris and European usage has extended the term to incorporate a characteristic plant cover, a soil type and a type of terrain — in short, a landscape term as characteristic of Westland as 'gumland' is of Northland. The areal extent of 'pakihi' has increased greatly since early this century for the logging of the terrace podocarp forests and the frequent fires that followed, have led to such increased waterlogging of the soil that only the least demanding of plant species could survive.

Lowland Terrains.

Although settlement in mountainous terrain has been relatively more important in Westland than elsewhere in New Zealand it has been localised in a very few areas. The widest spread of settlement has been on the lowlands and some consideration must be given to the varied pattern of lowland terrains shown on Fig. 2a. The lowlands of Westland are more complex in land form and lithology than any other depositional lowland in New Zealand although the far-spreading forest cover tends to mask the irregularities of the surface. Local relief ranges up to 600 feet and there are low hills with slopes of 15 to 20 degrees. These areas are interspersed with near-level surfaces where, for distances of up to four miles, gradients are no more than 1 in 150. The varied surface forms are the result of the complex history of deposition and dissection that has occurred since the elevation of the Southern Alps and Paparoa Range began in early Pleistocene times.

The basement of the Westland lowlands is formed of late Tertiary beds but these form the surface only locally, such as the southern end of the Paparoa Range, at Big Dam Hill near Kumara and on the coast between Charleston and Pukakaiki. In the Waimea hills and the New River Valley the Tertiaries are mantled with glacial and river gravels and near Charleston by marine gravels. But in all these areas they are exposed as cliffs in the stream valleys where the bluish mudstones were known as 'blue-bottom' by the alluvial miner.

More extensive are the closely-dissected gravel hills which are important landforms in the Grey-Inangahua depression. They are composed of a gravel-conglomerate, stained rusty-brown with prolonged leaching. They were known to the alluvial gold miner as the 'Old Man Gravels' and were considered by him to be non-sauriferous. As the Southern Alps rose rapidly in the early Pleistocene a flood of these gravels filled the
Grey-Inangahua depression to a possible depth of 5,000 feet.10 Today the even-crested summits of this old depositional surface rise to a general height of between 1,000 and 1,300 feet but dissection has produced a maze of ridges. Only scattered portions of the original surface remain and are marked by boggy openings in the forest. Valley slopes range from 12 to 20 degrees, although ridges are seldom more than 600 feet above the streams. The main valleys are terraced and received a partial infilling of younger gravels when piedmont ice advanced near to or on to these hills. The stream beds and terraces, accordingly, have been worked for gold but, because of the low per acre volume of merchantable timber, the forests have remained virtually intact except for local disturbance by gold miners.

The moraines and high level terraces are the legacy of two late Pleistocene glaciations, in the last of which four separate advances of the ice have been recognised.11 The Westland moraines are the most impressive depositional features resulting from glaciation in New Zealand and in no other part of the country do moraines form such significant landforms. They range in height from 100 feet near the sea coast to 1,300 feet at Waitata in the north and almost 2,000 feet at the base of the Southern Alps between the Waiho and Cook Rivers. The morainic landforms vary from low, closely-spaced, hummocky ridges as found to the north of Lake Brunner and between Hokitika and Ross, to widely-spaced, gently-sloping ridges with intervening flat surfaces and boggy hollows. In South Westland comparatively steep slopes occur where high morainic hills are intersected by modern river valleys. Thus, while slopes of less than 5 degrees are common, locally they may range from 10 to 20 degrees. From Hokitika southwards moraine extends almost to the sea and from the Waitaha River to beyond Bruce Bay it forms prominent coastal cliffs. Most of the lakes of Westland, which add so much to its -

scenic attractions, occupy hollows in moraines or occupy former
ice hollows and are partly dammed by moraines. As the piedmont
and valley glaciers were important agents in transporting
alluvial gold and as the meltwater streams would concentrate the
metal which was widely-disseminated in the moraines, the zone to
the west of the former ice limits is of critical importance in
the historical geography of Westland.

The 'terraces' of Westland are presumed to be constructional
surfaces formed largely of outwash gravels deposited beyond the
ice limits during times of ice advances. In interglacial
periods these surfaces were terraced when streams cut valleys
into them. In later advances of the ice these valleys were
partially infilled with fresh outwash gravels, only to be terrace
again when down cutting resumed. Gravel deposition extended far
beyond the limits of the ice and during the penultimate glacia-
tion (the 'Waimaungan' stage of Gage and Suggate) vast quantities
of gravel must have been transported down a valley some 500 feet
above the present Buller River, to form the extensive high level
terrace deposits of the Buller coast plain. The result has been
to give a step-like character to the lowland landscapes, the
heights of successive terrace levels varying from 20 feet to as
much as 500 feet.

The maximum height of the terrace gravels is about 1,000
feet at the base of the mountains in the Grey Valley, 1,200
feet in the Imangahua Valley and 700 feet in the Buller coast
plain. To the north of Hokitika throughout the Westland lowlands
at least two high level terrace surfaces can be recognised above
the present river flats. In many cases three such surfaces are
apparent and more rarely, four. Downcutting into the deposit
of the last glacial advance on the Ikawaura Plain has produced
a remarkable sequence of six terraces within an altitudinal range
of 120 feet but such prolific 'stepping' in the landscape is rare.
In the Grey Valley individual terrace surfaces extending for

three or four miles are large enough to have acquired the term 'plain', especially when the original vegetation was of an open character, thus the Chinetakitaki, Ikamatua and Maimai Plains. Gradients on the older terraces vary from about 1 in 48 on the Craigiesburn Pakihi, a surface formed in the Waiau glacial stage, to about 1 in 53 on the Maimai Plain, constructed in an early advance of the last glaciation. On the Chinetakitaki Plain and between Kumara and the sea, both surfaces resulting from the last major advance of the ice, the gradients are only about 1 in 150. Soil qualities deteriorate with elevation. The older and higher the terrace the more prolonged has been the leaching and the more waterlogged the soil. The margins of these terraces have been the principal source of alluvial gold while the extensive surfaces themselves provided the bulk of the timber cut in Westland before about 1940.

The floodplains of the present rivers in Westland nowhere form wide expanses of low-lying terrain but are widely scattered from Karamea in the north to the Cascade Valley in the south. North of Hokitika the floodplains are narrow ribbons where modern streams have cut into the outwash deposit of the last glacial advance. From Hokitika southwards the river flats occur in more extensive patches up to eight miles wide and up to twelve miles from the mountains to the sea. They are wide at the base of the mountains and narrow seawards between hills of moraine. The flights of terraces characteristic of the north do not occur here. It has been suggested that the alluvium-filled river valleys of South Westland represent areas where the ice was thicker during glacial advances and where little or no moraine was deposited. Since the valleys were last occupied by ice or by glacial lakes the rivers have infilled the former hollows with greywacke shingle and fertile schist-derived sands.

Four types of floodplain sites can be recognised, each having its characteristic vegetation association. First are the

rivers which splay out from narrow rock-bound gorges in wide, unstable, shingle beds. Most rivers in Westland are loaded with debris and flow in braided streams which frequently alter course and are a constant menace to farmlands. With the exception of the Buller, the normal flow of West Coast rivers is quite modulated in relation to the size of river bed but rivers rise rapidly with the onset of rain and are subject to flash floods when warm spring rains fall on alpine ice and snow. Under primitive conditions an unstable vegetation of tussock grassland establishes on islands in the wider river beds but with European settlement the introduced broom has largely taken its place in North Westland.

The second type of floodplain site comprises the gravelly soils which, because of their permeability or liability to episodic flooding, carried a primitive vegetation of light totara forest intermixed with tussock grasses. Thirdly, are the deep permeable soils which were originally covered with denser stands of ribbonwood, matai, totara and kahikatea forest. Fourthly are the swamp soils, structureless and slow-draining. These were, and to a large extent still are, covered in kahikatea swamp forests or in manuka scrub or flax. From the Hokitika Valley to Bruce Bay the swampy soils lie to the seaward margin in each river valley leaving the drier soils, and thus the settled areas, on the inner margin of each valley plain. From Bruce Bay southwards the floodplains are almost entirely waterlogged and the only areas of permeable soils are on the levees along the main rivers and on old beach ridges.

The Forest Cover.

When the white man first came to Westland the forest extended in an almost unbroken mantle from the coastline to the alpine snowfields and glaciers. After almost one hundred years of settlement, forest is still the dominant surface cover. Although great inroads have been made into the merchantable timber stands on the lowlands of north Westland, man's impact has been slight compared with his almost total destruction of the lowland forests
in other parts of New Zealand. At first the forest was regarded as an encumbrance rather than a resource; it checked exploration, delayed settlement and so handicapped the prospector in his search for gold that there was an interval of 45 years between the first discovery on the Buller River and the last discovery of a major ore body at Waiuta.

Although giving the superficial impression of uniformity the forest is seen on closer inspection to form a mosaic of an almost bewildering complexity of tree species, each characteristic association bearing a close relation to the pattern of terrain, soils and underlying rock type. Regional and local differences in the character of the forests have been significant to human geography only since the growth of a timber export industry in the 1890's. Since that time the species composition of the forests, their volume of timber per acre and their relative accessibility have been determining factors in the location of the industry. The Maoris and the pioneer explorers, with their acute concern for food supplies, were well aware that the podocarp forests supported a more abundant bird life than the beech forests. The gold miner was little concerned with the variety of forest types for, regardless of species, there was an abundance of timber for his needs all about him. The pioneer farmer, however, recognised the varying density of forests on the river flats and, taking the line of least resistance, settled first on the areas of lighter totara forest and ribbonwood scrub. The first attempt to describe and map the forest types of a large part of Westland was made by Charles Douglas, a reconnaissance explorer in the late nineteenth century. His unrivalled knowledge of South Westland was distilled in a manuscript 'Timber Reconnaissance Map' of the area south of the Hokitika River,¹⁴ a valuable document which has gathered dust in a Lands and Survey Department safe, virtually unknown for at least sixty years.

¹⁴ 'Timber Reconnaissance Map', M.S. in Dept. of Lands and Survey, Hokitika, 1/73, n.d. Although not signed by Douglas the cartographic style and handwriting are undoubtedly his.
A comprehensive view of the forest types of Westland has had to await the recent mapping by the National Forest Survey. Hypotheses accounting for the distribution pattern thus revealed have been advanced by Holloway.

The map Fig. 3a is an attempt to define four major forest types although it can scarcely hint at the complexity of local associations. The map has been based on the writer's field observations, on the map by Charles Douglas and on the descriptions by Holloway. The most clearly defined unit is the lowland podocarp region which extends from the Paringa River to the Taramakau with a few protrusions north towards the Grey River. In these forests, and in the mountain forests to the east, beech species do not occur except for a local patch mapped by Douglas in the headwaters of the Mahitahi River. It is now widely accepted that the absence of beech is a legacy of the ice ages when no forests survived in Westland except possibly on low coastal sites in the far north. As beech seed cannot be dispersed by birds or by wind over great distances it is a slow coloniser. Because of the high ice-bound passes to the east beech could not advance into central Westland from Canterbury but only from the south and north. On the other hand, the podocarp and broadleaved species can be spread by birds or wind over considerable distances and could therefore quickly reoccupy the land following climatic amelioration. Rimu, the principal merchantable timber species, is the physiognomic dominant on the terraces and moraines of the central podocarp region. It is intermixed with miro and Hall's totara and with many hardwood species, notably kamahi and quintinia. Locally, on the wettest soils, rimu stands pass

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15. A summary description of the Westland forests is published in S.E. Masters, J.T. Holloway and P.J. McKelvey: The National Forest Survey of New Zealand, 1955, Vol. I, The Indigenous Forest Resources of New Zealand, Wellington, 1957. The forest type maps covering areas of merchantable forest have been prepared in manuscript only and are not published.

into silver pine, then into stunted silver pine—manuka stands and finally into open bogs. On the alluvial soils of the river flats rimu gives second place to other podocarps. There are totara stands on the most permeable soils and matai—kahikatea stands on the deeper well-drained soils but seldom were there dense stands of merchantable timber. The swamp forests of the alluvial soils consist of almost pure stands of kahikatea, some of which contained very high densities of milling timber.

The forests of the mountain zone to the east of the lowland podocarp forests consist of broadleaved hardwoods with a local podocarp element. Rata and kamahi are the dominant hardwoods forming a dense jungle-like cover. The podocarps are rimu and miro at low altitudes and kaikawaka (mountain cedar) and Hall's totara at higher levels. They do not form a canopy as on the lowlands but are widely spaced, old and massive trees. 17

To the north and south of these two central forest types beech is the dominant species, occurring either in pure stands or intermingled with podocarp and broadleaved trees. The hill and mountain forests are largely beech with a scattering of podocarps at lower levels. Silver beech is normally the timber-line species, occupying situations analogous to the rata—kamahi forests of the central alpine slopes. Mountain beech, which occupies montane sites on the eastern slopes of the Southern Alps, in Westland normally occupies lowland sites on sour bogs. 18 Red beech, which is poorly represented in South Westland by a few relict stands, is an extensive and aggressive species in the north. It occurs on recent alluvium and on lower gravel terraces, usually in association with rimu. Hard beech, which does not occur in South Westland is widely distributed in the north on the higher terraces and lower hill slopes.

Between the lowland podocarp forests of central Westland

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17 Holloway considers these trees to be relics of a once-flourishing montane podocarp forest where regeneration effectively ceased about A.D. 1200 owing to a fall in temperature.

and the pure beech forests of the northern and southern mountains there occur two zones where podocarps are dominant but with a local incoming beech element in the river valleys. One is on the coastal plain and coastal hills from the Paringa River to the Cascade Valley. In the north, podocarps were numerous in the coastal forests from Karamea to Barrytown and on the Grey Valley terraces as far north as the Ahaura River. The presence of beech on certain alluvial soils suggests an 'invasion' of the podocarp areas by downstream migration of the more vigorous beech species. North of Ahaura the lowland forests are mainly beech forests with a strong representation of podocarps on local sites. Where mixed forest has been disturbed by windthrow, flood, fire or timber-cutting there has usually been a profuse regeneration into pure beech pole stands. Where the terrace podocarp stands have been felled and burnt, swamping of the soil by rising water table has prevented any forest regeneration but on undulating or hilly land, where podocarp forest was disturbed by gold miners, the regeneration of scrub hardwoods such as kamahi and quintinia has sometimes formed dense thickets.

The Open Vegetation.

Above the timberline the pre-European vegetation of sub-alpine herbfield, snowgrass and shrub field remains virtually undisturbed. Except for a brief period at the beginning of this century it has not been grazed by domestic animals. The open vegetation below the timberline has been grouped into two categories in Fig.3b. 'Eag vegetation' includes both the open flax and rush swamps of the alluvial floodplains and the more extensive areas of 'pakihi' fern-sedge vegetation. The only other openings in the forest were the patches of grassland and fernland, sometimes mixed with scattered trees and scrub, which grew on the most permeable soils of the river flats and on some of the lower terraces at Ahaura and Ikamatua in the central Grey Valley.
It is possible that the extent and character of some of these pakihi and grassland patches at the time of European settlement may have owed something to human agency. Holloway stated: 'there are reasonable grounds for suspecting that many of the open bogs of to-day, particularly the drier pakihi, owe their present condition to repeated burning over many centuries'.

He points out that even during short spells of fine weather the pakihi becomes highly inflammable. Rigg, in a study of the Westport pakihi, admits the possibility of Maori fires but doubts whether the openings originated from the burning of a primeval silver pine-manuka forest. Julius von Haast, who visited the central Grey Valley in 1860, described several patches of open vegetation on the floodplain and terrace levels. His party walked for several miles over 'swampy grounds once covered with dense forest, as was proved by the presence in them of numerous stumps of large burnt trees'. This apparently refers to the floodplain level of the Grey River. Haast described the Westport pakihi as boggy ground, covered in stunted manuka and fern, but 'formerly occupied by forest trees, of which the prostrated trunks are only half buried'.

In view of the increasing evidence from many parts of New Zealand of the role of Maori fires in altering the vegetation cover, it is not improbable that fires lit by hunting parties in dry periods had some local effect on the forests of Westland and that they at least extended the natural patches of open vegetation. This hypothesis seems more applicable to the grass and fern vegetation of the floodplains than to the majority of the pakihi areas. The Maori used the gravel river

22 ibid., p.149
beds as his routeways and he hunted birds on the river flats but there would have been little inducement to go up on to the pakihi terraces. Similar bog formations on the higher parts of the South Westland moraines are encircled by almost impenetrable thickets of silver pine and manuka and are more likely to be the result of natural conditions of impeded drainage. It is improbable that the Maori hunter would seek out unrewarding hunting grounds when the most abundant bird life was on the coastal lagoons and on the river flats.

The patches of open vegetation in the forest were not so significant to the early settlement of Westland as were the patches of native forest in the grassland environment of Canterbury. The fern and grass openings in the river flats were the first areas to be farmed in Westland and those in the Grey Valley and at Lake Brunner had attracted a few pastoral settlers before 1864. The significance of these people in the settlement pattern was very soon lost in the flood of gold diggers. Nevertheless, the speed with which the farmlands of the central Grey Valley were turned to grow food for the miners and the packmen's horses was due to the absence of the dense forest cover. The pakihi areas, on the other hand, appear to have had no effect on the pattern of settlement. It was clear from the start that they would prove most difficult to farm but they did sometimes prove to be convenient sites for mining reservoirs. On the Buller coast plain and on the coastal terraces between Hokitika and Greymouth the pakihi lands were worked for gold but this had nothing to do with their vegetation cover. Despite their absence of forest the Charleston and Addisons pakihis were among the last goldfields to be developed in the 1860's.
Physical Regions.

A division of Westland into physical regions has been made on Fig. 2b. The areas have been delimited principally in terms of terrain contrasts but the presence of mineral deposits has also been taken into account. A brief description of the physical aspect of each region will provide an indication of the varied combinations of opportunities and handicaps which have conditioned the course and pattern of settlement.

(1) The Karamea Lowlands consist of a core of the narrow but fertile floodplains of the Karamea and Wanganui Rivers and a bordering strip of consolidated sand hills some sixteen miles long. In addition this region has two large peat swamps, areas of gravel terraces about 200 feet above the floodplains and dissected hills of Tertiary marls, sandstones and limestones. The area has one of the lowest rainfall totals in Westland and it is probably the mildest area on the South Island west coast. The subtropical paspalum grass occurs in pastures and lemon trees regularly bear good crops.

(2) The Buller Coalfield occurs on the Papahaua Range, the northward extension of the anticlinal structure of the Paparoa Range. In the central and northern portion it has gently-eveloping, plateau-like surfaces between 2,000 and 2,500 feet with occasional eminences of about 3,500 feet in Mounts William, Frederick and Augustus. The region consists of granites, gneiss and greywackes capped, over about half of the area, with a thin veneer of early Tertiary coal measures, usually no more than about 200 feet thick. The timberline is low and bare rock or stunted sub-alpine scrub covers more than half the region. On the uplands slopes of less than ten degrees are common but the plateau is cleft by the gorges of the Waimangaroa and Ngakawau Rivers which are 1,300 feet deep in places. A long and remarkably regular slope seawards probably marks a monoclinal flexure, for a few steeply-dipping coal-measure remnants are preserved at the margin of the coastal
plain and were the site of the first mining operations on the coalfield. Compared with other settled areas in Westland the climate is singularly unattractive. Gales are frequent and the rainfall is more than twice as heavy as on the nearby coast plain. In the north, between Ngakawau and Mokihinui, the surface is considerably lower and the hills are less than 1,000 feet.

(3) The Northern Mountains is a poorly-mapped area of complex structure and relief. No popular name can be assigned to the area and, apart from some quartz and alluvial gold mining at Lyell and occasional prospecting elsewhere, the region has had almost no human significance. It is a deeply-dissected land of youthful gorges but with evidence of cirque glaciation at higher levels. Inland the granitic Mount Radiant, Stormy and Glasgow Ranges rise to 4,700 feet. Pre-Cambrian (?) greywackes and argillites also occur and the coastal portion consists of high hills of Tertiary limestones and mudstones rising to 2,000 feet near the contact with the older rocks. Cliffs, several hundred feet high, front the sea between the Wanganui and Mokihinui Rivers and until an inland bridle track was formed in the 1880's they effectively sealed off the Karamea lowlands to land travel.

(4) The Buller Coast Plain. This is a synolinal structure floored with Tertiary beds and veneered with marine and river gravels. At its widest at Cape Foulwind, where granite and gneiss of the undermass are exposed at the surface, the plain is eight miles wide. At its narrowest between Gravity and Nikau it is merely a strip of consolidated sand dunes about 200 yards across. The terrain elements of the region are the sand dunes which line most of the coast, narrow ribbons of alluvial flats which amount to some 8,000 acres and gravel terraces which occupy most of the region. South of the Buller there is an extensive belt of undulating country, about 200 feet above sea level, with many low parallel ridges composed of marine gravels with intervening swampy hollows and sluggish creeks. Inland there is a prominent step of 250 feet to
a high terrace surface at 500 to 600 feet extending back to the ranges. Immediately seaward of this terrace edge is a prominent line of old gold workings. The soils on most of the Buller coast plain are groundwater podsols with well-developed iron pans. Perhaps one-half of the area was covered in an open pakihi vegetation at the time of European settlement, the highest proportion of non-forested vegetation in any lowland region of Westland. The timber stands were largely removed early this century and the cut-over has been repeatedly fired so that today the Buller coast plain presents the most open and drab scenery in Westland. The Buller River, despite the handicap of the gravel bar at its mouth, offered one of the very few relatively safe harbours on the west coast, the northerly aspect and the projection of Cape Foulwind giving substantial protection from heavy swell.

(5) The Buller Valley runs transversely to the 'grain' of the country and the present river bed is deeply entrenched in a picturesque gorge cut through granite, limestone and breccia which in places stand out as towering bluffs. About 500 feet above the river there are indications of an older, more mature valley containing high-level gravels and morainic boulders. In the central part of the valley near Inangahua there are pakihis on this surface about a thousand feet above sea level. The most difficult part of the gorge to traverse was the stretch between Lyell and the junction with the Maruia River. Although the Buller Valley was the first thoroughfare in Westland to be used by the white man, the railway linking Westport with Inangahua was not completed until 1943, the last railway to be opened in Westland.

(6) The Punakaiki Tertiary Hill Country was termed the 'Brighton Plateau' by Henderson, but as the town of Brighton has

disappeared without even leaving its name on the modern map, the title of the one mile topographical sheet covering this area has been adopted as a regional name. Structurally the area is a continuation of the Buller syncline and although the surface appears uniform from a distance, in fact it is exceedingly broken. South of the Totara River the gentle terrain of the Buller coast plain merges into an area of irregular relief composed of gravel-capped ridges and closely-spaced valleys with exposures of Tertiary coal measures, clays and limestones. Further south limestone and sandstone predominate forming a wild coastline where cliffs tower 400 feet above the reef-lined shore. Inland the main streams are entrenched in vertical-walled canyons while small streams disappear into the limestone. Summit heights range from 600 to 2,000 feet. The best description of the terrain is probably that on the official topographical map where the topographer, on giving up the apparently hopeless task of drawing contours, has written 'rough, jumbled country, heavily timbered, rocky knobs and deep holes, no defined ridges.'

(7) **The Barrytown Flats** is a narrow region ten miles long and one and a half miles across at its widest. It consists of a shingle beach ridge backed by swampy alluvium and by a line of dissected gravel terraces at 200 and 500 feet elevation.

(8) **The Paparoa Range** is a fault shattered anticlinal structure and one of the dominating surface forms of north Westland. Longitudinal valleys divide the mountains into three roughly-parallel ridges whose bare, jagged peaks range from 4,000 to almost 5,000 feet. The northern and central portions consist of granite and gneiss while in the southern portion greywackes form rather lower and less serrate crests. Main valleys such as the Big River and Otutu River are U shaped and clearly modified by ice while at higher levels there are many cirques.

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23. New Zealand Provisional One Mile Map, Sheet, S.37, Punakaiki.
and tarns. In the southwest the Paparoa Range meets the sea in a wild, rocky coast while in the north and west the tree line ascends to 4,000 feet in places, its upper limit in Westland.

(9) **The Victoria Range Foothills** together with the Victoria and Brunner Ranges are an anticlinal structure similar to the Paparoa Range. The foothill region is distinguished by its lower elevation (2,000 to 3,000 feet), by its smooth summit profiles in contrast to the jagged granite peaks to the east, and by its rock types. The region is composed mainly of ancient greywackes through which auriferous quartz lodes have been intruded. There are also remnants of Tertiary coal measures and, on some plateau surfaces, a veneer of glacial gravels.

(10) **The Victoria and Brunner Ranges** are similar in structure and surface form to the Paparoa Range except that they consist wholly of granite. The pyramidal summits are of striking form and there are many sharp pinnacles and savage crags.

(11) **The Maruia Valley** occupies a north-trending syncline roughly-parallel to but narrower than the Grey-Inangahua depression. Above the floodplain level are terraces of river gravels and lacustrine silts and sands which pass into steeply-dipping Tertiary beds on the margin of the valley.

(12) **The Greymouth Coalfield** lies at the end of the southward-plunging Paparoa anticline. Although the northern portion of the coalfield is as mountainous as any part of the Paparoa Range and the southern part has low hills or flat terraces, the presence of coal measures beneath this varied surface justifies its recognition as one region. North of the Grey River the highest elevation is Mount Davy (3,410 feet), while to the south of the river the crescentic loop of limestone forming the Kaiata and Twelve Apostles Ranges rises to between 1,100 and 1,400 feet. Differential erosion of tilted beds of varying resistance is more apparent in the surface forms of this region than in any other part of Westland. Precipitous cliffs have developed on limestone, sandstone and conglomerate rocks producing a more irregular surface than in any other New Zealand
coalfield. Further structural details will be treated in the chapters dealing with coal mining but one physiographic feature of considerable importance must be noted - the breaching of the southern portion of the anticline by the Grey River. Two gorges have been formed, one at Brunner, where the river has cut through a ridge formed by the hardest members of the coal measures, another through the cuestaform limestone ridge behind the town of Greymouth. This southern part of the coalfield has been one of the principal routeways in Westland, even before the coal measures themselves were worked on an extensive scale, for it is the only low-level gap between the sea coast and the extensive Grey Valley lowland.

The Central Lowlands extend from Ross to Inangahua and from the coast to the Alpine Fault. The region consists of several drainage basins separated by hills of up to 1,000 feet. Each basin could have been delimited as a separate physical region but the area defined on Fig. 2b has at least two unifying characteristics - it consists almost entirely of gravels and it has been the main scene of human activity in Westland. The northern part is the Grey-Inangahua structural depression, a deep synclinal trough with a vast thickness of Tertiary beds and a cover of gravels. From the Grey and Arnold Rivers southwards the Tertiaries are near the surface and occasionally form hills whereas the gravel mantle, although widespread, is a much shallower veneer than further north. The lowland terrain includes dissected gravel hills, moraines, terraces of varying heights, alluvial flats, seamps and coastal sand dunes. Every kind of lowland soil type found in Westland is represented here as is every type of lowland plant association. Initially the main resource of the area was alluvial gold and its working promoted a more rapid and extensive spread of close settlement than has been the case in any other forested area of New Zealand. For almost a

century the forests of this region have provided the bulk of
the Westland timber production and there are still substantial
reserves.

(14) Alpine Westland has been subdivided into two parts on
Fig. 2b. The area to the north of Whitcombe Pass is lower
than to the south, peaks rising to between 5,000 and 7,000 feet.
Between Whitcombe Pass at 4,000 feet and Lewis Pass at 2,800
feet there are several gaps across the main divide which are
free of snow for a large part of the year and most of them have
carried some traffic since Maori times. South of Whitcombe
Pass summit heights range from 8,000 to 9,000 feet and there
are a few peaks of more than 10,000 feet. This part of alpine
Westland has permanent snow and icefields and active glaciers.
The only ice-free pass is Haast Pass at 1,800 feet in the far
south. This is the lowest gap in the South Island main divide
but, as the resources which men have chosen to utilise in Westland
lie far to the north, this pass has yet to become a significant
routeway. Whereas the summits and upper ridges in alpine
Westland show strong signs of glacial sculpture, U shaped
valleys occur only near the main divide and most valleys have
all the characteristics of youthful streams in their V profiles,
interlocking spurs and irregular gradients. Upper slopes of
bare rock pass into smooth, grassy basins and shoulders. Streams
plunge through narrow gorges, their beds encumbered with giant
boulders and their courses marked by waterfalls and foaming
cascades. Linear scree of steel-grey talus streak down
forested mountain slopes testifying to the potency of geological
erosion, while in places jagged rock faces rise bare of
vegetation for several thousand feet. In the south the only
human activity has been spasmodic gold prospecting in the
river gorges, occasional cattle grazing on the broader river
flats and, more recently, the activities of climbers and
hunters. In the north, the need to construct and maintain
communications across the mountains has been responsible for
some settlement.
(15) The Outlying Mountains are composed of granite and ancient greywackes and argillites and occur in several detached masses in central Westland. They are separated from the alpine schists and the younger alpine greywackes by a narrow, northeast-trending valley which marks the Alpine Fault. Summits are lower than those of alpine Westland, ranging from 3,000 to 5,000 feet. They are free of snow in summer and are covered almost to the tops in vegetation. Greywacke mountains such as Mount Greenland near Ross are subdued in outline but the granites of the Hohonu and Turiwhate Ranges are intensely fretted by cirques. Peaks and ridges are worn to craggy razor-backs and present an even more diversified skyline than that of the alpine country to the east.

(16) The South Westland Lowlands are composed of a succession of high morainic hills and the floodplains of the present rivers. The fluvio-glacial terraces, so typical of the central lowlands region, do not appear south of Lake Ianthe. The moraines form long, smooth ridges sloping gently seawards from the alpine schists. Inland they may be from 1,500 to 2,000 feet in height and seawards they terminate in vertical cliffs which rise like gigantic rubble walls 100 to 400 feet above the shore. Each large river and each area of morainic hill land made up a succession of obstacles to north-south traffic. In the early years of settlement traffic was confined to the sandy beaches and boulder-strewn base of the sea cliffs. During normal flow the major rivers of South Westland are coloured a smoky blue from the suspended rock flour from the active glaciers in their headwaters.

(17) The Moeraki Coastal Mountains interrupt the succession of moraines and floodplains and present yet another barrier to communication along the coast, one that will not be surmounted until the completion of the road between Lake Paringa and the Haast River, scheduled for some time in the middle 1960's. The area consists of a seaward fringe of Tertiary and Cretaceous rocks forming hills about 1,000 feet above sea level and a belt of greywackes and argillites rising from 2,000 to 3,000 feet.
The Faringa and Moeraki Rivers flow through this hill region in wide glaciated valleys. Although there are substantial deposits of limestone and indications of gold, bituminous coal, radio-active thorite and rumours of copper ores, there has been no mining in this region. 25

(18) The Haast Coast Plain extends for twenty miles from the Waia River to the Arawata River at Jacksons Bay. It consists of low-lying, poorly-drained alluvium, a succession of sand ridges separated by swamps and a number of isolated granite hills rising from the plain like beehives and varying in height from a few hundred to two thousand feet. The moraines which are so characteristic of the South Westland lowlands region do not appear here although the Open Bay Islands, three miles offshore, are shown on a map of Charles Douglas to consist of limestone capped with moraine. 26 The remarkable succession of beach ridges apparent on aerial photographs suggest rapid and recent progradation of the plain. The Haast coast plain has the lowest average elevation of any lowland region in Westland and the least variety in surface forms.

(19) The Southwestern Mountains. South of the Arawata River and west of the Alpine Fault lies a belt of hill and mountain country composed of mid-Tertiary sediments near the coast and a wider belt of greywackes inland. The limestone promontory of Jackson Head forms the only sheltered deep-water inlet on the coast of Westland.

(20) The Cascade Valley and Plateau. The hilly belt is broken by the wide alluvial valley of the Cascade and by several impressive accumulations of moraine including the twelve-mile long Cascade Plateau. The latter is one of the distinctive physical units of Westland. Much of the moraine was derived from the belt of ultrabasic rocks on the western slope of the Olivine Range and, because of the excessive alkalinity, the soils

26. Map of Open Bay Islands, 1889, unpublished M.S.
cannot support a forest vegetation. The plateau landscape consists of lateral moraine ridges covered in stunted tussock, flax and scrub with occasional gigantic blocks of schist which have been transported from the upper slopes of the Olivine Range. Here, under a rainfall of more than 200 inches annually, one is reminded of the tor-dotted landscape of the sparsely-vegetated mountains of Central Otago where the rainfall is ten times less.

**Conclusion.**

Of the twenty physical regions described above, five have been of critical importance as the scene of settlement and economic activity. These are the Central Lowlands, the Buller Coast Plain, the Greymouth and Buller Coalfields and the Victoria Range Foothills. Six regions have been minor areas of settlement, the Karamea Lowlands, the Buller Valley, the Maruia Valley, the Barrytown Flats, the South Westland Lowlands and the Haast Coast Plain. The remaining nine physical regions have either been completely devoid of settlement or have been occupied spasmodically and exceedingly sparsely.
Westland, lying remote from the points of Polynesian landfall in northern New Zealand and isolated by mountain barriers and a stormy ocean, was probably not visited by stone age man for some centuries after the first settlement of New Zealand. It is quite probable that the shores of Westland, the first part of New Zealand to be seen by European eyes, were among the last parts of the country to be occupied by Polynesian settlers. When Thomas Brunner visited Westland in 1847-48 he found but 97 inhabitants on the 220 mile extent of coast from Karamea to Paringa. Despite its small population and its remote position Westland, by its possession of the most highly prized article of Maori trade, the coveted pounamu or greenstone, played a special role as a region producing a high quality mineral for the whole of New Zealand. For several centuries a trickle of mineral traffic flowed out to every part of the country and contributed markedly to the development of Maori culture and its high standard of artistic skill.

Sources for the study of the Maori geography of Westland in the early nineteenth century are the first hand observations of early travellers from 1846 onwards, notably Heaphy2, Brunner3, Rochfort4, and James Mackey5, and the comparatively meagre records of folklore and tradition derived from the natives by

2. Charles Heaphy: "Notes on an Expedition to Kawatiri and Arahura on the Western Coast of the Middle Island", Nelson Examiner, Sept. 5th, 12th, 18th, 26th, Oct. 3rd, 10th, 17th, 1846.
European recorders, among them, Alexander Mackay, Roberts, Stack, Travers, and Mitchell. By the very nature of the Maori occupation, field observation is unlikely to be as rewarding to the student of Maori geography in Westland as it may be in the North Island, nor is there any documentary record of excavations of Maori sites.

The People.

In the 1840's the hundred or so Maori inhabitants of Westland were, in their tribal origins, a strangely mixed group. This had resulted from sporadic invasions and conquests from the north and east which culminated in the raids of Te Rauparaha's musket-carrying warriors from the shores of Cook Strait in 1828 and 1836. The people were nominally the Poutini branch of the Ngai-tahu tribe and gave Westland its Maori name. The Ngai-tahu, who occupied the east coast of Canterbury, had invaded Westland towards the end of the 17th century overcame the original Ngati-wairangi occupants and incorporated the survivors in the Poutini Ngai-tahu. After 1828 some of Te Rauparaha's Ngati-toa raiders from the North Island had settled down on the coast and in the 1840's there were also some Ngai-tahu refugees who had fled from Te Rauparaha's war parties on the east coast.


7. One of the most important sources on Maori life in Westland derived from the inhabitants themselves are the notes made at Bruce Bay in 1897 by G. J. Roberts, the Commissioner of Crown Lands for Westland. Roberts interviewed five Maoris whose ages varied from 50 to 97 and his manuscript notes were incorporated in publications of Percy Smith and Skinner:


The reports of early European observers affirm that the total population of the Poutini coast was small even by South Island standards. Heaphy estimated about 70 persons north of the Arahura river. Brunner found 97 between Kawatiri and Paringa, while a census of 1868 lists 116 persons, a mere five percent of the total Maori population of the South Island. Warfare in the early 19th century had undoubtedly taken its toll and there is some evidence of a larger population at an earlier date. One of Roberts' Maori informants said that more than 200 fighting men were mustered in defence of the hastily fortified pa at Hokitika and Mawhera in 1836. This could imply a total population of more than 500, but it is more probable that a large proportion of the fighting men were not Poutini but the erstwhile North Island invaders of 1828. Brunner describes "a formerly large pa" together with "some taro plantations of former days" on the south banks of the Hokitika river and the remains of a "very large pa" at Okarite. Sherrin found many totara whares on the south bank of the Poerua river and thought that a large number of natives must have at some time resided there. The remains of small pa, stockades and overgrown plantations were found along the coast north of Karamea by Heaphy and Brunner in 1846. Mitchell describes Maori occupation of the Karamea district after 1750 and states that a track up the Karamea river was so well worn as to be observed by early farmers in the district. Certainly, the number of oven remains and artifacts found by settlers on the lightly timbered river flats and the very extensive ovens and shell heaps still to be seen in sandhills near the mouth of the Karamea river suggest former occupation of this warm and sheltered locality, although it was quite empty of settlement in 1846.

Caution is necessary, however, in interpreting such evidence as pointing to a larger total population at earlier times. The Poutini coast dwellers had migratory habits and their settlements were at the best, semi-permanent. Although there were small patches of riverbank cultivation in the 1840's it appears that the maize and white potato, leeks and sprouts, noted by Heaphy were introduced from the east coast after European vessels began calling at Banks Peninsula. The taro was probably brought down from the Cook Strait area by Te Rauparaha's marauders. It appears that before pakeha settlement in New Zealand no crops were cultivated on the Poutini Coast. Heaphy insists that the Arahura natives did not have the kumara, or sweet potato²⁰, the basic and most widespread crop of Maori New Zealand. There seem to be no reasons why the kumara could not have been grown successfully on the virtually frost-free sites and well drained silt loam soils near the river mouths, but without evidence to the contrary it must be assumed that until a few years before Heaphy and Brunner arrived, the Poutini natives were hunters and gatherers of food and minerals, and not cultivators.

Despite the abundant harvest of swamp, river, lake and forest at some seasons of the year, it is unlikely that the natural food resources of the Poutini coast could have maintained a year-round population of more than a few hundred. The working of greenstone gave rise to trade but it is doubtful if there was any significant return flow of food. The quantity of kumara or fern root that a man could carry on his back from Kaiapoiha to Arahura in excess of the requirements of a transalpine march of two weeks or more would not feed many mouths for long. On the south and east coasts of the Island beyond the limit of crop cultivation, the Maori found in the bracken fern root an abundant source of food to supplement the winter ration of preserved birds and fish, but the small and scattered fern root grounds on the Poutini coast could not have had any appreciable effect on the capacity of the land to support people.

The Resource Basis: Food Supplies.

The physical features of the Poutini Coast made it one of the least attractive environments for stone age man in New Zealand. Food resources of the Poutini coast were spread out over a great extent of territory, necessitating long seasonal journeys for food gathering and the establishment of temporary settlements. Some indication of the Maori attitude to the value of particular pieces of country may be gained by studying the location of the Native Reserves laid out in agreement with the Maoris by James Mackay in 1860 when he completed the purchase of the west coast of the South Island for the Crown.21 Although the introduction of crops had by this time reduced their dependence on plant and animal life it can be presumed that the Maori would have wanted to reserve his most productive food gathering grounds and that the reserves would include, in addition to burial grounds and pa sites, the most "intensive" of his food gathering sites.

River banks and the shores of lakes and lagoons were the most valued sites of the Poutini natives. Not only did the rivers abound in eels and swarm in the spring months with myriads of small inanga, or whitebait, but the shingle river beds were the only practicable routeways in such a densely forested land. They gave access to the bird snaring and berry gathering areas of the forests upstream and it was from the river beds of the Taramakau and Arakura that the greenstone was recovered after floods. Eels and whitebait from rivers and lagoons and wekas (woodhen) from the forests fringing the river banks were the mainstay of diet and large quantities were sun-dried, preserved in fat and stored in seaweed bags for winter supplies.22 Most of the Native Reserves laid out by Mackay are on the banks of the larger rivers within a mile of the sea. These were probably the most productive fishing grounds and today they are certainly

21. James Mackay: M.S. op. cit. (Schedule A. Reserves for Individual allotments.)
the most desirable places for whitebaiting. Reserves at Okarito and Poerua, border extensive lagoons and other areas were marked out near the broad estuarine mudflats of the Orowaiti River near Kawetiri. Mackay's list includes a block of 150 acres about 25 miles up the Taramakau River on the open plain leading towards Lake Brunner. This was probably a source of fern-root and birds for parties making the overland trip to Canterbury. Reserves in the open country of the middle Grey Valley included some of the few fern root grounds in Westland, while the largest single reserve of 3000 acres extended seven miles up the river bed and banks of the Arahura.

Apart from these favoured sites, amounting to some 10,000 acres, the resources of stone age man in Westland were thinly and widely spread. Two extensive water surfaces, Lake Brunner and the Okarito Lagoon, were the resort of all kinds of waterfowl. On Lake Brunner Rochfort identified "paradise, grey and blue ducks, teal, crested grebe, rail, white cranes and sea gulls, with an abundance of quail and woodhen on the plains." The largest of the west coast lagoons, Okarito, is a seven-mile long labyrinth of mud flats, tidal creeks and bush clad promontories and islands, an ideal habitat for waterfowl. The prospector-explorer, Sherrin, said that grey and paradise ducks, spoonbill, teal and pigeons were to be found there in hundreds and that the water swarmed with "herring, flatfish and whitebait." No doubt the other lakes and lagoons of the Pouhini coast were visited on fishing and fowling trips for most of them have Maori names, but specific reference is made only to two of them, Kaurapataka, a charming alpine lake visited by parties on the Taramakau-Kurunui route to the east coast, and Lake Nahui in the Buller Gorge.

23. This reserve does not appear in the published cadastral maps of Grey County.
24. Rochfort: op. cit., p.297. The "white cranes" were Kotuku or white heron.
26. Of the larger Westland lakes only Hochstetter had apparently no Maori name.
Mussels were gathered and occasional seals killed at points on the coast between the Potikohua River (Brighton) and Omau (Cape Foulwind). The Pontini natives rarely put to sea but dogfish were caught off the rocks at Brighton and dried on stages erected in a large sea cavern. These were consumed at Arakahura, fifty miles to the south. Adzes and oven remains found by settlers in some of the larger river valleys in south Westland suggest that such areas as the Wataroa, Wanganui and Kokatahi flats were visited for bird snaring. The light totara forest and scattered belts of scrub and broadleaved shrubs and grass-land that grew on these flats would be relatively easy to penetrate and were favoured haunts of the weka.

In north Westland the more "extensive" of the food gathering grounds were in the valleys of the Grey, Inangahua and Okakaka and Karamea. There is a striking relation between the distribution of these food grounds and the occurrence of podocarp and broadleaved forests in an area which was covered, for the most part, in beech forests. Few New Zealand environments are more niggardly of food than the pure beech forest associations. Brunner's Maori companions on the homeward journey maintained that they would starve in the beech forests and insisted that instead of striking across country they should follow the circuitous course of the Inangahua River where podocarp-broadleaved associations intermingled with the beech and their nectar and berry bearing trees supported a more abundant bird life.

December was described as "a glorious month of dietary among the natives on the coast" when the rivers abounded in fish, the forest fruits ripened and the birds grew fat on berries and nectar. In their wide ranging summer migrations up the Grey Valley, Maoris from the Arakahura district snared birds on the spurs of the Paparoa Range, caught eels in the

river, dug fern root on the grassy parklands of the flood
plain and low terraces and made liquor of the tutu berries
from the shrub patches on the plains. Further afield
the search for the kakapo in the upper Maruia Valley, and
for the kiwi, kakapo and weka in the tributaries of the Buller,
brought the Pouakai Ngai-tahu into occasional conflict with the
inhabitants of Massacre Bay (now known as Golden Bay) to the
North. The Ngati-tumatakokiri tribe from northwest Nelson
and the Pouakai both claimed rights to the bird snaring grounds
of these distant interior valleys and made the disputed
territory a skirmishing zone.

The Resource Basis: Pouanamu.

The most important area on the Pouakai coast was the
greenstone country, the mythical Waipounamu, comprising the
river beds of the Taramakau and Arahura and the sea beach
between. The Westland greenstone, or pouanamu of the Maori, is
a true nephrite, translucent and typically dark green in colour.
Some Nephrites are as hard as or harder than steel and on
grinding could give the Maori a tool with a cutting edge
surpassed by no other stone age culture in the world. Because
of its extreme toughness and great hardness the nephrite was
keenly sought after for high quality tools such as adzes, chisels
and drill points. Its scarcity and beauty made it a
treasured medium for ornaments for people of high rank and
shortly before the European occupation of New Zealand, green-
stone was becoming recognised as a medium of exchange.

33. A parrot whose favoured habitat was the beech forest,
sub-alpine grasslands and tussock flats of North Westland
and Nelson.
35. F.J. Turner: 'Geological Investigations of the Nephrites,
Serpentines and Related Greenstones used by the Maoris
of Otago and South Canterbury', Trans. Roy. Soc. N.Z.,
Vol.65, 1936, p.203.
36. Ibid, p.204.
Quoted in F. R. Chapman: 'On the Working of Greenstone
or Nephrite by the Maoris', Trans. N.Z. Inst., Vol.XXIV,
1891, p.514.
The source of the pounamu is in a belt of ultra-basic igneous rocks occurring in several parallel bands intruded through the schists about two miles east of the alpine fault. The rocks have been mapped by Bell in six localities on a twelve mile belt in the watersheds of the Taramakau and Arahura. Nephrite is only one of a group of minerals so numerous that the belt has been described as a 'natural mineralogical museum'. The intrusions occur at high altitudes in exceptionally rugged terrain and it is unlikely that the Maori ever discovered Nephrite in situ or the fact would have undoubtedly been recorded in folklore. Nephrite was found in sizes varying from pebbles to large boulders in the recent river gravels of the Arahura and Taramakau and has been sluiced in large quantities in gold mining claims from glacial outwash gravels at Greenstone, Kinwara, and Waimea. The Native Reserve in the Arahura Valley extends seven miles upstream from the sea to Humphrey's Gully and probably marked the limit of greenstone grounds of the Maori in the valley. This point coincides with the seaward limit of glacial moraine in the floor of the valley and would tend to support the view that the pounamu recovered by the Maori came from the reworking by modern streams of the glacial and fluvio-glacial deposits. Chapman states that the Maoris also recovered greenstone on the sea beach where it had been cast up by the waves and another source is described in a landslide in the Hohonu River, a stream draining part of the moraine in the Taramakau Valley.

The special significance of the Poutini coast in the mineral economy of Maori New Zealand was as the only source of

39. ibid., p.67.
41. Skinner: op.cit., p.149.
true nephrite, the hardest and toughest of the greenstones.
Other greenstones semi-nephrite from Lake Wakatipu and the
translucent serpentine, taniwha, from Milford Sound were found
in localities even more remote from centres of population.
The original Ngati-wairangi settlers in Westland had discovered
the Arahura greenstone and presumably established a coastwise,
south to north pattern of mineral traffic long before the Ngai-
tahu discovered the alpine passes from Canterbury. It was
in the eighteenth and early nineteenth centuries that the
overland, west to east pattern of trade developed and that
Kalapoiha became something of an emporium for the working and
trading of greenstone. Much greenstone was carried out of
Westland in an unworked state as pebbles or rough blocks on
trading journeys or occasional plundering forays. Some was
made up into ornaments by the Poutini natives themselves and
Heaphy and Brunner found the pa at the mouth of the Taramakau
a veritable workshop for the manufacture of ear pendants and
other ornaments. Heaphy describes the use of "mica slate"
for sawing the poumanu when wet, while for grinding and polishing
the Maoris used a calcareous sandstone which overlies the coal
measures at Brunner - the 'Island Sandstone' formation of later
day geologists.

Routes and Settlements.

Sea beach and river bed were the natural trackways on
the Poutini coast. Small canoes were used on rivers and lakes
but Heaphy saw no craft capable of putting to sea. The Tasman
Sea with its constant swell and frequently heavy surf would have

42. Turner: op.cit., pp.206-07. Note also Turner's suggestion
that true nephrite may have been recovered by the Maoris
from the belt of ultra-basic rocks in the Jackson River -
Cascade area of South Westland.
43. J. W. Stack: "Traditional History of the South Island Maoris",
Trans. N.Z. Inst., Vol.X, 1877, p.87 and
Roger Duff: The Moa Hunter Period of Maori Culture,
Wellington 1950, p.269. Duff concludes that the use of
nephrite was a rare, late and insignificant aspect of the
culture of the South Island moa hunters. Only one size for
which an Arahura origin can be satisfactorily proven has
been found in moa hunter camps. Reasoning from this
evidence and from early Maori tradition from the North Island,
Duff suggests (p.261) that the Arahura greenstone was first
located by the Ngati-wairangi somewhere about 1400 A.D.
made canoe voyaging a hazardous undertaking. Poutini tradition relates that the only long sea voyage made in earlier times was from Bruce Bay (Mahitahi) to Milford Sound in search of tangiwai, a journey made only about once in a generation.\(^\text{45}\) Other tradition refers to a canoe route from the North Island and Nelson to the sheltered anchorage of Tauranga Bay near Cape Foulwind. Here plundering parties are said to have left their canoes and proceeded overland to the greenstone country.\(^\text{46}\)

The land route from Arahura southwards lay along sandy beaches and past a succession of boulder strewn cliffs passable only at low tide and in calm weather. From Mawhera to Jackson Bay there were twentythree dangerous rivers to be forded or crossed by canoe or raupo raft. North of Mawhera the route traversed a bold, rock-bound coast where perpendicular cliffs had to be scaled by ladders of flax, rata and supplejack.

The Maori, considering his utilitarian motives, had made a good job of transalpine exploration. His aim was to get from coast to coast by the shortest and lowest routes and to locate suitable provisioning points to sustain his passage across a most inhospitable terrain. Seven passes were used in varying degree and present day knowledge could add none more convenient. The favourite routes of the Poutini inhabitants were Haast pass, a low level gap communicating with the Otago lakes district and Hurunui or Harper Pass, their main route to Canterbury. The Hurunui route, with Lakes Brunner, Poerua and Kaurapataka on the western side and Lake Sumner and several smaller lakes on the eastern side of the divide, offered the traveller a safer route with the assurance of larders of fish and birds. One branch of the route led up the Hohonu creek and crossed Lake Brunner by canoe, traversed the open plain by a small creek and led to a portage back to the Taramatau River. Another canoe route followed the Mawhera (Grey) and Arnold rivers to Lake Brunner and a third alternative was to

\(^{45}\) Skinner: \textit{op.cit.}, p.145.  
\(^{46}\) Mitchell: \textit{op.cit.}, p.50.
paddle up the gorge of the Taramakau to the limit of canoe navigation at the junction of the Taipo river. Browning Pass, leading from the Rakaia watershed, and the reputed route of the first Ngai-tahu invaders of Westland, continued to be used occasionally by east coast parties, while Whitcombe Pass, the highest and most difficult route of them all, was sometimes used on the return journey to the east coast. It is said that Arthurs Pass was used when entering Westland but that travellers laden with greenstone could not swim the pools in the Otira Gorge. The two northernmost routes led from the Hanmer basin and Waian into the headwaters of the Karua by Lewis Pass and by Amuri Pass into the Ahaura tributary of the Grey. These routes were used by Maoris from the Amuri district and Kaikoura coast. Chapman considers that only at rare intervals did the east coast natives make tribal expeditions in search of new supplies of greenstone. In food the Poutini were self supporting and greenstone was the only basis for trans-island trade. The Poutini said they made the overland journey to Kaiapoi in summer, in small parties, generally of half a dozen and rarely of more than twelve. They returned with valuable articles such as mats, or tarama, a scent made from the gum of the spear grass which grew on the tussock plains of Canterbury. Brunner was told of a party which crossed the island in seventeen days.

There is evidence of Maori occupation of at least twenty settlements on the Poutini coast from Jackson Bay to Karamaia. Sixteen of the sites are on the sea coast or on river banks within a few hundred yards of the shore. Only four were inland and none of these were occupied when described by early travellers.

47. Skinner: op.cit., p.142
48. Ibid., p.143
49. The Bruce Bay Maoris questioned by Roberts were unable to confirm this tradition. (Skinner: op.cit., p.143.) But see K.R.Rae: Pencillings by Land and Sea, Hokitika, 1887, p.177.
52. Skinner: op.cit., p.143.
Although thirteen settlements were occupied at some time between 1843 and 1860 only a few were inhabited at any one time. The population shifted both seasonally and over a period of years as food supplies became depleted or invading war parties took their toll. Evidence of rapid change in the population of individual settlements is provided by comparing Heaphy's estimates of 1846 with Brunner's enumeration made in 1847.

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Heaphy 1846</th>
<th>Brunner 1847</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kararoa</td>
<td>28 (plus men on way to Nelson)</td>
<td>6</td>
</tr>
<tr>
<td>Mawhera</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Taramakau</td>
<td>21 (plus large number of children)</td>
<td>24</td>
</tr>
<tr>
<td>Arahura</td>
<td>(inhabitants absent)</td>
<td>3</td>
</tr>
</tbody>
</table>

The settlements were located in four distinct groups with wide stretches of unoccupied country between. Flanking these, at the extremities of the region were single pa sites at Jackson's Bay and Karamoa. At the time of Heaphy and Brunner's visit the Kawatiri district had just begun to be re-occupied by the Arahura natives after the raids from the north in the previous two decades. Few potato plantations had been established in the hope of obtaining title to the district by occupation, and then selling on favourable terms when the area was required for white settlement. Tiroroa, fifteen miles up the Buller River, is the only pa in Westland where earthworks are still visible. Mitchell says this site was occupied intermittently until about 1850, but it is not described by contemporary writers. Its position on a steep hill with a commanding view down the Buller valley gave the settlement a strategic location on one of the main routes to the summer bird snaring grounds in the Okahaka, Inangahua and upper Buller valleys. From Tiroroa, Foutini Sentinels could give warning of the approach of unfriendly parties from Nelson and Massacre Bay. Whatever be its origin it is significant that the only pa in Westland with earthworks

54. Nothing is known of the particular site of the Karamoa settlement. There may have been several in the district in the eighteenth century.
should command the gateway to a disputed hunting ground.

The second group of settlements, between Kararoa and Hokitika, contained about two thirds of the population of the Poutini coast at the time of Brunner's second visit. Apart from Kararoa, on a tiny patch of wooded land between steep mountains and a rocky shore, the coastal settlements were on the river banks. Taramakan, the largest settlement and the principal pounamu 'workshop' was described by Heaphy as 'more like a whaling station' than any place he knew of. The houses had doors and chimneys and were apparently built in imitation of the European whaling stations of the east coast. There were summer fishing stations on an island in the Grey River and on Refuge Island in Lake Brunner. The lake pa was probably used as a retreat in time of invasion.

From Hokitika to the Wanganui River, a distance of almost forty miles, there are no recorded native settlements and in 1860 the Maoris thought so little of this stretch of coast that they did not ask for any land to be reserved there. Wanganui was not occupied when visited by Brunner, and Poutu and Okarito, although they gave evidence of formerly large populations, appear to have been used chiefly as summer fishing and fowling villages for inhabitants of the Arakura district to the north and Bruce Bay to the south. The southern group of settlements was centred on Bruce Bay with Paringa as a summer residence for fishing. Little is known of Maori settlement further south and Mackay found only "two or three old men" living at Jackson's Bay.

Conclusion.

In its human geography Maori Westland showed more similarities to other parts of the South Island than at any time since. If we exclude the northeast littoral from Banks

58. Brunner: op.cit., p. 335. In 1843 a memorial was erected on the island commemorating Brunner's journey of exploration.
Peninsula to Tasman Bay, with its crop cultivation and direct trade links with the North Island, the similarities are even more striking. The Poutini coast, together with Marihiku and Otago, was sparsely populated, remote from the routes of Polynesian migration in New Zealand, and late in its occupation by man. The Poutini settlers, as in Marihiku and Otago, lived in small, unfortified coastal villages which were occupied seasonally or for a few years at a time. They lacked cultivated crops and lived a semi-nomadic life gathering food along the coasts and rivers but making seasonal journeys to inland lakes or forest hunting grounds. Marihiku and Poutini both possessed the highly prized greenstone minerals which gave rise to a small but far-spread flow of trade. No other important resource of Maori New Zealand was so restricted in distribution and located so far from centres of population and trade. Differences between the Poutini coast and the south and east coasts of the island were in the smaller total population of Westland, the greater reliance on the food resources of river, lake and forest as compared with sea shore and fern patch in Marihiku, the use of shingle river bed and sea beach as the only trackways, and the sole possession of the most valuable of the greenstones, the true nephrite or pounamu.

Despite the fundamentally different patterns of human geography which have succeeded Maori settlement in Westland, some elements have been persistent through several phases of European occupation. The 'heartland' of the Poutini Coast was in central Westland, on the Kawera - Hokitika littoral and the Taramakau routeway. Here was the source of greenstone, the sites of the larger and more permanent villages and the meeting point of routeways from north, south and east. In the late 1860's this area was to become the centre of the Westland gold country, with the site of the largest towns, the area best

61. This area of the South Island has been defined by Cumberland as one of three major geographic regions of late eighteenth century New Zealand. It contained about three percent of the population. (See: Kenneth B. Cumberland: "Nootaroro Haorl", New Zealand about 1780: Geographical Review, Vol.39, No.3, July 1949, pp.407-24. If one excludes consideration of the profound differences in the physical geography of the east and west coasts the southern region, named 'To Wahi Pounamu' by Cumberland, was more uniform in the character of its human geography than either of the two northern regions recognised by Cumberland.
supplied with communications, and the scene of the first timber milling and first intensive farming activities in Westland.

The Taramakau - Hurunui route away of the Maori was followed by the first explorers, surveyors and prospectors from Canterbury, and in 1865 it was the principal overland route used by the army of gold diggers.

Of the twenty Maori settlements shown on the map (Fig. 4 b) eleven have had European towns or townships built on or near the Maori sites. Some of the Maori routes in North Westland are followed by modern roads while in south Westland, the beach route from Hokitika to Paringa gave the only land access to the southern blacksand gold diggings for some decades after the gold rushes. Of the seven alpine passes used by the Maori two are followed by modern highways. Of the remaining five, all except Whitcombe Pass have been used as stock routes at various times and are today crossed by rough foot tracks. All five are used at times by trampers, mountaineers, and deerstalkers. Hurunui (or Harper Pass), the main trans-island route of the Maori, today has only a walking track but it probably carries a greater annual traffic of deerstalkers and trampers than it ever did of Maori traders.

Place names are the most permanent survivals of the Maori occupation of the Poutini coast. The modern map is indeed a document of pre-pakeha geography and is a permanent record of the territorial extent of the Maori occupation. Along the coastline the number of Maori names far outweighs the few European ones. Rivers, creeks, headlands, lagoons, rocks and offshore reefs all had their Maori names and most of them were adopted by early surveyors. Away from the coast, Maori names

62. These were (with the original Maori names in italics followed by the name of the European settlement): 'Karamat' Karamea; 'Kawetiri': Westport; 'Oman': Cape Foulwind; 'Mawhera': Greywahora; 'Mautapa': Brunner; 'Taramakau'; Whitcombe (for short time after 1334); 'Hokitika': Hokitika; River and Lagoon Townships (for short time during gold rush 1366-93); Hokitika': Hokitika (on opposite side of river from Maori settlement); 'Ukaito': Ukaito; 'Kaitaki': Bruce Bay (swamilling township in 1330's and early 1340's); 'Ukaha' (Maori name recorded by Sharrin in 1333); Arasewa Township (for few years after Special Settlement of 1375), and Jacksons Bay (Public Works camp 1338-43).
become much less frequent and they rarely appear east of the alpine fault; lakes, the larger rivers, the more prominent of the outlying mountains and the few patches of open land complete the list. Later, the gold diggers were to sprinkle the terrace country with distinctive and colourful names, while the features in alpine Westland were to be named in much more prosaic fashion by government surveyors.

The arrival of an alien culture seeking gold, coal and timber, brought a fundamental change in the appraisal of the resources of the Poutini coast and in its human geography. But Westland still fills its ancient role as a supplier to all New Zealand of a strongly localised mineral resource. The intermittent trickle of the valued, but not indispensable pounamu, has given place to a regular stream of bituminous coal which cannot be interrupted for long without causing serious damage to the economy of New Zealand.
European knowledge of Westland was acquired at a comparatively late stage in the settlement of New Zealand. Cook, and the oceanic explorers who followed him, gave the harbourless coast of Westland but a cursory glance, although Fiordland to the south was frequently visited and its shores mapped and described in some detail. When the first organised settlement in the South Island was established at Nelson in 1842, three quarters of a century had elapsed since Cook had dismissed Westland as "an inhospitable shore, unworthy of observation, except for its ridge of naked and barren rocks covered with snow". In the interval little further knowledge had been gained and later off-shore commentators had merely confirmed Cook's impression. It appears from maps of New Zealand published before 1850 that the uncharted coast of Westland gave cartographers an opportunity to indulge in a fantasy of imaginary bays and peninsulas.

There is circumstantial evidence that before the first overland explorers visited Westland occasional sealing parties had landed at scattered points on the coast between Cascade Point and Abut Head in South Westland, and at Cape Foulwind in the north. Heaphy records that Thomas, a well-known Cook Strait whaler, anchored near the Black Reef at Cape Foulwind about 1844 and obtained 150 sealskins and that about ten years before a sealing station had been occupied at Toropuh i north of Karamea. 1 The remains of a sealing boat were found near Abut Head by Brunner 2, and Sherrin said that Maoris had been formerly employed in the locality 3. At Cascade Point the exploring party of Claude Olivier in 1862 found "an old track evidently used by whalers for getting timber to their vessels" and deduced

from the felled trees and timber skids that white men had been there. The same party found the "ruins of an old sealing station" at Jackson's Bay. Brief and on a small scale as the operations of the sealers may have been, it was significant of things to come that the first fleeting phase of pakeha activity in Westland should have been an exploitative one.

Exploration: The First Phase.

The first overland explorers penetrated Westland from the north. Their journeys were inspired partly by a desire to seek new pasture lands for the Nelson colonists whose settlements were confined to small mountain-girt valleys at the head of Tasman and Massacre Bays. A motive, perhaps as compelling, was simply the personal curiosity of the explorers as to the nature of the country in the middle and west of the island. A report by Thoms "of the existence of a large river with a considerable tract of level land on its banks" led to the first overland journey by Heaphy and Brunner in 1846. Departing from West Wanganui Inlet they traversed a coastline formerly thought impassable, travelled as far as Ōrāhuru, and returned by the same route. It was a route characterised by rocky promontories, densely wooded spurs ending in bold headlands, sandy beaches, and a succession of dangerous rivers. Half of the coast could be traversed only at low water. Heaphy pronounced unfavourably on the region. The open country at the Buller mouth was but "a swampy moss, totally useless for agriculture". The rivers were considered unfit for coasting vessels and Heaphy concluded that the "Port Cooper country appears to be decidedly the most appropriate locality for the next settlement".

The one redeeming feature was the discovery of "a seam of capital coal"

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3. loc. cit., Oct. 17th. Port Cooper was the general name given at that time to the country around Banks Peninsula and shortly to become the site of the Canterbury settlement. The maps prepared by Heaphy and Brunner for the New Zealand Company after this journey have not been published. The manuscripts are now in the Colonial Office and Admiralty collections, London.
south of Cape Foulwind and near the future site of Charleston. 7

Late in the same year Brunner set out on his own initiative and with four Maori companions began the 550 day journey which has become the classic story of New Zealand exploration. The point of departure was from the head of the Tasman Bay lowland and Brunner was the first white man to penetrate the formidable sixty-mile barrier of the ranges and ravines of the Buller Valley. The record of privation in crossing this difficult terrain must have been a strong deterrent to prospective travellers and to have contributed to the general attitude of people towards the West Coast in the ensuing decade.

"Large granite rocks heaped confusedly together all over the surface, with a thick growth of underbrush and briers, an immense quantity of dead and rotten timber, and all these on the steep and broken declivities of a range of high mountains interspersed with perpendicular walls of rocks, precipices and deep ravines, form a combination of difficulties which must be encountered to be adequately understood or allowed for" 8.

After travelling down the coast to Paringa, Brunner returned by way of the Grey and Inangahua valleys and once more through the "fearsome" country of granite and beech forest in the middle Buller. Of all the land he explored, only the Grey Valley, with its grassy flats and fine timber, impressed Brunner as having possibilities for colonisation. His summing up of the results of the expedition was modest indeed. No vast grazing lands had been discovered for the flocks of Nelson sheep farmers, nor any accessible pass across the mountains of the South Island to the north of the Grey Valley. Even the discovery of a seam of coal "of apparently very fine quality" near the mouth of the Grey River does not seem to have excited Brunner's imagination about economic possibilities as was to be the case when Haast examined the seam in 1860. Indeed the final assessment could hardly have shown less enthusiasm for

7. Little interest seems to have been aroused by this first report of coal in Westland, possibly because the requirements of the Nelson colonists could be provided from the recently discovered seams in Massacre (or Golden) Bay. The coal was in fact the lowest rank of any Westland coals and although the Charleston field was the first to be reported it was the last of several coalfields to be worked on any significant scale.

the resources of the land he explored:

"I am, however, sure there is nothing on the
West Coast worth incurring the expense of
exploring, but I certainly think the natives
there require something to be done for them." 9

His most positive suggestion about the area was that "the
introduction of goats would much benefit (the natives) and
ultimately ourselves". 10 Although Brunner's conclusions may
have been coloured by his hardships there is little doubt that
his journal gave rise to the opinion that Westland was but a
rain sodden wilderness unfit for settlement. People's curiosity
about the land was satisfied and Westland came to be regarded
with a sort of superstitious dread. 11 A characteristic
impression of the West Coast, derived second hand, was that of
Charles Hursthouse, written in 1860-

"A large portion of the western half of the Nelson
Province appears to be a densely-timbered Alpine
wilderness - a Black Forest region, unfitted for
the most part for plough or fleece. It is a
savage gloomy country, silent, desolate, and dreary...
it is a country fresh from nature's rudest mint,
untouched by hand of man..." 12

It was for a second group of explorers a decade later, notably
Mackay and Rochfort, to sound a more optimistic note.

Exploration: The Second Phase.

A new period of exploratory activity began in 1857 when
James Mackay, an adventurous civil servant and stock farmer
from Collingwood, followed the original land route of Heaphy
and Brunner from Cape Farewell to the mouth of the Grey. He
journeyed upstream to the grasslands at Mawheraiti, and
described them as fit for pastoral occupation, and was the
first person to write with enthusiasm on the prospects of the
West Coast for settlement. Mackay made the first soundings
of the river mouths and reported 24 feet of water on the Grey
bar and 18 feet on the Buller at high tide. He was surprised
at the absence of strong winds on the coast and could see no

9. ibid., p.377.
10. loc. cit.
difficulty in light-draught vessels approaching the coast. Westland was next penetrated from the eastern side of the Southern Alps. Late in 1857 Leonard Harper with a European and four Kaiapoi Maoris crossed the saddle at the head of the Hurunui River, journeyed down the Taramakau and travelled 90 miles south along the coast to the Waitangi River. The journey added little to existing knowledge and Harper considered the West Coast uninhabitable. In 1858 the same transalpine route was used by the Nelson surveyor Dochfort, who proceeded to define the western portion of the provincial boundary between Canterbury and Nelson. Close on his heels came James Mackay, this time with a commission from the New Zealand government to negotiate the purchase of the West Coast from the natives.

In 1860 Westland saw a good deal of exploratory and scientific activity, again centred on Nelson. Mackay, with the Governor's authority to complete the purchase of the area from the Maoris, Haast, the geologist, and Burnett, a colliery engineer and surveyor proceeded to the upper valley of the Buller. In order to avoid the difficult country of the middle Buller gorges, so vividly pictured by Brunner, the parties struck southwards up the Marua river, crossed the grassy plains of its upper valley and found a pass, only 1620 feet high, leading into the headwaters of the Grey. Mackay, the trail blazer of the new route, as was then the fashion of New Zealand explorers, set fire to the grasslands which made such a tremendous blaze that he thought it might have been seen both in Nelson and at the Grey.

Under the provisions of the New Zealand Constitution Act, in 1853 the West Coast of the South Island had been arbitrarily divided among the three provincial districts of Otago, Canterbury and Nelson. On the eastern side of the

the dividing range the Canterbury-Nelson boundary was marked by the Hurumui River and on the west by the Grey and Arnold Rivers and an undetermined line running to the headwaters of the Hurumui River (a point as then unknown except to the Maoris). The provincial government of Nelson took an earlier and more active interest than that of Canterbury in exploring and making known the resources of the western part of its province. The Canterbury settlers could find ample scope for their energies for many years to come in developing the agricultural and pastoral potential of the eastern plains and tussock hills. An influential, but by no means universal segment of Canterbury opinion was apathetic or even opposed to the discovery of minerals, especially a goldfield, fearing the radical upheaval it might bring to the structure of Canterbury society. In Nelson, however, there were no such inhibitions, and minerals were looked upon with some enthusiasm, especially after the loss of the best sheep grazing country with the political separation of Marlborough and its formation into a separate province in 1858. Early coal discoveries in Massacre Bay, followed by the small gold rush to Collingwood in 1857 - the first in the South Island - and the excitement caused by the Dun Mountain copper discoveries at the very back door of the town of Nelson, made public opinion more sympathetic towards mining interests.

Thus by 1860 the Nelson community came to see that the development of the western part of the province was essential if the settlement as a whole was to expand and prosper. As early as 1862 the Superintendent of Nelson devoted most of his address on the opening of the Provincial Council session to West Coast matters and to speculation about its gold, coal and pasture resources. In the exploratory activity in north Westland about 1860 was seen the spectacle, somewhat unique in New Zealand, of a government sponsoring scientific reconnaissance surveys of a piece of territory before its settlement. A surveyor, a geologist and a mining engineer were given the job of finding routeways, determining the heights of passes,
reporting on the location and extent of land suitable for settlement, locating sites of future towns, investigating timber and mineral resources and generally reporting on the nature of the country and its physical geography. As a result of these expeditions the "alpine wilderness" emerged to the view as a land less fearful and became something of a storehouse of raw materials - a storehouse remote and difficult to exploit, and still seen somewhat mistily through a curtain of rain, but a land which promised to become a valued part of New Zealand.

Assessing the Resources of the Land.

The official journeys of survey and exploration resulted in the first authentic discovery of gold in Westland. Interest had been aroused by the discovery of an alluvial gold-field near Collingwood in the extreme northwestern mountains of Nelson in 1857. The noted Austrian geologist, Hochstatter, had been commissioned to report on this field, and made the first authoritative suggestion that gold might be found along the length of the west coast. The large audience which crowded to hear Hochstatter's public lecture was a measure of the interest of Nelson people in the possible mineral resources of the west.

"In the mica-slate and clay slate zone of the western ranges we have the matrix of the gold. Southwards from the Makuri and Makoki Ranges the same formation can be traced to the gorge of the Buller River. How much further it extends in that direction has not yet been ascertained; but inasmuch as gold has been found at the southern extremity of the Southern Alps and also in the gravels of the Mataura in the Province of Otago ..., it is not unreasonable to infer that the same gold bearing zone may extend continuously throughout the whole length of the Middle Island." 13.

15. There are unconfirmed accounts of earlier discoveries. In 1858 it was reported that the West Coast chief Terapahi and Tinui of Kaiapoi, journeyed on the West Coast with the pastoralist, Lee, and returned to Nelson bringing specimens of gold from the north bank of the Buller. See Lyttelton Times, April 3rd, 1858. There is a tradition, unsupported by any contemporary evidence, that an exploring party consisting of Thomas, John and Joseph Oakes, visited the West Coast in the schooner "Emerald Isle" in 1837 and discovered traces of gold. (See W.I. Lord: Greymouth District Diamond Jubilee, 1928, p.21 and ibid: Old Westland, Auckland, 1940, pp.93-4). Thomas Oakes unsuccessfully petitioned parliament in 1855 for a reward in recognition of his early discovery of gold. Had there been good grounds for this claim it is surprising that his brother John, in writing to the Lyttelton Times in 1855 should not have mentioned this 1837 discovery. (See also footnote 32 to this chapter).

Prophecy was quickly followed by fulfilment. A few
weeks later on November 8th, 1859, John Rochfort surveying on
the banks of the Buller River, 20 miles upstream and near the
present site of Berlins, wrote in his diary:

"Whilst chaining I was surprised and no less
gratified by one of the hands, (F. Millington)
announcing the discovery of gold, an event as
unexpected as propitious, and one which must
have a powerful influence on the prospects of
this long neglected West Land. The Royal mineral
was lying on the edge of the river, glistening in
the sun, and in such quantity as to induce a rather
mutinous spirit, my hands having a greater preference
for the golden prospect before than then the steamer
duties of surveying". 17.

After his two visits to Westland in 1859 Rochfort wrote
with enthusiasm on its potentialities for settlement. 18 The
mouths of the Buller and Grey were "admirably adapted" for the
sites of towns, the south bank of the Buller indeed, could form
a "perfect Venice" with its "accumulation of small islands and
peninsulas, divided by deep channels available for navigation".
He considered the land at the mouth of the Buller to be an
"excellent field for a great number of agriculturalists" and
suggested that they combine agriculture with gold digging while
the crops were growing. The Grey River was shown to have deep
water on the bar at low tide and its two deep water lagoons
could provide safe anchorage for small vessels during the
frequent floods in the river. The river was navigable for
several miles and ran through an area described as "the most
extensive district of land in the province of Nelson available
for agriculture". Seals and whales near Cape Foulwind, a seam
of good coal and vast areas of red and white pine, totara and
other timber trees added to the inventory of the Westland store-
house as pictured by Rochfort. The climate was described as
"extremely salubrious", and in his opinion "equal to that of
Nelson", a heresy which no one since has dared perpetuate.
Rochfort was indeed the prototype of the parochial West Coaster.

17. John Rochfort: 'Notes on a West Coast Expedition', Nelson
Examiner, Dec. 24th, 1859.
18. Idem., 'Journal of Two Expeditions to the West Coast of
the Middle Island of New Zealand', Journ. Roy. Geog. Soc.,
But his report came as a timely corrective to the prevailing gloomy opinions about the region and his impression of the climate is excusable if his visits had coincided with some of the long spells of fine weather which are a redeeming feature of Westland.

All the early commentators were very much impressed with the Grey Valley and its patches of open grassland. This may reflect a prevailing attitude in New Zealand which looked upon open sheep grazing lands as the choice sites for settlement. Partly it was a reaction in the minds of the travellers after spending weeks of difficult travelling in dense forest. Burnett described the Grey Valley as "by far the finest part of Nelson I have seen" but he thought that without regular communication "no one but a madman, or a very recent arrival red hot for bush farming would come and settle in such a place".

Haast was a prolific writer and his travels in Western Nelson resulted in a 150 page book and some large scale maps forming as full a report as was ever made of a district of New Zealand prior to its settlement. The open lands were described in detail. About 250,000 acres of level land (forest and grassland) would be available in the Grey Valley for farm settlement, but Haast was less eloquent about the country at the mouth of the Buller than Rochfort had been. He reported 50,000 acres of level country but nearly two thirds was "partly stony, swampy or mossy", and although a township could be formed on the banks of the Buller it would have a restricted hinterland. As a site for a town Haast considered that "the mouth of the Grey will always be preferable".

In the Karamea district he reported "25,000 acres of fine level forest land".

20. idem: Copy of Letter to his wife, (unpublished) Apr.27th,1830.
21. Julius von Haast: Report of a Topographical and Geological Exploration of the Western Districts of the Nelson Province, New Zealand, Nelson, 1861. The maps were not published at the time but the topographical map is printed as an end paper to H.P. von Haast: The Life and Times of Julius von Haast, Wellington, 1948. The other maps are housed in the Department of Land and Survey, Nelson. (See map bibliography at end of this volume).
Together with Burnett, Haast discovered the Buller coalfields on the crest of a bleak plateau. Indicative of the interest of the Nelson government in the west coast were Burnett's instructions to follow up the discovery with detailed mapping and assessment of reserves. But the Buller coalfield was easier to survey than to exploit. The Greymouth field with a seam exposed on the banks of a navigable waterway was the first to be developed. The Buller required costly haulage systems and railways before it could be exploited but Burnett was quick to point out the inherent advantages in thick seams, gentle dips and a terrain which favoured development of mines by adits instead of with shafts and expensive drainage pumps. The situation of the coal seams 2000 feet above sea level was not seen as any major handicap to the province which had built the Dun Mountain railway - New Zealand's first, and in many ways the most remarkable mineral tramline.

Shortly before these more promising reports of Westland became widely known an important change took place in the ownership of the region. Mackay on his third journey in 1860 completed the purchase of the West Coast from the Maoris, the last sale of native land to the Crown in the South Island. Apart from about 10,000 acres of reserves the Poutini Ngai-tahu were happy to receive 300 golden sovereigns in settlement of their claims to the remaining 7½ million acres. Mackay's report concluded:

"It is to be hoped that now that the native title has been finally extinguished and that available gold and coal fields have been discovered there, it may attract a population to its long neglected and almost unknown valleys and in time add its quota to the general wealth of the Colony. Having paid three visits I have much pleasure in stating that it deserves a better character than has hitherto been accorded to it". 24

Thus, unlike the Coromandel Peninsula goldfields in the North Island, there were to be no native land difficulties to impede the progress of the miners in Westland. The area had been

sold to the Crown a few years before the army of diggers arrived and recovered in the first two years of the rush, gold ten thousand times the value of the 300 sovereigns paid the Poupin Ngai-tahu for the land.

Gold from the Buller.

From 1860 until the 'invasion' by the gold diggers at the end of 1864, the small scale European activity in Westland was centred on three areas: region: the Buller Valley, the grasslands of the central Grey Valley and the neighbourhood of the Taramakau River. (See map, Fig 1a). Rochfort's discovery of gold caused a stir among the few hundred miners at Collingwood where yields were beginning to fall off. Although small parties came to the Buller by sea from 1860 onwards, no major 'rush' eventuated. In Westland, as in Otago, some years were to elapse between the first reported gold discoveries and the first 'significant' find.

The newspaper accounts appearing in the Nelson Examiner of the Buller diggings are on the whole rather disappointing material for the geographer. They provide descriptions of the route up the river, and accounts of nuggets found, but there are few estimates of population and descriptions of mining methods are rare. The Maoris became successful prospectors. They located both the Waimangaroa and Lyell Creek diggings and parcels of gold brought overland by natives led to the first expeditions by Collingwood miners to the Buller. 25 Gold was found at several places on the banks of the Buller between Old Diggings (the site of Rochfort's discovery) and Lyell. Workings extended several miles up the bed of Lyell Creek, the source of some of the largest nuggets ever found in New Zealand, and other gold workings were at Waimangaroa, near the sea coast ten miles north of the Buller mouth.

The early Buller diggings were characterised by coarse flaky gold and nuggets which were easily recovered by cradling deposits on the river beaches or gathering from crevices in the

rocks where the particles of gold had been swept by floods. Small water races were brought to the river banks, rough wooden sluice boxes constructed, and the gold recovered with little preliminary outlay or equipment. From the mouth of the Buller, where a collection of five shanties formed the nucleus of the town of Westport, the diggings were reached by native canoes. The charge was £2 per man for the three-day upstream journey to Lyell. Supplies were irregular and came by sea from Nelson in a single small schooner which was all that the volume of trade warranted. On one remarkable voyage this vessel took six weeks over the trip and the diggers on the Buller were reduced to a state of near starvation. For four years the Buller diggings supported a fluctuating population, generally estimated at about 200. The highest estimate was of 300 to 400 men in December, 1863, but the discovery of the Pelorus, or Whakamaru goldfield in the Marlborough Sounds in the following year drained off most of the Buller diggers.

In the early 'sixties the Buller Valley was a marginal and not very important element in the developing pattern of New Zealand goldfields. Had it not been for the earlier discoveries at Collingwood and the pool of miners left there in 1860 it is doubtful if many would have visited the Buller at all. It happened that the first prospectors chanced on a part of the Westland goldfields where small quantities of coarse gold could be recovered easily with simple appliances. It was the part of Westland most accessible from Collingwood. The Buller River mouth was the first and safest landfall on the coast and the river itself was navigable by canoes for forty miles upstream. The diggers do not appear to have been a very adventurous or particularly skilled body of miners and as long as prospecting in Westland kept within the rocky confines of the Buller Valley

and its tributaries, no outstanding gold discovery could have been made. The difficulties of access, the failure to discover a bonanza field, the irregular supplies and the high cost of provisions on the Buller were unlikely to draw many miners in view of the superior attractions of the widely publicised Otago goldfields. One outcome, however, of the early mining activities was the selection of the site of Westport, the first town to be surveyed in Westland and the only one where the surveyors preceded the settlers. It was laid out, not on the south bank as suggested by Rochfort and Haast, among the "perfect Venice" of islands and peninsulas, but on the north bank with a view to the future export of coal.

Southern Areas of Interest.

The second field of European interest lay forty miles to the south. The open grasslands of the central Grey Valley became outliers in the heart of the forested West Coast of the pastoral economy of the east coast plains and hills. Three enterprising graziers, Mackley, Freeth, and Lee, took up pastoral licenses over 22,000 acres. By 1863 the runs had been stocked with sheep, presumably with Merinos, the only breed then available in large numbers, but ill-adapted to the climatic conditions of the West Coast. They were driven over Amuri Pass from the Wairau Valley in Marlborough, 100 miles distant, and from the Hamner Plains in the south eastern extremity of Nelson Province. 31 The pastoral land formed a semi-circle around the low hills which were later to become the Ahaura goldfields, but despite this early activity in the area gold was not discovered there until a fairly late stage in the 'rushes'. The Grey Valley runs, together with a cattle station taken up in 1863 on the Pekihis south of Westport, show that Westland farming, however fitful its progress and unimportant it has been by comparison with other parts of New Zealand, can at least claim a history as venerable as that of gold mining and older than either coal mining or sawmilling.

Of greater importance, however, the establishment of the pastoral runs indirectly drew attention to the third, and what was to prove the most critical area of pre-gold rush activity - the Taramakau Valley.

In 1862 the schooner "Emerald Isle" bound for the River Grey with stores for Freeth's sheep station ran by error into the Taramakau and was bar bound there for a fortnight. With the aid of a roughly constructed cradle, a few grains of gold were recovered by the crew. The discovery created interest in Canterbury. The Provincial Council was encouraged to offer a reward of £1000 for the discovery of a goldfield whose "location shall be reasonably accessible from Christchurch". The reward was to be "subject to the approval of the Provincial Council and the Provincial Geologist as to its paying capabilities and extent". Although there was a strong feeling in Christchurch that west Canterbury, when settled, would not long remain a part of the province, and that money spent developing the area would ultimately be wasted, parties were sent out over the divide to cut a track down the Taramakau Valley to the sea. Survey parties were active during 1863 and a government provision depot was established at the mouth of the Grey, the nucleus of the town of Greymouth. That year some desultory prospecting was carried on by survey hands, Maoris and private parties in the neighbourhood of the Taramakau. Activities were centred on the Kohou, or Greenstone, Creek, but handicapped by lack of provisions and the means of moving them about, and by a lack of knowledge of prospecting methods, the parties recovered only trifling amounts of gold.

32. Sherrin: "West Coast Journal", Press, Dec.17th, 1863. The evidence on the purpose of this expedition is somewhat contradictory. In a letter to the Lyttelton Times on March 21st, 1865, after the commencement of the gold rush, John Oakes stated that the schooner "Emerald Isle" was fitted out by him and despatched to the West Coast in September, 1862. The vessel was under the command of a Captain Dixon who had experience on the goldfields of California and Victoria. Dixon was to direct a search for gold and others were to look for sheep and cattle country. A parcel of fine gold was sent overland by a Maori to Oakes in Christchurch who unsuccessfully claimed the reward of £1000 offered by the provincial government for the discovery of a payable goldfield.

33. Lyttelton Times, Feb.18th, 1863.

34. Press, April, 18th, 1863.
Westland was a land of peculiar difficulty to the early prospector. The dense, trackless forests, the numerous rivers which at times became raging torrents and claimed many lives, the copious rain and the clouds of mosquitoes and sandflies which added to the misery of camping in the bush, and the uncertainty of securing provisions made for a combination of obstacles which were not found in other goldfields of New Zealand, nor indeed of Australia or California. In Westland the prospector could not make a quick retreat to settled areas with assured supplies as was the case in Coromandel, Collingwood and in much of Otago. To be sure, Westland had its advantages in the abundant timber for fuel, mining appliances and buildings, in the milder winters and more ample water supply than Otago, in the freedom from a Maori problem as in Coromandel and from disputes with agricultural interests as in Otago and Victoria; but these were compensations to be enjoyed later by the regular miner rather than by the pioneer prospector.

Of the accounts by early prospectors and survey hands the most vivid and detailed were by R. A. Sherrin, a man of Victorian mining experience, and later a leading New Zealand journalist. He provided a terse commentary on the conditions of life that prospectors would have to face in Westland and gave sound practical advice to those who would follow him:

"Sandflies become a nuisance almost too great to bear, while still further to try your patience your coat will get fly blown on your back and your blankets covered in maggots unless safely protected by a bag." (33)

"The great secret in travelling on the coast is never to be in a hurry. husband your provisions, live on half a pint of flour a day if you are detained by a fresh, and instead of frantically rushing into the river when the ford is practicable, take your gun and go shooting or lie in the tent and go to sleep." (37)

35. Sherrin: 'Journal of an Expedition to the Gold Field of Taranaki', Press, March 21st, 24th, 26th, 1863; and West Coast Journal, Press, Dec. 12th, 14th, 17th, 21st, 22nd, 26th, 28th, 1863. Reports by other prospectors in the area include: Diary of Mr. Edward Dickey's Late Search for Gold, (unpublished) 1862, and William Scott: Diary of a Prospecting Tour to the West Coast from 1863 to 1864, (unpublished) 1864.
37. Ibid., Dec. 26th, 1863.
and of a trip to Lake Brunner he writes:

"Wet through all the time, scarcely ever dry at night, freshes every hour, a mist heavy and dense covering everything, the journey was worse than description can paint it. While travelling in this bush how vividly Humboldt's descriptions of South America are remembered. The density of the vegetation, the rottenness of the soil, the wonderful amount of rain and water, the thousands of decomposing trees, being heaped in on every side by kei-kei, supplejack and taterana; the networks of roots to crawl leisurely over, the canyons and rivers to cross and recross with a heavy swag will only give an idea of the difficulty of travelling in constant rain. (38)

It may have been after such a journey that the writer suggested offering the west coast to Britain as a convict settlement if payable gold were not to be found. Horses, he said, were useless for prospecting parties as there was nothing for them to eat... The best plan was to land provisions on the western coast and explore the rivers by canoe. In concluding, Sherrin warned, with a certain degree of prophetic insight, that unless the Canterbury government undertook an early stock-taking to determine the worth of its west coast that "Melbourne people will have founded towns, though of canvas there.... and Melbourne merchants, Melbourne miners, Melbourne stockholders and Melbourne capitalists reap all the advantages." 39

Many "indications" of gold were found in 1863, but what was required to set off a gold rush was proof of a payable digging, tested by an experienced miner whose reliability was acknowledged by men on other goldfields of New Zealand. The only source of supplies for the prospecting parties was the Canterbury government depot at the mouth of the Grey and the only means of moving supplies about the country were by Maori canoes or on men's backs. Thus, the effective range of prospecting in Central Westland was limited to about a 20 mile radius of the mouth of the Grey.

Given persistence on the part of the prospectors, it appeared that if payable gold were to be found in Westland, then the Taramakau - Lake Brunner area was the most likely place to expect the critical discovery. Such in fact was the case in the spring

38. ibid., Dec.21st, 1863.
39. ibid., Dec.26th, 1863.
of 1864. Three prospectors with Otago and Australian experience, Hunt, Smart, and French, arrived on the coast early in 1864 at a time when hopes of discovering a payable field were waning and the Canterbury government was about to withdraw its survey parties and abandon the Grey depot. They worked assiduously for some months. In July, W. H. Revell, the Canterbury government agent at the Grey, forwarded to the Provincial Secretary in Christchurch a letter and sketch map from French and Smart who spoke most favourably of the prospects in the Taramakau and described the character of the gold as varying from fine dust on the sea beach, to scaly than coarse, shotty gold near the head of the Hohono creek at the foot of the granite mountains. 40

Revell's next despatch contained momentous news. He had made a personal inspection of the claims of Hunt and the three parties of Maoris who had been prospecting at Hohono since April and concluded that there was "no doubt that the Hohono goldfields are now a reality capable of supporting 8,000 to 10,000 people and only await the arrival of some diggers to start them," 41. Hunt, an experienced miner who thoroughly understood his business, had obtained over 40 ounces of gold and was described by Revell as the first person who obtained the precious metal in payable quantities. The letter written by Hunt to the Superintendent of Canterbury on July 15th, described in terse, unpolished prose the most important single event in the history of Westland: 42

"I have been on the West Coast since 15th April, prospecting the Hohono as far as Perounda and several gullies running into the Big Hohono river, and found payable gold for several miles on the Hohono. I can get the colour at any place; the prospects are from a pennyweight to three ptyts. to the dish. I have got about 38 ozs. A party of four might make about £150 per week. I tried a hole and went down 7 feet, and got about a ptyt to the dish, but could not bottom, the water coming in too fast. There is room for a large population..."

40 Smart: op. cit.
42 Lyttelton Times, Aug. 6th, 1864. Albert William Hunt was a somewhat enigmatic person who figured in the vanguard of several later rushes in Westland. Little is known of his earlier or subsequent career, although he may have been the "William Hunt" who was one of the party who located the first bonanza quartz reef on the Thames goldfield in 1837.
The road is very rough. There is plenty of splendid timber. There are no wild pigs but diggers ought to fetch a gun and plenty of ammo. I have been on the Australian and Otago diggings. There are no provisions here; I have been living on "spuds" most of the time.

On August 31st Revell reported that 43 passengers had arrived at the Grey by steamer from Nelson, while others had come from the Buller and some overland from Canterbury, making a total population of about 500 at the diggings. Westland's first mining camp was already taking shape:

"a skittle alley and grog shanty are now in course of erection at the mouth of the Greenstone and will be opened for business in a short time. (43)

Thus five years after Rochfort's discovery at Old Diggings on the Buller River, the workings in Greenstone Creek proved the existence of a richly payable goldfield. The isolation of Westland, the difficulties of the terrain and the discovery of more accessible goldfields in Otago and Marlborough had prevented an early rush. Greenstone Creek was the first significant discovery - the trigger which set off the 'Invasion' by the diggers.

The Maori and the Goldfields.

In the early phases of the gold rush, and in the prospecting period before it, the Maori played a part out of all proportion to his numbers. Once he had learned the value of the royal mineral of the white man, the Maori spurned the gathering of pounamu and joined eagerly in the quest for gold. Not only were the Maoris among the pioneer diggers of the Buller field but for a time their canoes had a monopoly of the carrying trade for Europeans up the river. When the rushes began in central Westland Maori parties were in the vanguard of the prospecting army. There were no more than fifty adult Maori males in Westland, but their success in finding new fields is testified by the frequency of such place names as "Maori Gully", "Maori Creek", and "Maori Point" on the topographic maps of the gold country. Indeed the sight of a Maori canoe paddling its way upstream was said to be sufficient to excite the curiosity of European diggers. Because they lacked technical skill in

43. Revell to Prov. Sec., C.P., No.8241, 1854.
the methods of gold recovery, the Maori diggers were essentially gleaners and prospectors and their newly found wealth was not an unmixed blessing. Cultivation was neglected and the proceeds of their gold winnings were frequently squandered on "intoxicating liquors or useless finery." 44

In another way the Maori gained from the European settlement of Westland. Some of the native reserves came to have a special site value for town buildings or farm land and within a few years the Native Trust was deriving an annual income of $3,000 to $4,000. 45 The Ardhura Valley was the first intensive farming district in Westland and has to this day maintained its early lead in the quality of its pastures and the volume of its production per acre. The Maori reserve on the river frontage at Hawhera, became, despite the efforts of surveyors and officials, the nucleus of the town of Greymouth and today it forms the business area of the town. 46 The fortuitous increments in the value of these sites, unforeseen at the time when the reserves were laid out, may be regarded as some small compensation to the Maori race for the unfavourable terms on which much of the North Island passed out of Maori hands.

**Gold Discoveries and the Flow of Settlement.**

Within nine months of the announcement of Hunt's discovery at Greenstone a forty mile extent of coast in central Westland had been rushed by a population of seven or eight thousand. By the end of 1865 more than 15,000 people were spread out over goldfields extending for 150 miles. No comparable area of New Zealand, before or since then, has witnessed such a large and sudden influx of people and so rapid a diffusion of people through country previously unoccupied.

46. Mackay may have had an uneasy conscience when he agreed to the Hawhera reserve. He tried to induce the natives to select an area further up the river but they insisted on retaining the landing place which had always been their home. Mackay appears to have satisfied any of his own misgivings and the doubts of his official superiors by stating that the whole of the native reserve was liable to flooding and that the most desirable sites for a town would be on the northern, or Nelson, side of the river, or on dry land near the head of the lagoons on the Canterbury side.
The circumstances which favoured a rapid inflow of people in 1865 were to be found in areas remote from Westland.

In the Otago goldfields New Zealand already had a large mining community, estimated to be 24,000 people in 1858 with about 18,000 of them actually engaged in mining activities. By 1864 the cream of the more easily worked gold deposits in Otago had been skimmed and the mining population, ever restless, was on the move again. In the autumn of 1864 about 6,000 men had left Otago by sea for the Whakamarina goldfields at the head of Pelorus Sound in Marlborough. Whakamarina was quickly worked out but it filled the role of a temporary staging point on the route from Otago to Westland. Further afield in Victoria there was a gold mining population of over 100,000, many of whom could gain only a part time living from the diggings. Yields there had fallen from an average of £233 of gold per miner in 1852 to £69 per man in the first six months of 1861. Accounts of New Zealand discoveries were widely circulated in the newspapers there and interest in the New Zealand goldfields had been awakened through the ebb and flow of trans-Tasman migration that followed the Otago discoveries. The shores of Westland were only a week's sea voyage from Melbourne. Thus, in 1864 there were within a reasonable travelling distance of Westland, three goldfields experiencing declining yields and containing reservoirs of experienced and restless miners. The men who joined the West Coast goldrush were not, on the whole, raw amateurs from farm, shop and factory, but were seasoned veterans in the art of gold mining and accustomed to the rigours of a pioneering life. Many of them could draw on a decade or more of experience in Australia, Otago and even California.


(Quoting from Report of the Secretary of the Mining Department of Victoria).
On the goldfields of Otago and California the sequence of gold discoveries and the flow of settlement showed a progressive inland advance from one major point of landfall. By contrast the migrations of diggers in Westland showed a more complex pattern, radiating from several points of dispersal. Because of the manner in which the gold was distributed and because of the absence of any large and safe harbour the miners entered the region at several points by land and sea. Hokitika, although the most important of the gateways to the gold country, did not play the commanding role like Dunedin, Melbourne, and San Francisco in channelling new arrivals to the goldfields in their hinterlands. To an extent without parallel on other fields, the sea was a highway between several parts of the gold country and during the Westland rushes some of the largest movements of population within the region were made by coastal steamer, schooner and cutter. Hokitika and Greymouth received most of the new arrivals from Australia and most of those who came by sea from other parts of New Zealand. Westport assumed significance at a late stage in the rushes and, with the exception of the earlier Buller discoveries, it was not an important port of entry for people from outside Westland. It did, however, become a point of re-dispersal for miners who had come from other parts of Westland. The occupation, abandonment and re-occupation of goldfields and late discoveries in areas previously considered barren, all added to the complexity of the internal flow of settlement. But Westland as a whole experienced a steady growth of population up to a maximum in 1867 and did not suffer from the ebb and flow of people to and from the region that was the case in the early years of the Otago goldrush.

Despite the dense forest cover, prospecting was carried out rapidly and in 1867, three years after the first rush, the alluvial gold country of Westland had been traced to its limits. There were a few important discoveries after this date but they were not in unexpected places and they merely added details to a pattern whose outline had already been determined. Discoveries
of quartz reefs and the development of hardrock mining came much more slowly and although the quartz reef country is of quite limited extent discoveries were made over a period of more than fifty years from 1839 to 1920. By contrast with California, where the extent of the gold country had been determined before there was any large influx of population, in Westland it was the insurge of a large body of miners themselves who pushed out the boundaries of the goldfields. In detail the sequence of prospecting activities can be traced from the river valleys up the creek beds, to the terrace sides, then the terrace tops and the summits of dissected gravel hills; or from sea beaches to buried blacksand deposits for two or three miles inland. Later, prospecting extended to the quartz lodes of the hard rock country and finally, in the 1880's prospectors, in much less romantic fashion than formerly, turned again to the river beds and low terraces - areas where gold was known to occur but which required closely spaced boreholes, accurate surveying and skilled interpretation to determine their worth as large scale dredging claims.

The first important contingent was composed of Whakamarina diggers who had come overland to Nelson and thence by steamer to the mouth of the Grey. Revell's despatches record the arrival of 950 passengers from Nelson between August, 1854, and February, 1855, but it appears that several shiploads were not reported by him. The flow from Nelson was supplemented by men

52. The sources for the remainder of this chapter are the contemporary newspapers and the published and unpublished reports of the mining wardens and goldfields commissioners to the provincial governments of Canterbury and Nelson. After 1870 the progress of gold discoveries can be traced in the Parliamentary Paper, "Report on the Goldfields of New Zealand", later incorporated in the annual "Mines Statement". In this account full citation has not been considered necessary and attention is drawn only to some of the more important sources. The aim is to show in general perspective the time and space sequences of the gold discoveries and the resultant flow of settlement. The purpose is geographical rather than historical. It is concerned with the process of filling up territory and of the emergence of a distinctive piece of country within the major Westland region. Reference to the time sequence of this process is considered essential for a fuller understanding of the nature of the area itself. It may be that in such limited aspects of the history and geography of an area that one can see a blending of time and space relationships and of a partial fusion of geographical and historical ways of thinking.
from the small and languishing diggings at Collingwood and the Buller River. After 1864 the Hokitika River replaced the Grey as the main point of entry but steamers continued to call regularly at the Grey to take on bunker coal which was won by intermittent working of the Brunner seam and brought down river in small boats. The Nelson steamer service marked the first commercial utilisation of West Coast coals and established an early reputation for their high quality. The relation of Nelson to the Westland goldfields has received very inadequate treatment in existing historical writings. Nelson merchants were the first to erect stores on the diggings, the first to import livestock, and they established the first transport services on the diggings with teams of packhorses to convey provisions along the beaches. Nelson enterprise was responsible for the first regular steamer services with Westland and for the selection of the site and the establishment of the first business houses in Hokitika. In 1864 most of the gold recovered in the west Canterbury diggings was exported by way of Nelson. Taking advantage of their relative proximity to the goldfields and their earlier experience in supplying goldfields markets, some of the Nelson business concerns established an early foothold in Westland commerce. Although soon to be outranked by Melbourne as a source of supply for the goldfields, Nelson retained a larger share of the West Coast trade than was ever enjoyed by the merchants of Christchurch and Lyttelton.

At the end of 1864 there were about 1,000 people on the diggings and prospectors had spread out from the original nucleus of Greenstone and had located paying deposits at Paroa and Saltwater Creeks south of the Grey, and at Waimea, in the densely forested jumble of low hills and terraces between the Ashura and Taramakau Rivers. There had also been abortive rushes to the Taipo Creek, 23 miles up the Taramakau and to the Totara, 20 miles south of Hokitika. When rumours of the Totara diggings reached Greenstone about 300 Europeans abandoned their claims and set off that very night across the Taramakau and
travelled south by the glare of torches.\textsuperscript{53} Thus was enacted for the first time one of those hasty migrations, touched off by a rumour, which were to be repeated many times and on a much larger scale in the next few years. By December, 1864 interest had shifted to the Waiheka field and the incipient shanty town at the mouth of the Grey was all but deserted when Nelson merchants took up business sites among the driftwood and sandunes at the mouth of the Hokitika River. The mushroom town of Hokitika and the extensive Waiheka goldfield at its hinterland were the main objectives of the thousands who came from Otago and Canterbury in the early months of 1865.

Routes to the Diggings.

As newspaper reports and private letters circulated from the diggings and as official returns of gold exports gave confirmation to rumours, the tide of gold seekers gathered momentum. The rain-sodden wilderness of recent years was becoming a centre of attraction for miners throughout Australasia. In Otago the new rush caused "fierce excitement" and valuable claims were "recklessly abandoned or disposed of for a mere trifle".\textsuperscript{54} In March of 1865 four thousand persons left Dunedin by coastwise shipping.\textsuperscript{55} In April the influx from Victoria began. Shipping routes all converged on Hokitika where a dangerous bar and shifting sandbanks, soon "garnished with a perfect shoal of wrecks", did not deter the ship owners. Every kind of craft from screw steamers and cattle boats to ten ton cutters were pressed into the lucrative trade. In 1866 the port of Hokitika received 25 percent of all the recorded passenger traffic between New Zealand ports. It was the point of entry for 55 percent of New Zealand's immigration from Australia in 1865 and for 73 percent of the Australian immigration to New Zealand.

\textsuperscript{53} Revell to Provincial Secretary, C.P. No.2672, 1864.
\textsuperscript{55} Loc. cit.
Otago miners had the choice of several routes. (See Map Fig. 6.) The most convenient were by ship from Dunedin or Bluff, through Foveaux Strait and along the west coast, or by the east coast and Cook Strait. Some miners travelled by sea to Lyttelton and walked overland to the diggings. A small number from the interior of Otago journeyed all the way by land and in April, 1865, when collecting cattle for a drive to the West Coast, E. A. Chudleigh met nearly 200 men with horses between Christchurch and Rakaia, en route to the diggings. At the height of the overland rush only one accessible pass had been discovered from Canterbury into Westland, Harper Pass at the saddle of the Hurunui and Taramakau Rivers at the extreme north of the province. The bridle path cut for the prospectors some years before was hastily patched up but it had never been intended to take the great volume of men, horses, sheep and cattle that poured over it early in 1865. The route lay through the interior valleys and basins of north Canterbury, entered the mountain country at the Waitihi gorge and followed the Hurunui Valley from Lake Sumner to the divide at 3152 feet. From the pass the route lay down the valley of the Taramakau to the sea but a detour was often made by way of Lake Brunner and Kohonu Creek to avoid the lower gorges of the river. Between Lake Sumner and Hokitika the only patch of open country with feed for horses and travelling stock was at Bruce's Paddock - or the Pakihi - on the stony plain between the Taramakau River and Lake Brunner. Haast's lively account captures the animated scene near the Waitihi Gorge overland route.

"...and endless train of gold-diggers with pack horses, packers driving horses before them, and even women walking stoutly along by the side of their husbands and often leading packhorses, all going to the new Eldorado.... 58.

57. Statistics of New Zealand, 1840 and 1866.
59. Julius von Haast: Geology of Canterbury and Westland, Christchurch, 1879, p. 57. It is doubtful whether many women made the overland passage. Until mid-1865 Westland was virtually an all-male society.
"The traveller could not help being struck by the feverish movement of a population hastening to a newly discovered goldfield. Many of the diggers andstonecutters who had brought loaded wagons from Otago in the belief that they could take them at least to the foot of the saddle, were now obliged to leave them behind and take their stores on with pack horses . . . . 50.

"Numbers of diggers on horseback, peddlers taking provisions on pack horses, herds of cattle driven by stockmen on horses, and all going in the same direction, enlivened the landscape, the loneliness of which at other times would not fail to make an impression upon the traveller." 61.

The need for a more direct route to the diggings and the firm conviction that Christchurch merchants could compete on the goldfields markets if only a dry road could be built there, induced the provincial government to send exploring parties into the headwaters of the Waimakiriri. In the autumn it was agreed that Arthur's Pass, discovered by A. D. Jebson in 1834, and leading into the Tira tributary of the Taramakau, would be the most practicable route and construction of a bridle road was begun in May. With commendable skill and speed, but with a remarkable disregard for the economics of transport, a dry road was constructed and opened for coach traffic in March, 1838. Before this the route was accessible to foot travellers and by the spring of 1835 the more southerly Arthur's Pass had replaced Harper Pass as the principal overland passage to the diggings.

More detailed consideration of the economic significance of the transalpine routes is deferred to a later chapter. It remains to discuss the relative importance of the different routes of entry to Westland in the early years of the gold rush.

For arrivals by sea the statistics available are fairly satisfactory but no record was made of overland travellers before October 1863. By that time the crest of the rush had passed and the small flow of people was evenly balanced with about 300 persons per month travelling across the mountains in both directions. 62. For 1866 and 1867 the Statistics of New Zealand

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50. ibid., p. 32.
61. ibid., p. 70.
62. 'Return of People and Stock that have passed to and from the West Canterbury Gold Fields', J.P.G.P., 1837, p. 214.
record separately the number of people arriving from Australia and from New Zealand ports. The Registrar-General's introductory report admits deficiencies in the record of coastwise arrivals for many New Zealand ports and after 1858 this particular information was no longer published. It can be assumed, however, that since most of the people arriving in Westland landed at Hokitika or Greymouth where customs staff were on duty, that the published figures are a fairly correct record of the actual number of arrivals. Coastwise migration to Westland declined markedly in 1857 but from some samples of shipping reports in local newspapers it would seem that there was a net gain of about 150 people per month from other parts of New Zealand.

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**NOTES:**

(a) Total population at end of 1866 was 1,000. Assumption (based on Revell's letters to Canterbury Provincial Secretary) that 300 came overland that year.

(b) May include coastwise departures from Greymouth and Hokitika for the Buller rushes; passengers were landed at Westport, Charleston, and Brighton which were not recorded as ports of entry.

(c) Estimates based on sample returns in contemporary newspapers which are unfortunately not complete in their enumeration. Coastwise passenger journeys to and from Hokitika in the later months of 1867 resulted in the following net change to the population: June - 116 people; July - 977; August - 2; September - 144; October - 23, and November - 26. (Figures from shipping notices in *West Coast Times*. The other figures in this table are from *Statistics of New Zealand* for 1866, 1867, and 1868.

The net gain to the Westland population from seaborne migration up to the end of 1867 was about 21,700 of which 43 per cent arrived direct from Australia. In the same period at least 35,000 people visited Westland by sea (including some who probably made more than one visit). The official census of December 1867
recorded almost 26,000 people in Westland although there is reason to believe that the actual population was several hundreds more (see Chapter Six below). If the estimates of net seaborne arrivals are accepted as reasonably correct we must conclude that the net gain to the population by people coming overland was no greater than five or six thousand, most of this accruing in the eighteen months after January 1865. A picture of the sources of immigration to Hokitika by sea in the later part of 1865 has been gained from the shipping notes in the West Coast Times for the six month period August 1865 to January 1866. A total of 7165 persons arrived at Hokitika from the following ports of departure:

- Sydney: 13.5 percent
- Melbourne: 37 percent
- Nelson and Cook Strait Ports: 3 percent
- Dunedin and Bluff: 34.5 percent
- Auckland (Aroaki): 3 percent

The Nelson influx, predominant in the first months of the rush, had fallen off to very modest proportions and the peak of the flow from Otago had already passed.

The personal histories of a number of West Coasters who arrived during the gold rushes, and who recorded their experiences in 1864, provides a random sample and throws some light on the different routes of entry. In preparing a collection of reminiscences C. J. Pfaff interviewed about 100 people of whom 92 gave information on the routes they used in getting to the goldfields. The evidence of this sample hardly supports the conclusions reached above previously where it appears that no more than 20 percent of the population came overland. The small proportion of direct arrivals from Australia among those interviewed by Pfaff may be

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due to the tendency of miners who were already living in New Zealand at the commencement of the Westland rush to remain in the country, whereas many of the Victorian immigrants had a loose attachment to the land and went further afield when the Westland diggings declined. The 40 percent of overland arrivals may prompt the cynic to suggest the longevity of those who were fit enough to face such a journey in 1865; but a total of 52 people is rather small a sample to give more than a supplementary impression of the relative importance of the different routes of migration.

Defining the Gold Country.

In March 1865 there were important new discoveries in central Westland, at Fox's, an extension of the Waimea goldfield in the Arapahora Valley; and at Kaniere, three miles up the Hokitika River and accessible by small boats from the port. The permanency and extent of the diggings were given official recognition on March 4th when all that part of Canterbury west of the main divide was proclaimed as the West Canterbury Gold Field; arrangements were made for its administration from Hokitika which became virtually a provincial sub-capital, and goldfield regulations, patterned on the Otago rules were brought into force. Kaniere, with its rich alluvial flats and nearby terrace workings, checked for a while the excessive nomadism which had characterised the diggings but by mid-winter two streams of diggers were moving out from the flanks of the central fields. One moved south along the sea beach to the Totara River where several rich gullies opened out into a basin-like flat and gave promise of rich returns for years to come. The town of Ross was shortly established and the first deep shaft workings on the Westland goldfields were commenced there and at Kaniere. The other stream moved north up the valley of the Grey, crossed the Nelson boundary and led to the proclamation of the Nelson Southwest Goldfields on August 1st. Unlike the Totara district with its rich deposits and deep leads, in the north, shallow diggings were opened out near the creek beds throughout a great area of terraced country and the Arnold,
No Town Red Jack's, Nelson Creek, Callaghan's and Blackball Creek and Moonlight diggings were added to the map of the gold country.

In the later part of 1865 the focus of interest shifted to the sea beaches and the fine gold associated with deposits of black iron sand (magnetite). In September the first beach rush took place ten miles north of Hokitika on the Auckland Lead, a two mile line of buried black sand just above high water mark. Thousands must have passed along this beach in the previous year but as long as the creek beds offered a rich harvest of coarse and flaky gold to be won by cradle and sluice box the miners do not seem to have bothered to work out a technique for recovering the very fine flour-like particles of gold on the beaches. In the same month a seaborne rush set in to the beaches at Bruce Bay and for the first time population was drawn into south Westland. It was quickly followed by discoveries at Okarito and adjacent beaches where for nine months phenomenal returns were made from the centuries' accumulation of black sand. By the end of the year a succession of beach workings had been developed on the thirty mile stretch of coast from Hokitika to Point Elizabeth and on remote, cliff-bound beaches even further north.

The year 1866 began with two 'duffer' rushes on the trail of the now-famous prospector Albert Hunt. Thousands joined in headlong stampedes up the River Arnold to the eastern shores of Lake Brunner and then south to Hunt's Beach between Bruce Bay and Paringa. Hunt, who had come to play the unwilling role of a Pied Piper, could hardly move into a new district without setting off a large human migration at his heels. The Hunt's Beach fiasco was followed in April by the discovery of rich black sand deposits at Gillespie's Beach, halfway between Okarito and Bruce Bay. In March the thrust up the Grey Valley was renewed. In the hill country east of Ahaura the Noble's, Duffer's and Orwell Creek diggings were opened up and by May the diggers had pressed on up the Little Grey River (Mawheraiti) and found gold in each of its eastern tributaries, in the Snowy,
Blackwater, Antonio's, Adamstown and Slab Hut Creeks. This thrust had extended the known auriferous country of the Grey Valley a further 20 miles. In June the stream of prospectors had crossed the saddle of gravel ridges at the head of the Grey and was advancing down the Inangahua Valley. In mid-winter about 1,000 miners were scattered up the tributary creeks cradling the surface deposits. It was described as a somewhat lawless and disorderly community which had outrun the limits of the legally proclaimed goldfields and had adopted a rough code of mining rules patterned on the early Collingwood Regulations. The high cost of drawing supplies either by packhorse over the Grey saddle or by boat up the Buller River made the Inangahua an unattractive field, but it is surprising that alluvial mining was carried on for four years before the nearby quartz lodes were prospected.

Further discoveries within the limits of the established goldfields were made with small rushes in the Waimea and a gradual extension of diggings up the New River from Marsden to Dunganville. A discovery at Bell Hill, north of Lake Brunner, added a small isolated field well beyond the main zone of the alluvial goldfields which by now appeared as a regular but narrow pattern of workings between Ross and the Inangahua Valley. In the spring of 1866 one of the largest rushes in the history of Westland, another seaborne migration, brought renewed activity to the neglected Buller district. Rich leads of blacksand were found buried under cemented gravels on barren pakihi terraces at Charleston and Brighton. Similar gold leads marking ancient sea beaches were traced north of Westport at Caledonian, Rochfort's, German and Giles Terraces; and in 1867 these workings were extended to the Hokihinui River, essentially the northern limit of the Westland goldfields.

64. T.A.S.Kynnersley to Provincial Secretary, N.P., No.303, 1866. The Collingwood Regulations allowed each man a claim of 72 feet square compared with the 45 foot limits of the Canterbury and Nelson South-West Goldfields Regulations.

65. Small quantities of gold have been recovered from the sea beach at Karamea, a further 20 miles north, but it never maintained more than a score of miners.
The personnel for the Buller rushes was largely drawn from other parts of Westland and the new diggings, lucrative as they were, did not stimulate a large flow from other parts of New Zealand. The Buller discoveries had come at an opportune time when the south Westland beaches were becoming exhausted. In 1867 the Addison's Flat discovery opened up a northward extension of the Charleston 'cement' leads. In the same year there occurred the last of the spectacular rushes to the south Westland beaches, this time to the mouth of the Haast where 1,000 people were gathered in February. Nothing worthwhile was discovered and this southernmost rush ever to occur in Westland was pronounced a "duffer".

By the end of 1867 the alluvial goldfields of Westland had been traced to their limits but a few deposits within the general limits of the gold country had yet to be located. In view of the thousands of experienced men who were moving about the gold country it is surprising that five important alluvial discoveries were to be made over another fifteen years. In 1878 small rushes to Croninville and Barrytown completed the pattern of workings on the raised sea beaches. On the main line of alluvial diggings, running northeast from Ross to Reefton, three discoveries were made adjacent to older workings; at Napoleon's Hill in the heart of the Ahaura fields in 1868, at Kumara in 1876 and at Rimu Terrace near Kaniere in 1882. All three discoveries were made on the hilltops or on the densely timbered terraces high above the rivers. These areas could not be prospected by following up stream beds but only by laborious and, in the first case, fortuitous shaft sinking through the gravel and heavy boulders that overlay the washdirt. The Rimu goldfield was located barely a mile from the bank of the Hokitika River where the Woodstock and Kaniere diggings had been opened up in 1865.

The last important migration of gold mining population in Westland was to Kumara in August, 1876. Fully 6,000 people took part in this final stampede. A large number of them were

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38. G.G. Fitzgerald to Goldfields Commissioner; C.P.No.254,1867.
labourers and others entirely unaccustomed to mining who had come from Canterbury and Otago and who quickly returned when it became clear that months of preparatory shaft sinking would be required before much gold could be won. The Kumara discovery emphasises the role of the Taramakau Valley in the historical geography of Westland. This valley contained the only important land routeways to the east coast and it was the scene of the first and the last of the important discoveries of alluvial gold in Westland. Greenstone Creek was the trigger which set off the first rush in 1864. The Kumara rush, only five miles distant, but twelve years later, marked the end of the romantic phase of the Westland diggings. Kumara drew in miners from the declining fields in other parts of Westland and gave work to many of them for another thirty years. Of all the alluvial goldfields in New Zealand, Kumara maintained the largest settled population for the longest time.

The Californian and Australian experience of many of the miners led them to expect the early discovery of gold bearing quartz reefs. It was argued that the great quantities of alluvial gold must have come from lodes in the mountains and for years the newspapers spoke confidently of the forthcoming discovery of quartz lodes, which would give stability to the economy of the region when the alluvial diggings suffered their inevitable decline. Prospectors who had found a little gold lodged in rock crevices in the gorges of such rivers as the Hokitika and Arahura were encouraged to search for reefs upstream, but the extent of the payable quartz reef country in Westland proved disappointing to early expectations. In such a densely forested country prospecting for quartz reefs was even more difficult than discovering alluvial diggings as the only rock exposures were in the beds of streams or where natural slips had occurred on the mountain slopes. The first record of the

68. The Nelson government went so far as to publish a map showing the presumed line of the reefs, as yet undiscovered. See 'Warden's Reports!', Vi & F.W.P.C., 1870.
granting of quartz reef claims is from Lyell in 1869. Had the alluvial diggings of the Inangahua Valley been more attractive one might have expected the discovery of the Reefton quartz lodes at an earlier date. But in 1869 there were only ninety people in the valley, and not until 1870 do they appear to have prospected upstream into the gorges of the mountain country. In that year the gold bearing conglomerates at the base of the coal measures in Murray Creek were worked by batteries of wooden stampers, similar to those in use at Charleston for breaking up the auriferous iron-sand cement. Quartz lodes were soon discovered in the greywackes and argillites at the head of the Murray Creek and prospecting shafts and tunnels were driven.

As further discoveries were made a regular flow of people set in to the Inangahua district from the Grey Valley and the coastal diggings of the Buller. By 1872 there were 3,000 people in the vicinity of Reefton and although no batteries had yet begun to crush quartz, shares in untested claims changed hands at a fever heat of speculation. By 1876 quartz reefs had been traced along a twelve mile northeast-southwest line from Larry Creek to Merrijigs and further south to Big River in 1880. The difficulties of getting heavy machinery near the reefs often meant a delay of several years between the discovery of a gold bearing lode and the beginning of effective production. So difficult were prospecting conditions in the mountain terrain south of Reefton that two important discoveries were not made until the twentieth century. In 1905 a state-subsidised prospecting party located the Blackwater lodes at Waiuta which developed into the largest and most steadily producing gold mine in Westland. In 1920, half a century after the first quartz reefs were discovered in the Inangahua goldfield, an isolated group of lodes were prospected at the Alexander River, six miles east of the main Reefton-Waiuta.

69. Ibid., p.21. The Inangahua Herald of Aug.31st, 1872 states that the first quartz ground was taken up by Zala in July, 1859.
70. Ibid., p.5.
line of quartz reefs. Crushing did not begin here until 1924. Minor gold bearing quartz reefs have been worked outside the Inangahua - Lyell area, as on Mount Greenland at Ross, the Paparoa Range near Blackball and Brunner and at Waimangaroa and Mokihinui on the Buller Coalfield, but none of these localities gave yields of any consequence. Although in a few cases they have paid dividends to the small companies working the reefs they have more frequently been sinks for money.

In summary, the alluvial goldfields of Westland were rapidly prospected and their general extent defined within three years of the Greenstone rush. Each discovery was followed by a rapid movement of people before older workings had been thoroughly investigated. After 1867, new gold discoveries were spread out over a long period and the delay can be attributed to the difficulties that the terrain and forest cover presented to the prospector. After 1866 the new rushes were composed largely of miners who had already worked on the Westland fields and who had no doubt been components of earlier rushes. In no other large region of New Zealand did the gold miners form the first spearhead of European settlement as they did in Westland. Of the other major gold mining areas of New Zealand, Otago had already been occupied by sheep graziers and the shores of the Coromandel Peninsula were already studded with the camps of sawmillers and bushmen when the armies of diggers moved in.
The previous chapter has shown how the character of Westland and its resources were made known and the spread of the gold miners throughout the region has been traced in both space and time. The following four chapters attempt to portray the human geography of Westland during its "golden decade" between 1865 and 1875. The invasion of the gold diggers soon established on the Westland lowlands a region which was remarkably homogeneous in its human geography. Gold mining was a regional "monoculture" as much as merino wool growing was the regional monoculture of the eastern tussock grasslands of the South Island at this time. It is true that agriculture, coal mining and sawmilling had all begun in Westland in a modest way before 1870 but these activities depended entirely on the market provided by the gold mining community. Had gold not been found it is highly probable that Westland would have remained, at least until the 1880's, in much the same condition as Meaphy and Brunner first described it.

The end of the golden decade was not marked by such revolutionary changes in the landscape as was the year 1865. The establishment of two special settlements in 1875 on a semi-subsistence agricultural basis and the completion in 1876 of the Greymouth-Brunner and Westport-Waimangaroa railways for the transport of coal were pointers to a new phase of occupancy and to the more varied patterns of economic geography of the 1880's. By 1875 the character of the goldfields was changing with the influx of Chinese miners from Otago and the widespread adoption of open-face hydraulic sluicing methods. Yet in 1876 there was one of the largest
and most spectacular alluvial gold rushes in New Zealand history. Scenes were repeated at Kumara which recalled those of Ross, Kanieri and Charleston ten years earlier. Thus the "golden decade" is a term of convenience and does not imply a period of occupancy terminating sharply about 1875; economic activity merely became more varied from that time on. Nor should it be assumed that the elements of the landscape remained stable during the decade of the gold rushes. Indeed, the period has not one human geography but many, and in the first three years there were important changes from month to month.

The very rapidity of the changes confronts the historical geographer with some special problems in reconstructing the past scene. A strictly spatial approach to historical geography is most clearly maintained if the area under study is viewed at one particular "point of time" or during a period of little change. To some, this procedure has the advantage of maintaining a distinctively geographical approach and avoids the intrusion of the time element implicit in treatment of "processes" and changes. Yet in an area undergoing rapid change it may be difficult to select a particular "point of time" which can be regarded as representative of the period, and for a large area it may be impossible to build up an adequate account for any one time in view of the change compilation and chance survival of documents and eye witness reports. Some parts of Westland had quite spectacular changes in population numbers and in the nature and intensity of mining operations from month to month. Little point would be served in examining in detail the sequence of these month by month geographies even if the evidence allowed successive cross sections for the whole area. The problem could be avoided by studying some particular point of time after the last of the major rushes, say in 1878, when much statistical information is available on a comparable basis for the entire region and when the tempo of change in landscape and society had slowed down. This, however, would fail to capture some-
thing of the lively and ever-changing scene that gave to gold rush Westland much of its "atmosphere" and set it apart from all other areas of New Zealand in the later 1860's.

Study of geographical changes, therefore, is essential in understanding the character of the region in this period. Different localities played significant roles at different times. The lowland area between Hokitika, Greymouth and Lake Brunner was the focus of activity at an early stage but maintained an important position throughout the decade. The South Westland beaches leapt into prominence for a few months in 1865 and 1866 only to fall quickly into decline. Later, the terraced coastlands of the Buller became the scene of the most intensive mining operations, while by the end of the decade most animated scenes were to be found at Kumara and in the mountain valleys near Reerton. Townships mushroomed and fell into decline; the methods and intensity of mining operations differed through time from place to place; routeways carried ever-fluctuating streams of men and goods, but wherever the landscapes of Westland had been modified by man there were striking similarities. Furthermore, all the bustle of human activity took place within three clearly-defined areas which at no other time have been the sole field of human interest in Westland - the ocean beaches of South Westland, the coastal plains of the Buller, and a long narrow zone in the north-central lowlands between Ross and Inangahua - these three constituted the regions of settlement and economic activity in gold rush Westland. (See Fig. 8 ) In addition the Taramakau Valley and the gorge of the Buller River had some significance as routeways. Outside from these areas, with a very few minor exceptions, the forests remained undisturbed by the armies of migrating diggers.

Although Westland is rich in legend and romantic appeal it has been poorly served in literature. Despite ample source material the region has attracted few historians. The published
works of Harrop, Lord, and Faris, are restricted in territorial coverage and time range and suffer from lack of documentation. A definitive regional history has yet to be written and this geographer would plead that when this is eventually undertaken the geographical region be treated as a whole. Some of Westland's most challenging historical and geographical problems have been ignored in past studies through misplaced respect for old provincial boundaries. Indeed the very existence of the provincial boundary along the Grey and Arnold Rivers, bisecting the gold country on one of its main routes of travel, poses problems which hitherto have not been raised. In the absence of a regional history, the geographer must, perforce, become his own historian.

In contrast to the pastoral and mercantile families of the eastern provinces of the South Island few people among the Westland gold-rush community had the time or the inclination to leave accounts of their observations. Those who have recorded some of their impressions or who have written brief historical narratives, based on their own experiences, include Money, a roving gold miner; Waite, a storekeeper and merchant; Preshaw, a banker and gold buyer; Harper, a clergyman; Broad, a mining warden; and Reid, a journalist. These works, although contributing to the "atmosphere" of the period, have comparatively small value as sources for geographical construction. The most vivid personal account of pioneering conditions in Westland is the recently-published collection

2. E.I. Lord: Old Westland, Auckland, 1940.
8. Lowther Broad: The Jubilee History of Nelson from 1842 to 1892, Nelson, 1892.
9. R.C. Reid: Rambles on the Golden Coast, Hokitika, 1884.
Yet we cannot but regret that so much of Mueller's time in the critical months covered by his letters was spent in surveying the Maori Reserves, far from the bustle of the mining camps. Although these letters add little to what is already known on the character of the land and its people, they do show more emphatically than other sources how tenacious were the communication links with the South Westland beaches and how the threat of starvation was a real factor in the environment of the remoter mining communities. Of the short-term visitors to Westland, Dilke, an itinerant English politician, and Haast, the Canterbury provincial geologist, had the keenest eye for landscape. Yet Haast reported in the autumn of 1865 at an early stage in the gold rushes and he did not travel on this occasion north of Greenstone. Only Harper, Haast and Mueller, of those who wrote during the gold rushes, hint at the beauty of the Westland landscape and it is not until 1884 that we find a writer comparing the mining landscapes of Westland with those of overseas goldfields.

Among all these sources there is no appreciation of the wider significance of the settlement of the Westland gold country, namely, that this was the first considerable settlement by Europeans in the New Zealand rain forest.

As for the miners themselves, their contribution to the literature of the golden decade has been negligible. Although Brunner, Rochfort, Sherrin, Waite and others have pictured vividly enough the impressions of the explorer or the pioneer prospector, we must remain largely ignorant of the personal impressions of the miners and the storekeepers and merchants who served them, or of their reactions to a

13. Reid: op. cit. p. 98.
strange and difficult environment. To learn much about the gold rush era the geographer must turn to the newspapers of the time, the journals of the provincial and central governments and the unpublished reports of the goldfields officials. The newspapers of the time reported on local events and the local scene with a wealth of detail. Some statistical material on the mining industry was collected by the provincial governments but in the absence of any central administration of gold mining in New Zealand this is seldom available on a comparable basis for the whole region until the middle 1870's.

A further important treasure house of source material is the early map collections of the Department of Lands and Survey. Although literary source material is probably available in larger quantity for the Otago goldfields, the student of Westland is fortunate that many more maps seem to have survived than of Otago. Landscape features depicted on these contemporary maps include the location of buildings within settlements, the patterns of water races, mining claims, dams, reservoirs, mine workings, tramways, tracks, ferries, stores, sawmills and former bush edges - in fact, the man-made elements of the landscape of gold rush Westland. Some of these maps have been redrawn and are presented in this study while information from many of the others has been used in the text.

Some aspects of the changing month-by-month patterns can be depicted in map form, as for instance, in the maps of

\[14\] A rare instance, from the pen of a Hokitika journalist may convey the feelings of the mass of the mining population. "... Moreover, wanderings in the bush of the West Coast are not attended with those pleasant episodes to be found under like circumstances in Australia, for here we lack that magnificent champagne country over which it is no hardship to travel, and where camping out is not attended with those excessive discomforts which fall to the lot of explorer and prospector here; and many an old Australian ranger who has pitched his tent "pro, leg.″ in this land of swamps, green timber and impenetrable bush, and who once thought a gum tree a nuisance, and travelling in Australia a weary pilgrimage, now has good cause to sigh for that sunny land." See: West Coast Times, 31 Oct. 1865.
population distribution for the region as a whole (Fig. 8) and for a small part of the gold country (Fig. 15). On the other hand, consideration merely of the patterns revealed by some fortuitous "snapshot" gives an incomplete picture of the nature of a rapidly-changing area. Sometimes a more satisfying insight can be gained by showing on the same map a group of features which would not have been seen together in the landscape at any one time. Such "cumulative" geographical patterns have been shown in the maps of the Ross Goldfields (Fig. 16), the Goldfields Settlements (Fig. 14b) and the landscape features in the Waimea and Kumara districts (Fig. 16f). An attempt to relate changes through time with spatial patterns is shown on the diagram (Fig. 14c) where a generalised profile of terrain and gold bearing deposits is related to developments in mining technology between 1865 and 1930.

The historical geographer is limited by the nature of his source materials as to the subjects he may study, but for the period of the golden decade in Westland the sources allow a fuller reconstruction of past conditions than at any other time. The period and its source materials have further importance in that the gold rush established the initial patterns of European settlement and many features were to persist into later day geographies. Of the features which gave character to gold rush Westland those most significant to geographical study were the population, the gold workings and their associated landscapes, the urban settlements, the routes and methods of travel and, finally, the less tangible features of political organisation and external relations.
A notable popular fallacy about Westland is the impression that its population at the peak of the gold rushes was considerably more than at the present time. It is commonly believed that after the gold rushes Westland experienced a large exodus and a decline in population that has been described by one writer as "rapid" and "disastrous". The conclusions reached in the present study do not bear out these popular impressions which are based on exaggerated estimates of the number of people who lived in Westland in the palmiest days of the golden decade. Many published estimates of the total population appear to be erroneous and writers about Westland do not seem to have considered the population to be a sufficiently worthy topic to justify detailed investigation. Harrop and Lord, without quoting sources, both give a total population of 50,000 at the end of 1866. Harrop's figure seems to apply to the area south of the Grey River, but Lord does not make it clear whether his "Old Westland" includes the Nelson South-west Goldfields. The figure of 50,000 has been widely adopted in popular newspaper articles, souvenir pamphlets and tourist guides.

It is surprising that writers do not seem to have looked up the Census Report for 1867 before publishing their estimates and geographers are not exempt from this censure. The present author gave an estimate of 40,000 to 50,000 for the whole of the Westland region between Jackson's Bay and Karamea, while Cumberland goes so far as to say that Westland once contained "the bulk" of New Zealand's population. In popular legend the estimates of the

gold rush population become quite fantastic and it is widely
believed by Hokitika people today that the 50,000 figure applied
to the town of Hokitika and its vicinity. In evidence before a
recent sitting of the Licencing Commission at Hokitika, a claim
that Goltsborough was endowed with special historical interest
because of its former population of 33,000, passed without
challenge. Yet a map of this town in 1871 shows three dozen
buildings and the largest population ever recorded in the local
mining warden’s reports was 300! The expansive terminology of
local legend may have influenced Clark when he wrote of the
“glamorous boom-cities of the sixties”, 7 but when the most
reliable source material is examined it appears highly doubtful
whether any town in Westland ever had a population of more than
5,000 during the gold rushes. A recent and typical example of
such exaggeration is the Weekly News of April 7th, 1954, where
the town of Charleston is credited with a boom day population of
30,000, although it is doubtful if there were ever more than 2,000
in the town.

A more conservative estimate is given by Morrell who
states that it is "possible that the population of the Coast rose
to 25,000 or 30,000 in the early months of 1866". 8 This comes
much closer to the totals obtained from the contemporary estimates
by the district mining wardens and the official census of 1867 but
it is difficult to agree with the implication that the peak of
population was reached in the early months of 1866. At this time
there were only 5400 people north of the Grey and Arnold Rivers
and from the record of inward arrivals by sea it is clear that
the Westland population continued to grow until late in 1867 (see
p.4/30 above). Although 1866 was the peak year for gold
production the yield in 1867 was very little less and the beginning
of an outflow of miners to the new goldfields at Thames and Queens-
land was not reported until December 1867. 10 It seems that the

9. T. A. S. Kynnersley: Warden’s Report on the South-west Gold-
Fields’, V.&.P.N.P.C., 1866.
10. West Coast Times, Dec.2nd, 1867.
peak of population in Westland was not attained until late in 1867, probably not long before the official census was taken in December.

Population Growth and Total Number.

Whatever estimate is accepted as to the peak population of Westland it is clear that the rate of growth in the first two years of the rush was phenomenal. Unlike the Otago goldfields with their sudden exodus of people in the winter of 1862, Westland experienced a steady and progressive increase. From a total of 300 people in August, 1864, it had grown slowly by the end of the year to a figure variously estimated at between 830 and 1000. The Colonial Collector of Customs, William Seed, estimated 7000 people in the district at the end of March, 1866. Rolleston, Provincial Secretary of Canterbury, said there were 7000 to 8000 people early in April, but many were destitute and he considered the field had been over-rushed. If these estimates are substantially correct, then the population of Westland had doubled itself every four weeks since the beginning of the year.

In June there is an estimate of 12,000 people, and Galvin, writing in 1887, gives a total for September of 15,000 people.

On May 4th, 1866, the West Coast Times said the population was between 25,000 and 30,000 while in July the estimates in the wardens’ reports for the area south of the Grey River, gives a total of 18,000. This, unfortunately, was one of the few occasions in the history of the rushes when all the district mining wardens gave their population estimates at the same time.

To this should be added a figure for the town of Hokitika, estimated by the present author to be about 4,000, although it may well have been more than this. At the time there were about

11. W. H. Revell to Provincial Secretary: C.P. No.2241, 1864.
12. Rochfort gives a total of 940 (Nelson Examiner, Jan.11th, 1865) Police Inspector Broham gives 830 (C.P.No.39, 1865) and Revell estimates 1,000 (C.P., No.25, 1865).
15. Press, June 3rd, 1865.
5000 people on the Nelson side of the Grey River giving a total estimate for the Westland region of about 27,300. A further newspaper estimate at the end of 1866 places the population at "considerably over 30,000 souls". In August 1867 a petition drawn up in Hokitika seeking the political separation of the West Canterbury Goldfields from the eastern part of the province, estimated the population of the district at not less than 50,000. This appears to be the origin of the oft-quoted fifty thousand figure, but it did not pass unchallenged at the time. The Grey River Argus in an editorial on August 10th, 1867, thought the estimate at least 20,000 too great.

The census of New Zealand taken in December, 1867, would seem to bring us on to more certain ground, but the figure for the total population is still elusive and even this official return cannot be accepted at face value. The census records a total population of 25,884 living in the Westland region, of which 10,466 were in the Nelson Southwest Goldfields and 15,418 in West Canterbury, shortly to be reconstituted as the County of Westland. There are good grounds for suspecting these figures of falling short of the actual total. The Registrar General's report mentions the "almost insuperable difficulties in obtaining correct enumeration of the Gold Digging population", and suggests that had this been possible the New Zealand total would "almost certainly have been many hundreds or even several thousands more than it is". Commissioner Kynnersley, who by virtue of his office was the person best qualified to make an estimate, thought that 1500 people had not been enumerated in the census on the Nelson Southwest Goldfields. No official comment on the returns is available for the area south of the Grey, but the West Coast Times on April 4th, 1868, insisted that the census was fallacious.

18. Revell to Provincial Superintendent: C.P., No.1895, 1868.
20. 'Petition of Certain Inhabitants of Westland to the Honourable the Legislative Council', A.J.L.C., Sept. 18th, 1867.
and that the forms had been imperfectly distributed and collected by the sub-enumerators. The actual total, said this newspaper on August 1st, may have been nearer 20,000 than the 15,418 recorded. The percentage error for West Canterbury could not have been as high as for the Nelson portion of the goldfields since more than 6,000 people were listed for the towns of Hokitika and Greymouth where the difficulties of census taking would be much less than on the scattered and remoter diggings. If we accept Kynnersley's estimate of 1,500 people not recorded in the north and allow an equivalent error for West Canterbury, the total population of Westland could have been 29,000, and it is possible that earlier in 1867, providing these estimates are valid, the population may even have reached 30,000. From the statistical record of seaborne arrivals and the accounts of overland migration to Westland it is not unlikely that between 40,000 and 45,000 people actually visited the goldfields between 1864 and 1868, but these could not have all been there at the same time and some people undoubtedly made more than one visit. Thus it appears that the maximum population of Westland during its golden decade was reached in 1867 and that the total was somewhat more than 26,000 and somewhat less than 30,000. An error of 15 per cent for an official census does seem rather high but how many people were missed by the sub-enumerators in December, 1867, can never be known. We can be satisfied, however, that the exaggerated nature of many of the published estimates is beyond dispute.

When the census returns for December 1867 are compared with an estimate made by the Nelson goldfields commissioner two months earlier some of the difficulties in interpreting population data during the gold rushes are emphasised. We may also gain some idea of the possible margin of error in the wardens' estimates which have been the basis of several maps drawn for this study. Detailed returns for the Westland North parliamentary electorate (in effect the Nelson Southwest Goldfields) were published in the Nelson Gazette of April, 1868, and the commissioner's estimate based on returns supplied by the district
mining wardens appeared in the same journal in October, 1867. 23

Nelson Southwest Goldfields, Population Returns, 1867.

<table>
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<th>Locality</th>
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<th>Census December 1867.</th>
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<tr>
<td>Buller</td>
<td>5000</td>
<td>2527</td>
</tr>
<tr>
<td>Mokihinui</td>
<td>1500</td>
<td>614</td>
</tr>
<tr>
<td>Grey</td>
<td>4000</td>
<td>2415</td>
</tr>
<tr>
<td>Total</td>
<td>18000</td>
<td>10466 (24)</td>
</tr>
</tbody>
</table>

Actual total in December, assuming 1500 missed enumeration 11966

Presuming that there was no migration from the area between October and December, Kynnersley's October estimate was at least 50 per cent in error. A small outward flow had actually set in towards the end of 1867 but it would not have been sufficient to account for the difference. The variation in the Mokihinui figures can be explained by the sudden exodus when the rush to that district in the spring proved a failure, but the consistent difference in the two sets of figures (apart from the town of Westport) can only be attributed to an over-estimate on the part of the wardens. The proportions of the total population for the different districts in the two returns are in closer agreement. These reservations must be borne in mind when studying the population maps derived from the wardens' estimates. The relative proportions are more correct than the actual district totals which seem to err on the side of consistent exaggeration. Since all business licenses, mining claims, water rights and other privileges had to be registered with the district wardens, these officers were in a position to gain a reasonably accurate impression of population totals and changes in their districts. Their main job was to settle mining disputes rather

24. The difference of 118 persons between the Nelson Gazette total and the return for the Westland North electorate in the Census Report is presumed to be due to a miss-print or clerical error in the Nelson publication. The total given here is from the Census Report.
than compile statistics and the scattered nature of mining activities in some wardens' districts and the constant movement of population made it difficult to attain any accurate total. Indeed the commissioner for the Canterbury goldfields, G.S. Sale, believed it would be impossible to obtain any census which would be true for four weeks together.²⁵

If our somewhat involved analysis has shown that widely held opinions of the total population must be rather drastically pruned, we can still admit that Westland held a substantial part of the New Zealand population and that it made quite a respectable showing when compared with other gold rushes of the nineteenth century. In the ensuing discussion it will be assumed that the 1867 census total of a little under 26,000 people was essentially correct. Whatever estimate is added for those who were missed by the census officials would slightly alter the conclusions but not significantly so.

In December 1867 the Westland region contained twelve percent of the European population of New Zealand. When the 38,000 Maoris are included in the total population of the colony, the Westland proportion is ten per cent. In 1951 the 40,000 people in Westland formed only two percent of the New Zealand total. There has been a drastic relative decline, but the total population of the region has increased since the boom days of the sixties. (See fig. 9.) More important than the percentage of total population is the proportion of certain age and sex groups living in Westland in 1867. Excluding the imperial military forces in New Zealand at that time, Westland had twenty-two percent of the adult European males in the country and twenty-six percent of the adult males aged from 21 to 40. Thus no less than one quarter of the most vigorous and active male age group in the young colony was living on the Westland goldfields; yet these men returned only three of the 76 members of the General Assembly in Wellington. It was in the proportion of young adult males that Westland stands out as a unique part of New Zealand in the general population structure of the time.

²⁵ Report by Mr. Sale to the Colonial Secretary on Apportionment of Customs Revenue at Greymouth?, C.R. No. 1546, 1866.
When compared with other goldfields it appeared that Westland drew the largest number of people of any New Zealand gold rush. In Otago the greatest return of gold was won in 1863 and in that year the mining wardens reported 21,000 people on the proclaimed Gold Fields and 3,000 more in the outlying gullies. The total number of miners at work that year fluctuated considerably but the estimated average for the year was 14,000. According to the census of 1864 there were only 15,700 people on the Otago goldfields of whom not more than 10,000 were thought to be engaged in mining activities. In Westland the number of miners recorded in the census was just under 13,000 and it can be assumed that any who missed the census would be miners rather than storekeepers and others. In comparing the totals for Otago and Westland it should be remembered that many administrative, shipping and commercial services for the goldfields of Otago were performed in Dunedin whereas in Westland most of these services were carried on in the goldfields towns themselves. At Thames, in the Coromandel Peninsula, New Zealand's third major goldfield, the peak yield of gold production coincided with the census year of 1871. The expected margin of error for a census in a compact quartz mining field would be much less than for the widely dispersed alluvial mining population of Otago and Westland and there is little ground for suspecting the census total of 11,950. Hutton suggests that at the end of 1868 there were about 18,000 on the Thames goldfields, but this is highly improbable. The peak gold yield at Thames was only 60 percent of the maximum return in both Otago and Westland. Before 1871 the Thames output was comparatively small, and up to the end of 1868 only £200,000 worth had been recovered, or £11 per head for the alleged 18,000 people.

27. Loc. cit.
Comparison with overseas gold rushes of the nineteenth century sets the Westland region in wider perspective. In Victoria, the immediate source area for much of the migration to Westland, Morrell states that the population of the goldfields reached a peak of 147,000 in 1858. Later he writes that 240,000 were living on the goldfields in 1861 but only 110,000 were gold miners and many of them were employed only part time. Morrell, writing of the Klondike rush to Alaska in 1898, estimates that 35,000 to 40,000 people actually reached the goldfields of about 100,000 who set out. An historian of the Colorado gold rush in the United States says that by 1861 the Colorado fields "had a population of perhaps 25,000," or approximately equivalent to the Otago and Westland peak. The Californian gold rush seems to have involved by 1851 about ten times as many people as the Westland diggings. Overland migration in 1849 and 1850 had brought 97,000 people to the Californian fields, and seaborne arrivals accounted for a further 128,000, giving a total population of 225,000 at the beginning of 1851.

Migratory Character and Distribution Patterns.

The population in its movements both to and from Westland and within the area itself, showed the migratory tendencies for which goldfields communities are proverbial. The coastwise and trans-Tasman migration associated with the Westland gold rushes has already been referred to (pp. 4/4 to 4/9 above), but it is worth emphasizing that even during the years of greatest gold output the movement of people was not entirely in the one direction. Even in 1865 thirty percent of those who came to Westland by sea from other New Zealand ports departed before the end of the year. In 1866, the year of peak production the return flow to Australia was thirty percent of the inward traffic. In the three years from

31. Ibid., p.251.
32. Ibid., p.383.
34. Morrell: op.cit., p.84 and 95, quoting H.H. Bancroft: History of California, 1883, and 1888.
1865 to 1867 Westland accounted for one half of the trans-Tasman passenger journeys beginning or ending at New Zealand ports, but after 1867 Westland's share of the traffic was consistently less than one-third. Despite the importance of the Australian element in the Westland rush the volume of trans-Tasman migration to New Zealand was much less spectacular than that associated with the Otago rushes earlier in the sixties as is demonstrated by the following table.

### Total Migration Between Australia and New Zealand

<table>
<thead>
<tr>
<th>Year</th>
<th>Arrivals in New Zealand</th>
<th>Departures</th>
<th>Total Number of Passenger Journeys</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860</td>
<td>1,795</td>
<td>2,439</td>
<td>4,234</td>
</tr>
<tr>
<td>1861</td>
<td>18,282</td>
<td>5,791</td>
<td>24,073</td>
</tr>
<tr>
<td>Otago Rushes (1862)</td>
<td>25,314</td>
<td>12,574</td>
<td>37,888</td>
</tr>
<tr>
<td>Otago Exodus (1863)</td>
<td>30,367</td>
<td>10,032</td>
<td>40,399</td>
</tr>
<tr>
<td>1864</td>
<td>8,929</td>
<td>11,686</td>
<td>20,615</td>
</tr>
<tr>
<td>1865</td>
<td>8,594</td>
<td>5,533</td>
<td>14,427</td>
</tr>
<tr>
<td>Westland Rushes (1866)</td>
<td>10,401</td>
<td>6,378</td>
<td>16,779</td>
</tr>
<tr>
<td>(1867)</td>
<td>6,272</td>
<td>5,926</td>
<td>11,298</td>
</tr>
<tr>
<td>Queensland Rush (1868)</td>
<td>5,072</td>
<td>6,708</td>
<td>11,784</td>
</tr>
<tr>
<td>1869</td>
<td>5,852</td>
<td>4,332</td>
<td>10,184</td>
</tr>
</tbody>
</table>

(Source of statistics: Statistics of New Zealand)

In 1868 emigration from Westland to Australia took away more than 2,000 people. The exodus was checked when some returned from the Queensland fields in the following year, but thereafter it continued as a slow but steady drain throughout the seventies with the single exception of the year of the Kumara rush, 1876, when there was a net immigration of 428 persons. A notable feature was the increasing proportion of women among the overseas migrants who remained in Westland. Of the net increase to the Westland

<table>
<thead>
<tr>
<th>Year</th>
<th>Trans-Tasman Journeys to and from Westland</th>
<th>Net Change to Westland population by overseas migration</th>
<th>Net Change in female population by overseas migration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1865</td>
<td>5,661</td>
<td>3,761</td>
<td>66</td>
</tr>
<tr>
<td>1866</td>
<td>9,511</td>
<td>4,407</td>
<td>870</td>
</tr>
<tr>
<td>1867</td>
<td>7,126</td>
<td>1,184</td>
<td>589</td>
</tr>
<tr>
<td>1868</td>
<td>5,864</td>
<td>-2,265</td>
<td>110</td>
</tr>
<tr>
<td>1869</td>
<td>2,639</td>
<td>279</td>
<td>176</td>
</tr>
<tr>
<td>1870</td>
<td>1,934</td>
<td>-70</td>
<td>7</td>
</tr>
</tbody>
</table>

(Source: Statistics of New Zealand)

population derived from Australian emigration the proportion of women rose from less than two percent in 1865 to more than fifty percent in 1867 and sixty percent in 1869. Even in the "exodus"
year of 1868 more women arrived than departed from Westland for Australia. While some of these were no doubt the "shiploads of dancing girls" of popular legend, the majority were the wives and daughters of earlier immigrants. A similar change no doubt took place in the composition of coastwise migrants after 1866 although no figures are published after this date. By the census of 1874 the proportion of males and females in the towns of Hokitika and Greymouth were approximately equal. Most of the women were of childbearing age and during the early seventies a steady increase in the excess of births over deaths helped to cushion the decline in the total population of Westland caused by the departure of many single men.

Some account has already been given of the currents of internal migration as the gold country came to be explored and defined. We shall now discuss the patterns of population distribution at representative stages in the course of the rushes, as might have been described by an observer at the time. The four maps (Fig. 8 a,b,c,d), are drawn at periods for which comparable figures are available for the whole region, and although three of them are based on the subjective estimates of observers at the time they depict the remarkable shifts in the distribution of population that took place in three years. In New Zealand, only the Otago goldfields might show a comparable pattern of rapid change.

The first map, for December 1864, shows Westland barely emerging from the prospecting stage and containing about 1,000 people. Apart from a handful of men who have remained at the Buller, the population is dispersed in small parties in the creek beds of central Westland. From the nucleus at Greenstone Creek the diggers have spread out over a 45 mile extent of coast from the River Grey to the Totara. The northernmost diggings are at

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36. For an official comment on the dancing girls see the report by the district mining warden at Ross, J. J. Aylmer, in 'First General Report on the Gold Fields of New Zealand', A.J.H.R., 4, 1872, p.21. He writes: "During the last year I have been compelled to refuse to recommend any new applications for dance house licenses, as I have found that the proprietors of these establishments were in the habit of making trips to Melbourne and Sydney, and in many cases importing into the district a class of girls neither fit for wives or domestic servants, in fact girls of the lowest class."
Saltwater Creek and although 200 men are on the Totara River the rich gold bearing spurs and flat nearby are not to be discovered for some months. A hundred men are at work proving the extent and payable qualities of the Waimea gold-field which will receive the bulk of the influx of diggers expected from Otago and Whakamarina early in the new year. A more central source of supply for the diggings has just been established by a group of Nelson merchants at the mouth of the Hokitika. About 200 persons are estimated to be near the mouths of the Taramakau and Grey Rivers, mainly storekeepers and packers and they have about fifty horses to carry provisions along the firm natural highway of the sea beach. Now that it has been shown that the Hokitika River is navigable to small craft it seems that the shanty towns at the Grey and Taramakau will decline and the packing trade will come to be centred on Hokitika.

Three months later, at the end of March 1865, the extent of occupied territory is much the same but the population has increased seven or eight fold since the beginning of the year. By sea the immigration has been channelled through Hokitika, and overland, by the Hurunui-Taramakau route. At present the diggers are finding plenty of scope for their energies in the gold-bearing country near the terminals of these routes of entry - principally at Waimea and Kanieré. Some 3,000 to 3,500 people are on the Waimea and Ararura diggings, and 2,000 miners elsewhere, 1,000 of them at Kanieré which is reached by small flat-bottomed boats on the Hokitika River. At Greenstone about 250 men are obtaining gold of a coarser quality than elsewhere but in the absence of water supplies to work the terrace deposits and the difficulties of working the creek bed during the frequent floods, this locality has not been able to support the population formerly expected. The miners describe the goldfields as a "poor man's diggings" where everyone has a fair chance of earning a living but the gold is too fine and widely scattered and the "wash dirt" too coarse to expect many bonanza claims or spectacular fortunes. In three months the town of Hokitika has
mushroomed to a population of about 2,000, but many men here are idlers and loafers with little inclination for, or knowledge of gold mining.

The reports of the mining wardens for July 1866, together with an estimate of 4,000 people for the town of Hokitika, give the Westland goldfields a total population of 26,700. In the absence of a careful census no one can say how closely this approximates to the actual number, but it is clear that the past fifteen months have seen a remarkable spread of people both to the north and south of the older diggings as well as a threefold increase in the total population. The outstanding feature of the distribution pattern is the line of settlement on the inland diggings which now extend for 80 miles in a northeasterly direction from Ross to the Inangahua Valley. About 15,000 people, according to the wardens' estimates, or nearly 55 percent of the total population are spread in clusters along this important belt of diggings. Where the gold leads are particularly rich the population is concentrated in groups around townships as at Ross with 3,500 people and the Kaniero district with 3,000 people. In the Grey Valley where a great number of tributary streams have gold in smaller quantities the population is widely dispersed. A rush has taken place into the Inangahua Valley where Mr. Kynnersley has recently estimated about a thousand people have gathered. But if the gold bearing gravels there are similar to the low grade deposits in the upper Grey Valley it is unlikely that such a large population can be maintained there for long, especially in view of the high cost of bringing supplies into the district. The second important concentration of people is on the sea beaches between Point Elizabeth and the Arahura River in central Westland and on the south Westland beaches between Okarito and Faringa. The auriferous blacksands, passed over by the earliest miners, first attracted a large mining population some nine months ago and since then the ocean beaches have been the scene of a number of spectacular rushes. At present about 6,000 people are living on the beaches or near the leads of buried blacksand which run parallel to the coast but a mile or so inland. It is noteworthy
that in south Westland the entire population is confined to the sea beaches. Although these have given such a rich harvest - some men being reported to have earned between £600 and £1200 for three months' work - it is certain that the southern beaches are rapidly becoming exhausted and cannot maintain their present population much longer. Dr. Haast, the Canterbury Provincial Geologist, is certain that the glacial drift which covers most of the country south of Ross does not contain payable gold, and although parties have prospected up the rivers, into the mountain gorges, and even to the foot of the glaciers, their failure to discover any payable gold only confirms Dr. Haast's view. On the beaches the population is strung out in small groups living in tents or hares of tree fern. Here and there little clusters of stores, grog shanties and packmen's shacks form untidy settlements but only at Okarito have the beach diggings given rise to a settlement with any claim to status as a township. According to the impression gained by the mining wardens only about one fifth of the population on the diggings are engaged in activities other than gold mining. Hokitika and Greymouth, in contrast to the mining camps are true commercial towns. About 20 percent of the total population of Westland live there, most of them being businessmen, officials, merchants and shopkeepers, general labourers and transport workers.

The coastal plains and terraces which extend for twenty miles on either side of the Buller River, have up to the present time remained empty of settlement. However, it is not unreasonable to expect that the leads of buried black sand which have been traced in central Westland from the neighbourhood of Hokitika to Cobden might extend further north to the level plains and terraces of the Buller district. William Fox, the well known prospector, has advised Mr. Kynnersley that he has located a good deal of ground midway between the Grey and the Buller which would pay a man £4 to £8 per week, but it is difficult to obtain supplies except by landing them on the exposed coast. The Nelson Government has subsidised a steamer to land men and supplies near

37. Kynnersley to Provincial Secretary: N.P.No.333, 1866.
Seal Island and with prospectors on the ground a rush to this district seems imminent.

For December 1867 the first detailed census returns are available and although the accuracy of the totals is widely disputed we shall assume, for the purposes of this description, that they are correct. The rushes to the black sand leads on the raised beaches of the Buller coastlands have brought about a northward shift in the centre of gravity of the goldfields population and have given Westland its third main commercial centre, at Westport. Of a total population of 25,834, no less than 30 per cent are to be found on the coastal district of the Buller. The line of settlements extends for about 50 miles from Brighton to Mokihinui, but unlike the Grey Valley diggings or the beach workings further south, the population here is clustered in large groups, and in addition to Westport there are three considerable townships on the diggings. Of the 6,350 people on the Buller diggings, 4,300 of them are living in the towns of Brighton, Charleston and Addison's. In no other part of the Westland goldfields has the proportion of "urban" dwelling miners been so high. In the Brighton district there are 1,293 people and according to the census about 1,000 of these are in the township. Charleston, with about 1,800 people, is larger than the south Canterbury town of Timaru.

Apart from the towns, detailed figures have not been published for the County of Westland portion of the goldfields and we have been compelled in drawing the map to distribute the 9,000 people who lived in the several mining districts in proportion to the latest available wardens' estimates. The inland line of diggings from Ross to the Inangahua Valley has lost population and now contains only 40 percent of the total compared with 55 percent in July 1866. All these diggings have been drained of people to supply the Buller rushes, especially the poorer fields of the Grey and Inangahua where there are now only 2,000 people. The most drastic change in the past eighteen months, but hardly unexpected, has taken place on the southern beaches where there are now only 500 people scattered for 70 miles between Haast and
Okarito. As the surface workings became poorer the Buller rushes took away the greater part of the population.

The three commercial towns account for 30 percent of the total population and for 35 percent of the female population of Westland. Whereas in Westland as a whole females made up only 20 percent of the total, in these three towns they form 35 percent. When the three towns are compared we can observe what seems to be a general tendency among goldfields communities - the longer established the town, the higher proportion of women.

<table>
<thead>
<tr>
<th>Town in order of Establishment</th>
<th>Females as Percentage of town population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hokitika</td>
<td>37</td>
</tr>
<tr>
<td>Greymouth</td>
<td>31</td>
</tr>
<tr>
<td>Westport</td>
<td>26</td>
</tr>
</tbody>
</table>

Hokitika with 4,586 people, ranks as the sixth urban centre of New Zealand. It is more than one third the size of Dunedin, the largest town in the country (12,777 people), and is not much smaller than Christchurch (5,647). Hokitika may have exceeded 5,000 earlier in 1867 but the increasing proportion of women and children arriving from Australia and other parts of New Zealand is tending to outweigh any loss caused by the departure of single men for the Buller or Thames and Queensland.

After 1867 the main shifts in the gold mining population were to the Reef ton quartz lodes after 1870 and to the Kumara alluvial diggings in 1876. Both these changes in population distribution are apparent on the map for 1878 (Fig. 24), when it is possible to map detailed settlement patterns with greater accuracy than for the earlier maps. The total number of people declined gradually after 1867 to 23,767 in 1871, and 23,000 in 1874. It increased to 25,650 by 1878 when the Kumara gold discoveries stemmed the general exodus, while migration of more than a thousand Chinese miners from Otago to Westland in the mid-seventies had compensated for the departure of many of the European diggers. Within Westland the rate of the decline was not uniform. The town of Ross with its rich, deep-level alluvial workings increased in population between 1867 and 1871 from 855 to
Charleston in 1871 maintained a population of 1,354, although Westport had withered to 378. Three years later Charleston had slumped into decline with only 523 people while at Brighton, bustling centre of 1,000 in 1867, could boast of only 87 inhabitants seven years later. The rise of the town of Reefton to 1,360 people in 1874 and the Inangahua goldfields generally to some 3,000 people accounts for much of the loss from the Buller coastal workings. Greymouth alone of the three commercial towns was able to maintain a growing population throughout the seventies. Its merchants were able to capitalise on the central position of the town with respect to the goldfields and were able to capture the trade of the new diggings at Reefton and Kumara. Westport, although the same distance from Reefton as Greymouth, was not as successful as its southern rival in the competitive struggle to supply the Inangahua field, and it had to await the development of the Buller coalfield before it regained even the modest population it had in the heyday of the Buller goldfields.

The Origins of the Population.

In their nationalities, birthplaces, and previous experience the gold rush community of Westland displayed several notable contrasts from the New Zealand population in general. The full significance of much that is discussed here cannot be appreciated until similar comparative studies are made for other parts of New Zealand but this section may contribute in a small way to knowledge of the origins of the New Zealand population in the eighteensixties. The census of 1867 lists birthplaces only by provincial districts, nor do the census returns for 1871 and 1874 give separately the birthplaces for the whole of Westland. Recourse has been made to a "sample census" of some 1,800 people whose place of birth is recorded in the annual reports of the Hokitika, Grey

38. The fullest treatment published on the origins of the South Island population is in Clark: op.cit., pp.130-158. A general summary of the topic is found in the Population Census, 1921, Part III, "Birthplaces of Population."
River and Reefton hospitals. It may be assumed that a man's birthplace had little to do with his chance of illness or accident and that this sample is, therefore, sufficiently representative of the whole population to permit valid comparisons. A possible error is in the proportion of those born in New Zealand. For the most part these were children who were unlikely to have received their medical attention in hospital. Australian-born children similarly may be a complicating factor but it is considered that the sample is representative of those people who made up the rush to Westland in 1865 and 1866 although some of the sample returns were made as late as 1874. On the diagram (Fig. 1) the birthplaces of the total New Zealand population are shown as for the census of 1867.

Eighty percent of the people were born in the British Isles, eleven percent came from continental Europe and most of the others were born in North America and Australia. The Westland population showed its most strongly marked deviations from the New Zealand average in its proportions of Irish-, foreign- and New Zealand-born inhabitants. The small percentage of people born in New Zealand can be explained by the age structure of the gold mining community and the small number of children living there in the early years of the rush. Of greater note was the strong Irish contingent which formed almost 33 percent of the inhabitants of Westland compared with barely 13 percent of Irish-born among the New Zealand population as a whole. The Irish made up a large element on the Victorian goldfields in the eighteen-fifties, and Westland was but the terminal of a long journey which had led them in stages from the southwest of Ireland to the English cities and ports, thence to Victoria or perhaps California, and later to Otago before some of them settled in Westland. To the present day their descendants have made up a high proportion of West Coasters, but after the gold rushes the Irish formed a steadily diminishing proportion of the overseas-born population of the region. Until

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39. The sample census is derived from the following sources and applies to the periods indicated: County of Westland Gazette, 1868, 1869, 1870 and 1871; Grey River Argus, March 15th, 1867; Weekly Argus, August 14th 1871, and 'Report of the Reefton Hospital Committee', V.H P.N.F.C., 1875. The census applied to the following periods: Hokitika: 1/6/67 to 30/4/69; 1/1/70 to 30/6/70 and 1/7/71 to 31/12/71. Grey River Hospital: 1/9/66 to 28/2/67 and 1/7/70 to 30/6/71; Reefton: twelve months 1874.
the nineteen-twenties a small but steady trickle of new
immigrants came to the Westland coalfields from the mining
districts of England, Scotland and Wales, but there was little
further Irish immigration although many of the Australians who
continued to move into Westland until the first world war were
probably of Irish parentage. In the eighteen-seventies it was
Canterbury rather than Westland which received the largest
proportion of New Zealand's Irish immigrants, and by 1921 (the
last census for which detailed information on birthplaces is
available) more people living in Westland had been born in
Scotland than in Ireland. Although in 1867 the numbers of
Irish and English born were approximately equal, and some of
the mining camps were reported to have had a preponderant Irish
element, by 1921 the only locality where the number of Irish born
exceeded those born in England was the decayed gold mining centre
of Kumara.40.

The Irish, in the eighteen-sixties, were a vigorous and
sometimes troublesome section of the Westland community. An
Irish nationalist newspaper, the New Zealand Celt, published in
Hokitika during 1868 was produced on a lavish standard such as
would make it the envy of most newspaper editors in New Zealand
at the time. This journal claimed to have a circulation
throughout Westland "From Hokihinui to Okarito" and its proprietors
aimed to make it the "Irish National Journal of the Southern
Hemisphere". Early in 1868 there were sympathetic demonstrations
at Hokitika and Charleston in honour of Fenian "martyrs" executed
in England and there were disturbances between rival groups of
the Irish and English demonstrators at Addison's Flat.41 On
the other hand there is no evidence to support the popular local
legend about "Fenian Riots" and there was an element of comedy
in the subsequent despatch of troops from the North Island to

40. Population Census 1921, Part III, 'Birthplaces of Population'.
41. See: West Coast Times and Westport Times, March 18th, 1868,
and Westport Times, April 4th, 1868.
maintain order at Hokitika.

The Irish seem to have been relatively more numerous on the gold diggings rather than in the towns, although the earliest statistics to support this view are from the census of 1878. At that date the Irish exceeded the English-born in the counties and small goldfields boroughs whereas the converse was the case in the three main towns: The Irish were predominantly labourers and miners and if they saved enough to enter business it was as country storekeeper and publican rather than as town merchant. In the business directories of the time English, Scottish and German names are the most numerous. If the numbers of prisoners committed to gaol are any measure of the strength of a particular national group, then it appears that Irish women formed a high proportion of the total female population. The following table of the number of women committed to gaol in Hokitika and Westport suggests that a large part of the female immigration from Victoria between 1867 and 1870 was of Irish origin. The data is from Statistics of New Zealand for the years cited.

<table>
<thead>
<tr>
<th>Year</th>
<th>English</th>
<th>Irish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1866</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>1867</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>1868</td>
<td>16</td>
<td>42</td>
</tr>
<tr>
<td>1869</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>1870</td>
<td>18</td>
<td>35</td>
</tr>
</tbody>
</table>

Although the large Irish element in Westland may have given the Colonial authorities some cause for concern, especially after the attempted assassination of the Duke of Edinburgh by an Irish Fenian in Australia, it is worth while pointing out the report of Commissioner Kynnersly, who was an eyewitness of the Addison’s Flat disturbance. In his report to the Nelson Provincial Secretary, published in the Westport Times of April 28th, 1868, he doubted whether there were any real Fenians among the Irish demonstrators. There were about 600 men on each side armed with “every description” of mining tool and about 50 or 60 fire arms on each side. Some ill-intentioned seditious nonsence spoken by two or three stump orators from Addison’s and some well intentioned but equally mischievous insulting expressions in reply, used by one or two persons at Westport, followed by a miserable street row in which all the wounds did not require twelve inches of sticking plaster and all the property destroyed would be well paid for by a ten pound note - the whole paddle being all the time sedulously stirred by the "Westport Times"... nearly led to a scene of bloodshed which in a few days would have spread from one end of this coast to the other."
While it is tempting to suggest that the Irish in general had less respect for the law than the population as a whole, the proportion of Irish prisoners of both sexes for these five years is remarkably similar to the proportion of Irish among the hospital patients. The gaol statistics collected at Hokitika and Westport from 1866 to 1870 appear to confirm the impression gained from the hospitals sample.

**BIRTHPLACES OF SAMPLE GROUPS OF WESTLAND POPULATION.**

<table>
<thead>
<tr>
<th>Birthplace</th>
<th>Percent of 2227 Prisoners</th>
<th>Percent of 1567 Hospital Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>England &amp; Wales</td>
<td>34.8</td>
<td>34.0</td>
</tr>
<tr>
<td>Ireland</td>
<td>35.3</td>
<td>32.6</td>
</tr>
<tr>
<td>Scotland</td>
<td>13.0</td>
<td>14.3</td>
</tr>
<tr>
<td>Foreign</td>
<td>9.3</td>
<td>14.3</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1.1</td>
<td>0.4</td>
</tr>
<tr>
<td>British Colonies</td>
<td>6.2</td>
<td>4.4</td>
</tr>
</tbody>
</table>

A check on the validity of these samples as applying to the whole population is provided by the table of birthplaces for the County of Westland at the 1871 census.

**BIRTHPLACES 1871.**

*(Percentage of total population)*

<table>
<thead>
<tr>
<th>Birthplace</th>
<th>County of Westland</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td>England &amp; Wales</td>
<td>25.3</td>
<td>26.6</td>
</tr>
<tr>
<td>Ireland</td>
<td>22.7</td>
<td>11.6</td>
</tr>
<tr>
<td>Scotland</td>
<td>11.9</td>
<td>14.4</td>
</tr>
<tr>
<td>Foreign</td>
<td>10.8</td>
<td>5.5</td>
</tr>
<tr>
<td>Australia</td>
<td>11.0</td>
<td>4.8</td>
</tr>
<tr>
<td>New Zealand</td>
<td>18.5</td>
<td>36.5</td>
</tr>
</tbody>
</table>

Clearly, there is a much higher proportion of persons born in Australia and New Zealand than in the hospitals or gaols samples - 29.5 per cent in the census compared with 5 to 6 per cent.

43. Census of New Zealand, 1871, Table 11, 'Birthplaces of the People'.
in the samples. However, in 1871, 27 per cent of the county population was under 15 years of age and most of these children must have been born in Australia and New Zealand. As the county included the boroughs of Hokitika and Greytown it probably had a higher percentage of children than the Westland region as a whole. Between the census dates of 1867 and 1871 the total recorded population of the Westland region fell by 2,400 whereas the number of children under 15 years increased by 1942. The loss of males over 21 years of age during the same period was 4,500. Thus it is apparent that the hospital sample provides a better measure than does the 1871 census of the countries of origin of the Westland community in the hey day of the rushes.

The frequent allusions to groups of foreign born people in the place names of the Westland gold country has given rise in the popular mind to an exaggerated impression of the role of these people in the gold rush population. They did, however, form a proportionately larger group in Westland than in the colony as a whole. The occurrence of a place name such as German Gully, Italian Gully, or Scandinavian Hill reflects not so much the numerical strength as the uniqueness of a particular national group in the community. Foreigners seem to have worked together in mining parties of their own nationality and a locality could be readily described by English speaking miners as the gully where a Greek or Italian party was working, although the foreigners may not have formed the bulk of the population even in that locality. There are very few place names referring to the larger national groups and the occurrence of the name "Welshman's" is rather an indication of the small number of Welsh people on the goldfields. Of almost 1,600 people in the hospital sample only 17 gave Wales as their birthplace - fewer than for Denmark or Germany or Switzerland. Most countries of continental Europe were represented, the largest numbers coming from Germany and Austria (4.1 per cent of the total), and Scandinavia (3.5 per cent). Switzerland (1.3 per cent) contributed as many people as France,
Belgium and the Netherlands together, while the Mediterranean countries and eastern Europe, Spain, Portugal, Italy, Greece, Russia and Finland, supplied a further one per cent. The Germans, many of them Jews, were particularly notable in business concerns while the Italians were prominent as successful prospectors. 44.

The remaining few per cent of the population had come from widely scattered parts of the world giving evidence of the widespread movements of people set in train by the mid-century gold rushes to regions bordering the Pacific Ocean. Three per cent of the total population were born in North America, and 3.6 per cent in Australia, fewer in fact than came from Germany. Although most of the adult gold rush population had probably spent some time in Australia the small percentage of those born there does not bear out Clark's contention that a large part of New Zealand's immigration from Australia in the sixties was from "the descendants of freed convict exiles and the large immigration of labourers to that area in the mid eighteen-forties". 45.

In 1871 the Australian born group in the County of Westland had 97 females per 100 males compared with 38.7 females per 100 males for the whole population of the Westland region. Since sex ratio the only age class with an evenly-balanced/was the under 15 group and as more than half the number were under five years it is clear that most people of Australian birth who came to Westland in the 1860's were children. A second Australian influx, in the early years of the twentieth century was of totally different character, being composed largely of young men seeking work in the Waikakua quartz mines and the Buller and Greymouth coalfields.

44. A chance confirmation of the impression that foreign miners kept together in their national groups was the discovery in the Nelson Provincial Council manuscripts of an application for a Special Claim by an Italian party at Half Ounce in the Ahaura goldfield dated March 5th, 1871. The names of the party, as far as could be deciphered, were: Theophilus Mabille (a mining engineer and surveyor), Paulo de Carlo, Filippo de Mario, Salvatore Gargzullo, Carlo Brolli, Pietro Santini, Antonio Turina, Frank Perera and two others.

In the 1860's the Chinese in Westland were a negligible part of the population. The role of the Chinese miner in Australasia has been as a gleaner rather than developer of goldfields and until the seventies the Chinese in New Zealand seem to have found plenty of work in Otago, picking over the diggings in the wake of the European miners. The first report of Chinese settlers in Westland is from Hokitika in 1868 where a number had established market gardens on the south bank of the river and a few had bought mining claims abandoned by Europeans. By 1871 there were only 24 Chinese living in Westland, eleven of them gardening near Hokitika, three gardening at Ross, and the remainder digging for gold on the sea beach south of Hokitika. At the same time there were 3,700 Chinese on the goldfields of Otago. It is difficult to explain the long delay between the arrival of the first few Chinese on the coast in 1868 and the first important migration from Otago about 1873. The opposition of the European miners may have been a factor but evidence is scanty. There is no doubt about the vehement attitude of a section of the Waimea miners who addressed a petition to the Superintendent of Canterbury in 1867 expressing alarm at the prospective introduction of large numbers of Chinese to the goldfields.

"The Petitioners have in their own experience seen the pernicious and injurious results arising from the influx of a Chinese population to any goldfield and the predatory habits which they frequently give proof of wherever they are, and especially so in Otago and the Colony of Victoria.

A very antagonistic feeling is felt by miners of the West Coast towards the Chinese because of their known uselessness to Europeans and on account of their thievish predilections.

Your petitioners humbly pray that a poll tax be placed upon every Chinese coming to the West Coast so that the immigration of these obnoxious people might be checked." 48.

In the face of such prejudice the docile Chinese might well have been deterred from coming to Westland, but when they

46. West Coast Times, Aug. 15th and Nov. 16th, 1868.
did arrive in large numbers they soon established a reputation for honesty and good behaviour. There is a touch of irony in the fact that by March 1873 when there were 370 Chinese in Westland, more than two thirds of them were working in the Waimea district, the source of the bellicose petition. In both Otago and Westland, however, businessmen and storekeepers welcomed Chinese immigration as a check to their declining trade.

Some information is available on the source areas from which gold-fields immigration originated within the British Isles. A regional concentration is most notable in Ireland, the Irish who lie buried in the graveyards of the Westland goldfields having in most cases left us a record of their county of birth. A sample 'census' was made by examining the inscriptions of 322 tombstones which recorded counties of birth and the results when plotted on a county map of Ireland make a significant pattern.⁴⁹ (See Fig. 13). Of the 33 counties of Ireland, six adjacent counties in the southwest of the country, Tipperary, Kerry, Cork, Limerick, Clare and Galway, supplied 60 per cent of the Westland sample. Persons born in Tipperary County were most numerous with 17 per cent of the total and were proportionately most important in the Greymouth district. Only 10 per cent came from the six Ulster counties and the absence of any record of people born in the vicinity of Dublin is striking. It is not the place here to discuss the significance of this pattern and comment is best deferred until further material is available on the source areas of Irish emigration to the southern hemisphere, especially to Victoria after 1850. However it may be noted in passing that three of the southern counties which supplied many immigrants to Westland, Tipperary, Clare and Kilkenny, were among the richer counties of Ireland in the decade 1851-1861.⁵⁰ As the English and Scots who died in Westland were not so consistent in having their county of birth inscribed on their tombstones a sample would be

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⁴⁹ Information was collected from tombstones in the cemeteries at Hokitika, Greymouth, Ahaura, Kumara, Stafford, Ross, and Reefton. Westport was not examined.

less valid than for the Irish. The distribution of Scottish birthplaces is fairly widespread over both the lowlands and highlands. There is a special concentration (which might be quite fortuitous on account of the limited number in the sample) from the Highland county of Argyle, the eastern lowland county of Fife and the northeastern county of Aberdeen which includes both highland and lowland areas. In England there is a similarly widespread pattern of origins of the gold rush community. Samples range from Cumberland to Surrey, from Northumberland to Cornwall. Two special areas stand out, London, and the southwestern counties of Cornwall and Devon, areas with a long history of mining and which in the nineteenth century sent out numbers of skilled men to every mining camp of the New World. Of all the Westland population only those born in the southwest of England and in North America are likely to have acquired any mining experience in their country of birth. But as has been suggested previously, the gold miners of Westland were no amateurs at their trade. It remains to demonstrate this by making another sample of the population, and leaving aside hospitals, gaols and graveyards we turn to the pages of The Dictionary of New Zealand Biography. 51.

This sample of the background and previous personal histories of the gold rush community depends for its validity on the assumption that the public servants and the politicians thrown up by a community are representative of the society they serve. Of the 43 people who lived in Westland during the gold rush, and who became sufficiently distinguished through political and public services or in commercial life to qualify for inclusion in The Dictionary of New Zealand Biography, the occupations are given for 40. Ten were officials, fifteen businessmen, three lawyers, five journalists, two were pastoral runholders and five were miners or miner-storekeepers. Of the latter five one became Prime Minister of New Zealand, three became members of Parliament and the other a member of the Legislative Council. Political

office in the goldfields went not so much to the miners as to the business and professional groups. Of those for whom birthplaces are given, fifteen were from England and Wales, nine from Ireland and eight from Scotland. Germany and Denmark together contributed four and Australia three. The experience of 36 people previous to coming to Westland is given and provides an illuminating record of the background of the more prominent members of the Westland society in the sixties. How significantly different it was from that of other New Zealand communities awaits further comparative studies.

Of the 36 persons:

- 23 had been in Australia, chiefly Victoria
- 20 had been in Southland or Otago
- 12 had been in both Victoria and Otago
- 2 had been at Whakamarina in 1864
- 2 had experience on the early Collingwood diggings
- 6 had been in business in Otago or Southland prior to setting up business in Westland
- 2 had been previously in business in Nelson
- 4 had lived at some time in Canterbury

Others may have lived in Otago or Victoria or both and the fact is not known to the biographer. The record of Australian and Otago experience is outstanding. Noteworthy too is the transfer of business concerns from Otago, Southland, and Nelson to the Westland goldfields while Canterbury businessmen were conspicuously absent. In this sample of "distinguished Westland personalities" there is no record of earlier Californian experience although in the contemporary newspapers there are occasional references to prospectors and miners who had been in California. From the number of officials in the sample a higher proportion of Canterbury experience might be expected but the majority of the goldfields officers were recruited from Otago and Victoria.

In contrast to the gradual peripheral expansion of a pastoral or agricultural frontier the mining frontier in the "New World" of nineteenth century moved as a series of narrow thrusts and leaps from goldfield to goldfield. Not only did the miners and prospectors move from field to field but complete sections of the goldfields community moved. Traders, publicans and professional men hastened after their departing customers
and even the police and goldfields officials, retrenched from their posts on the declining fields, sought new appointments on the expanding ones. New goldfields were sprinkled with the place names of the old. Publicans in Westland sought custom from old Australian diggers by naming hotels after Melbourne, Ballarat, Castlemaine, Bendigo and Lambing Flat, while New Zealand fields were commemorated in public houses such as the Havelock, Dunedin, Dunstan and Shotover.

**Age and Sex Structures of the Gold Rush Community.**

Brief reference has been made above to the marked disparity between the Westland population and that of New Zealand as a whole in respect of age and sex composition. The salient features, the preponderance of young adult males and the small numbers of women and children are indicated in the following table for the European population at the 1867 census.

<table>
<thead>
<tr>
<th></th>
<th>Females per 100 Males</th>
<th>Males aged 21-39 per 100 Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westland</td>
<td>25</td>
<td>31</td>
</tr>
<tr>
<td>Interior Otago</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>New Zealand</td>
<td>66</td>
<td>47</td>
</tr>
</tbody>
</table>

It seems probable that such a pattern could develop only in the early stages of an alluvial gold rush in an area previously unoccupied and the interior of Otago and Westland in the 1860's probably showed a greater divergence from the national mean in these respects than has any other area in the history of New Zealand.

The age and sex structures of the Westland population and the European population of New Zealand at various dates is shown in the form of compound pyramids on Fig. 25. Each age and sex class is expressed as a percentage of the total regional or national population. As the census returns of 1867 and 1871 do not show all the quinquennial age classes separately, the gold rush period cannot be precisely compared with later dates. On Fig. 25 the 1867 data for the age groups 21-39 and 40-54 have
been plotted on the unrealistic assumption of an equal division into five-year groups. It does, however, permit some comparisons with the national structure. A more likely representation of the Westland gold rush community is shown on Fig. 25 b. In this diagram the proportions in various quinquennial age groups at the 1878 census were projected back and distributed in relation to the 1867 total. Thus in 1878 the 35-39 year group is assumed to bear the same relation to the 30-49 class as did the 25-29 year group to the 21-39 age class in the 1867 census. This procedure is valid if it is assumed that the loss by emigration from Westland after 1867 involved a representative proportion of each five-year adult age group. The national age structure cannot be inferred in this same way because of the effect on adult age groups of the substantial immigration to New Zealand between 1870 and 1878, virtually none of which went to Westland.

The amended pyramid suggests that men between 25 and 29 years were the largest single group and formed about one-fifth of the entire Westland population in 1867. It is unlikely that this ratio has been attained since by any New Zealand community of comparable size. The bulge formed on the graph by this group of young men can be traced in the regional age structure through successive censuses. It appears as the 40-44 year group in 1881 and is still evident in the 70-74 year group of 1911. Women, by contrast, appear to have been present in approximately equal numbers in each five-year group from 21-24. This could imply that most of those who came during the gold rush were married women, accompanying or following their husbands. Clearly, the great majority of the bachelor diggers who came to Westland in their twenties had little chance of finding a bride so long as they remained in the region.

The most marked positive deviations from the national average in 1867 was the high proportion of males aged 21-39; they were 62 per cent in Westland compared with 28 per cent for New Zealand as a whole. Males aged 40-54 were slightly more
numerous in Westland: 7.8 per cent compared with 6.5 per cent for New Zealand. In all other categories Westland had negative deviations from the national average. It was slight in the case of women between 21 and 39 (10.5 per cent compared with 13.3 per cent) but marked in the under 21 groups of both sexes and especially so in the 10-14 age class (2 per cent as against 8 per cent). There were very few people over 55 years in New Zealand in 1867 and the Westland proportion of these was infinitesimal.

There was a marked difference in sex ratios as between the larger towns and the "rural" goldfields. The trend in sex ratios between 1867 and 1911 in several kinds of Westland communities is summarised in the table on the following page. By 1867 the three commercial towns already had twice as many females per one hundred males as the region as a whole. Ross, the only goldfield centre for which returns are available, closely approached this figure, whereas in the remainder of Westland the ratio was only 14 to 100. By 1871 the proportion of females in the commercial towns far exceeded the national average due to the increase in the number of children, the arrival of more women from Australia and the departure of many single men. If a low ratio of females to males is regarded as a measure of a pioneer community, the three commercial towns of Westland had passed well beyond the pioneer stage scarcely six years after their foundation.

It has often been suggested that the growth of population by natural increase in New Zealand has been faster in rural than in urban areas. In Westland of the 1870's at least, the potential for growth of the non-urban population was less than in the towns where sex ratios were more evenly balanced.
<table>
<thead>
<tr>
<th>Census Date</th>
<th>1867</th>
<th>1871</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
<th>1911</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Commercial Towns*</td>
<td>52.5</td>
<td>90</td>
<td>97.5</td>
<td>90</td>
<td>96.3</td>
<td>89.3</td>
</tr>
<tr>
<td>Goldfields Boroughs**</td>
<td>46</td>
<td>51</td>
<td>80</td>
<td>82.6</td>
<td>99</td>
<td>95</td>
</tr>
<tr>
<td>Brunner</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>89</td>
<td>100</td>
<td>87</td>
</tr>
<tr>
<td>Remainder of Westland</td>
<td>14</td>
<td>30.5</td>
<td>48.5</td>
<td>57.7</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Westland Region</td>
<td>25</td>
<td>38.7</td>
<td>61.3</td>
<td>68.5</td>
<td>76</td>
<td>72.4</td>
</tr>
<tr>
<td>New Zealand</td>
<td>66</td>
<td>72</td>
<td>81.6</td>
<td>88</td>
<td>90.3</td>
<td>89.6</td>
</tr>
</tbody>
</table>

* Westport, Greymouth and Hokitika.
** Kumara and Ross from 1881 on; township of Ross for 1867, townships of Ross and Charleston for 1871.
Conclusion.

The Westland gold rush community was more widely travelled and diverse in its origins than the New Zealand population in general. It was a vigorous, migratory society composed of a high proportion of young men, and of a greater proportion of Irish and continental Europeans than in any other New Zealand community since the gold rushes. To some extent the cosmopolitan nature of early Westland society has survived to the present day, notably in the number of Irish names and in the high proportion of Roman Catholics listed in recent censuses of religious professions. Some parts of the Westland region have at earlier times, though not necessarily during the golden decade, been marked by a high proportion of people of particular national origins. Distinctive national communities were the English at Karamea, the Welsh and Scots in the Buller coalfield, the Cornishmen and Australians in the Inangahua quartz mining centres, the Shetlanders on the Charleston beaches, the English and Scots at the coalmining town of Runanga, the Chinese in the Grey Valley and later in the town of Greymouth, and the polygot society of Germans, Poles, Scandinavians, Italians, Irish and Englishmen at Jackson's Bay in the late 1870's. In the early 1870's the Germans attained their greatest numerical strength in Westland on the Ross goldfield and the Jews in the town of Hokitika. While in most cases it is difficult to point to landscape differences resulting from these contrasted national groups, by their local concentrations they have given character to separate parts of Westland at various times in the past.

The gold rush immigration of 1865-67 and the related aftermath movement of women and children was the only major flow of settlement in Westland's history. Its effects on the age and sex structure of the community are apparent at least until 1911 while the Irish-Catholic element has had a more permanent legacy. The Chinese settlement, although significant for a time, was wholly male and could not be self-perpetuating. Small scale
movements at later times of people from Britain, Australia and other parts of New Zealand have played a part in contributing to the present population but few communities in New Zealand can have owed so much to the people who came within the span of three years.
VII.

**PANORAMA OF THE GOLDFIELDS.**

Viewed in outline the gold country of Westland took the form of a gigantic letter Y with the town of Ross at its axis. The three arms of the letter represent major segments of the goldfields each of which had distinctive characteristics of their own and provide a basis for describing broad regional contrasts. The great length and narrow extent of the Westland goldfields contrasts markedly with the more compact patterns of the other major New Zealand fields of Otago and the Coromandel Peninsula.

**Distribution of Gold Workings.**

The most important segment of the goldfields was the line of workings extending from Ross, 105 miles northeast to Lyell Creek. This belt, seldom more than five miles wide, was the famous 'golden line' which yielded the bulk of the Westland gold output. In detail, the pattern of 19th century gold workings formed not so much a line as a belt of discontinuous alluvial workings in the valleys of smaller rivers and in scores of tributary creeks. The beds and banks of the larger rivers were generally devoid of workings as were the higher parts of the terraces and hills between the streams. With very few exceptions the alluvial workings were distributed regularly in a well defined zone showing a very striking relation to the seaward margin of the glacial moraines. (See map of 19th Century Gold Workings, Fig. 14a).

Many of the smaller valleys had continuous workings in an east-west direction for five or more miles. There are continuous tailings for six miles in the valley of the Hohonu or Greenstone River, while along the sinuous course of the New River and its tributaries there were workings for almost ten miles. The alluvial gold deposits were rich and concentrated near the southern portion of the 'golden line', especially at Ross, Kaniere, and Kumara, whereas further north the auriferous ground was poorer and more widely distributed. In the Inangahua district the golden zone
was bounded on the east by a narrow belt of quartz workings which, in the nineteenth century, extended for 15 miles from Big River to Larry Creek with an outpost at Lyell a further 20 miles to the north. Twentieth century discoveries extended the Reefton line of quartz workings another five miles south to Waitua.

The southern segment of the Westland goldfields has not been shown on the map (Fig. 4). A reduction in scale would have impaired the accuracy of the map for North Westland and the small lateral extent and limited economic importance of the attenuated line of South Westland diggings did not justify a map on a comparable large scale. Apart from a few gleaning in the alpine river gorges, all gold workings south of Ross were confined to the blacksands of the beaches within a hundred yards or so of the shoreline. There were workings in most beaches on the 150 mile extent of coast from Ross to Jacksons Bay, but the richest accumulations of gold were found on a few beaches in the 40 miles between Okarito and Bruce Bay. Only in 1885 and 1886 did the southern beaches contribute a significant proportion of the Westland gold output. Although phenomenal returns were made for a few months the cream of the harvest was soon skimmed, but fossickers were able to make a living from beachcombing for many years afterwards.

The third segment of the goldfields extended 120 miles north from Ross to Hokihinui. It was distinguished by blacksand workings on the sea beaches, similar to those of South Westland, and by elevated leads of blacksand associated with older marine gravels. The old sea beach Leads were first worked at Hau Hau and Blue Spur in the Kaniere goldfield, a distance of two miles from the present shoreline and at an elevation of 200 feet. They were traced through the Waimea goldfields to Rutherglen and Saltwater Creek south of Greymouth, thence further north along the base of the Paparoa Range at Barrytown and were continued in the richest leads of all at Brighton, Charleston and Addison's, until they terminated north of the Buller River between Caledonian Terrace and Fairdown. In the Buller area
the marine gravels of the raised beaches provided the bulk of the district's gold yield and were not so quickly exploited and exhausted as were the black sand deposits of the present sea beaches. In this district they reached a maximum height above sea level of between 500 and 600 feet and at Addison's were found as far as six miles inland from the coast.

Although most of the glacial deposits and marine and river-borne gravels which mantle the West Coast lowlands appear to be gold bearing to a small degree, they were payable only where the deposits had been resorted and concentrated through the natural "panning" of streams, waves and glacial meltwaters. There is a very clear relation between the distribution of alluvial goldfields and the seaward margin of the moraines which the great piedmont and valley glaciers deposited in their successive advances on to the Westland lowlands. South of Ross where the moraines extend to the coast no payable gold was found inland from the beaches. In a few cases the older Pleistocene gravels contained payable gold. At Humphreys Gully in the Arakura Valley and at Jones' Flat, Ross, a decomposed pebbly conglomerate resting on the upper Tertiary beds was richly gold bearing. In the Grey Valley, however, the weathered yellow-brown gravels which are probably of similar age, and were known to the alluvial miner as "Old Man Bottom", or "Old Man Gravels", were not payable auriferous except where reconcentrated by modern streams.

The bulk of the alluvial gold was recovered from gravels deposited by torrential outwash streams from the Pleistocene glaciers. Some came from alluvium deposited by modern streams from the reworking of older fluviatile and glacial material and a little gold was sometimes derived from the terminal moraines. It is evident that during the Pleistocene glaciations most of the alluvial gold was transported by ice and concentrated by glacial streams. The gold, being of high specific gravity, was not carried far from the ice front, and the richest deposits with the heavier shotty and scaly gold and small nuggets were found nearest

to the terminal moraines. The further the fluvio-glacial deposits were from the ice front the lower became the gold content and the smaller the particles of metal. On the sea beaches, and in the buried leads of ironsand near the coast the gold was exceedingly fine and flour-like, indeed much of it floated on water and gave considerable difficulties in recovery. Thus the most important areas from an economic standpoint during the golden decade of Westland were the ocean beaches and the fluvio-glacial terraces together with the creeks and gullies dissecting them. Gold was found in much greater concentrations in the smaller rivers and creeks than in the large river beds whose channels are choked with accumulations of greywacke and granite shingle recently derived from the mountains. These later areas were not payable until modern steel dredges came to dig deeply and rapidly turn over large quantities of alluvium of small gold content.

In some cases, as at Napoleon's Hill, Kumara, Woodstock and Ross, workings in auriferous gravels underlay the glacial deposits although the moraines themselves were not generally considered payable. Payable gold of a coarse, shotty nature was found in a few places east of the seaward limit of glacial moraine, as at Bell Hill, in the Taipo River tributary of the Taramakau, at Kaniere Forks and the Totera River, Ross. These deposits possibly resulted from the reconcentration by modern streams of glacial material dating from a late phase in the Pleistocene glaciations when the ice tongues did not extend beyond the mountain valleys. Large nuggets were found at Lyell Creek in the earliest days of the Buller diggings and at Moonlight Creek in the Grey Valley. In both these places the nuggets could have been eroded from quartz veins near at hand but elsewhere on the Westland diggings few large nuggets have been found.

The goldfields of Westland had few well-defined deep leads

2. McKay, however, states that the largest nugget ever obtained at Kumara was considered to have been won from the overlying (terminal) moraine. See Alexander McKay: 'Geological Explorations in the Northern Part of Westland' in 'Papers and Reports Relating to Minerals and Mining' A.U.N.Z., C.3, 1893, p155.
such as were traced in Victoria and California in the abandoned
drainage channels of Tertiary streams. In Westland the bulk of
the alluvial gold must have been deposited within a relatively
short time span by torrential streams frequently changing in
course. The richest deposits occurred where the ice front advanced
to approximately the same point during successive glaciations or
where the outwash channels remained stable for a considerable time.
Such conditions appear to have been the case at Kumara, Kaniera,
Rimu, and Ross. The gold workings varied in elevation from
1,200 feet above sea level on Napoleon's Hill in the Ahaura gold-
field, and in the limestone cave workings west of Inangahua township,
to about 200 feet below sea level at Ross. Most of the workings were
less than 500 feet above sea level and were rarely deeper than 60
feet below the land surface or more than 200 feet above the present
stream channels. The fluvio-glacial deposits containing the gold
were typically coarse gravels with many large boulders and extraction
of the metal, whether by underground or open face methods meant heavy
and dangerous work for the miner. The auriferous material was not
uniformly distributed through the gravels but occurred in layers of
'wash dirt' from a few inches to a few feet thick, and resting on
"bottoms" which impeded the downward passage of the particles of
metal. The "bottoms" were generally found on the upper Tertiary
marine beds which underlie most of the gold country - brown and
grey sandstones and siltstones, blue clays (the 'Blue Bottom' of
the old diggers) and the weathered pleocene gravels or "Old Man
Bottom". In some places, especially at Kumara and Ross, the
gold occurred on false bottoms of clay and silt distributed
through the fluvio-glacial gravels.

On the ocean beaches the fine particles of gold were
associated with heavy black ironsand which had been carried along
the coast by the northward-trending current, concentrated by wave
action in irregular lenses and later covered with grey beach sands.
In places, where the beach zone extended as much as 50 chains
inland, several parallel leads were found among the swampy hollows

N.Z. Geological Survey Bulletin No. 13 (New Series), Wellington,
1911, p. 17.
and successive lines of sandhills. The beaches were essentially surface workings but where claims could be kept free of water by pumping devices the leads were worked to a depth of 20 or 30 feet. The older marine leads on the raised beaches also contained fine gold with black sand but except where the leads were deeply buried prolonged leaching under a high rainfall formed a rusty iron cement which had to be pounded mechanically and sometimes burnt before the gold could be set free. The old leads occurred at three successive elevations— at approximately 80, 200 and 500 feet above sea level—the leads of the 200 foot level being the most important economically. The cemented marine gravels rested on upper Tertiary rocks, although at Charleston some of them lay directly on seams of sub-bituminous coal, a circumstance surely unique among the goldfields of the world. River-borne gravels, barren of gold, frequently mantled the leads to a depth of 60 feet.

The limited distribution of auriferous quartz lodes is in marked contrast to the widespread occurrence of detrital gold. The ultimate source of the alluvial gold has thus been a topic of much discussion. The quartz lodes which traverse the Palaeozoic greywackes and argillites along part of the eastern flank of the Grey-Inangahua depression are acknowledged to be competent sources of supply for all the auriferous alluvium of the Reefton district. Similar quartz lodes at Lyell undoubtedly supplied the nuggets and scaly gold of the Lyell Creek and Buller Valley alluvial workings. At the southern end of the Paparoa Range the erosion of large quartz veins in the greywackes could have produced the coarse alluvial gold of Moonlight, Blackball and Ten Mile Creeks, while lodes on Mount Greenland may have supplied the bulk of the Ross alluvial deposits. But in view of the close relationship between the glacial moraines and the principal alluvial gold workings, it is difficult to see how the bulk of the Westland gold could have been derived from the Palaeozoic rocks many miles west of the Alpine Fault.

Haast, the first geologist to examine the Westland goldfields

thought that most of the alluvial gold was derived from the schists on the western flank of the Southern Alps. He considered the auriferous gravels to be of Pliocene or pre-glacial origin, forming in the West Canterbury Goldfields, a vast triangle of 300 square miles with Ross at the apex and the Grey and Arnold Rivers at the base. Elsewhere Haast's "Great Gold Drift" had been destroyed by the Pleistocene ice advances. Although fine gold can be panned in many of the rivers of alpine Westland, notably the Hokitika, the quartz veins in the schists and greywackes of the Southern Alps show either very slight or no indications of gold. By the late 19th century it was the conviction of the informed alluvial miners and of several geologists that the gold on the lowlands could not have been supplied from an easterly direction.

Hector, in 1869, suggested that the gold drifts were deposited in a great river valley extending from Tasman Bay south-westwards where it was cut off obliquely by the sea coast between Greymouth and Ross. McKay elaborated this view and favoured the assumption that an ancient highland west of the present coastline provided the gold in the older gravels which in turn were eroded and supplied the metal to the younger deposits. There is no tectonic evidence for inferring an ancient highland west of the coast, nor any structural or topographic evidence for an ancient river valley from Ross to Tasman Bay. McKay seems to have advanced this hypothesis because he could not postulate an eastern source for the bulk of the gold. The reports by McKay were widely read by the miners of the day and even to the present time old gold miners and their descendants support the "ancient river" hypothesis, some with the tenacity of an article of faith.

6. Ibid., p.179.
A contrary view was expressed by Bell and Fraser.\(^\text{10}\) They point out that in some other alluvial goldfields, notably in British Columbia and the Yukon, the nearby mountains were subjected to intense glaciation. As in Westland, the rich "mother lodes" which were to be expected in the light of Californian experience were never discovered on these fields. It is possible that ice and water erosion removed the rich upper portion of the quartz lodes during the elevation of the western slopes of the Southern Alps - an elevation which continued at a rapid rate during the quaternary period. The quartz veins in the mountain country today, in the view of Bell and Fraser, are regarded as remnants of lodes from which the richly auriferous upper portions have been removed.\(^\text{11}\)

The problem thus remains open and the ultimate source of the alluvial gold will probably always be a matter for conjecture. While some deposits came from the erosion of nearby quartz veins in the Palaeozoic rocks, an eastern origin for much of the gold does not seem impossible. It is noteworthy that three alluvial goldfields in the South Island, Westland, Marlborough, and Otago, are either located on, or are close to areas of schist rocks.

**Alluvial Mining Methods.**

The gold bearing gravels had undergone a process of natural panning and concentration by streams and waves. All that the nineteenth century diggers had to do was to complete the panning and for this water was required in varying quantities according to the richness of the deposits. Most of the techniques employed in alluvial mining in Westland had previously applied in Otago, and with the exception of sea beach mining, the diggers in Westland were imitators rather than innovators. It was in Otago that new techniques were developed or overseas ones first tested in New Zealand. The familiar mining devices, hydraulic sluices, dredges, cement crushing mills, the hydraulic bucket elevator and the water


\(^{11}\) ibid., p.96.
balance are described first from Otago, especially from the Tuapeka field which has played the part of a proving ground for alluvial mining methods in New Zealand. Nevertheless there is evidence that the hydraulic "blow-up" - a suction device for elevating sands and gravels by a water jet - was independently invented at Waimangaroa in Westland at the same time as a similar machine was built at Gabriel's Gully in Otago.

The simple and picturesque methods of individual mining by cradle, sluice box and tin dish did not predominate for long on the Westland goldfields. Most of the diggers could call on previous experience in Otago and Victoria and when mining machinery was required it could be readily obtained from Melbourne. The chief appliance in use on the early Buller diggings and during the prospecting period further south was the small sluice box, paved with wooden riffles and into which the wash dirt was shovelled by hand. A primitive device described in the early stages of the Waimea diggings was a log of wood roughly hollowed with an axe and paved with pebbles and moss to trap the gold as the gravels were sluiced through. The stream beds and low terraces were frequently worked by "paddocking"; the overlying gravels being dug out to the level of the wash dirt and the claim then worked on an open face. A sluice box was placed in or alongside the paddock and the wash dirt forked through it when water was available.

Until April, 1865, the workings were confined to the recent alluvial deposits of the creek beds and shallow gullies but these were quickly worked out and increasing attention was turned to the older and richer gravels of the nearby flats and terraces. The change was first apparent at Kaniere, the field which on several occasions led Westland in the adoption of new mining techniques. At first the practice was to trace layers of wash dirt by driving tunnels in from the terrace sides or by sinking shafts. This was the method most familiar to the Victorian miners although in Westland the preparatory work was more arduous.

13. Ibid., p.189.
14. Canterbury Standard, Nov.27th, 1865 (quoting a letter from a former Victorian miner to the newspaper Bendigo Advertiser).
An American axe was just as important a part of the digger's equipment as his pick and shovel, for the heavy bush had to be felled and the large stumps and tangled surface roots removed before shaft sinking could begin. Timber slabbing of shafts and drives was essential but requirements could be supplied on the spot, an advantage possessed by the Westland goldfields over treeless Central Otago. By the spring of 1855 the goldfields had rapidly passed the pioneer stage in mining techniques and the newspapers were describing the widespread use of improved appliances. The individual efforts of prospectors or of a couple of mates working together, soon gave way to co-operative effort and the amalgamation of claims. Westland became a community of small scale capitalists with mining parties of four to ten men as the characteristic working unit. The delay in earning time involved in preparing new mining appliances meant that the claim-holders required credit for purchasing their stores. In this way the storekeeper and hotel-keeper became partners in mining enterprise and would seem to have earned more profits than the working digger.

The Ross and Kaniera districts led the way in the adoption of mechanical appliances. Shallow shafts worked by hand-drawn windlasses gave place to deeper workings fitted with horse drawn ropes, pulleys and drums to raise the buckets of wash dirt and drainage water. A typical appliance, known in mining terminology as a whip, is described from Ross early in 1856. Over the mouth of the shaft a stout wooden beam was fixed at an angle of 45 degrees and from this hung a hemp cable running over pulleys. At the shaft end was fixed a bullock hide bucket braced with iron fittings while the other end was attached to the horse. The horse walked back and forth along a short roadway and hauled up the wash dirt which was tipped on to a small wooden stage from where it was fed into the sluice boxes. Early co-operation was enforced by the problem of keeping ground water out of the shafts and the relative ease of access to the port of Hokitika favoured the cheap establishment of machinery.

15. West Coast Times, Jan. 4th, 1866.
Manual labour and horse power could not keep pace with the flow of ground water and at Kaniere it was stated that two or three men on each claim had to occupy all their time pumping water to enable the others in the party to dig for gold. Water wheels for pumping were soon on the ground and early in 1866, only nine months after the first Kaniere rush, steam engines were being employed to work drainage pumps. A typical organisation was the United Steam Drainage Company, formed by the amalgamation of four claims containing 31 shareholders. Their 14 Horsepower steam engine supplied with wood fuel, worked a 50 foot long Californian pump which drained the workings of all four adjoining claims.

Despite the success of sinking and driving in the richer ground it was soon recognised that the abundant water supplies of Westland permitted the working of the terrace deposits on an open face wherever there was sufficient fall for the tailings. In the adoption of hydraulic systems of mining the Waimea district led the way. The problem was to bring water to a point considerably above the stream level and to do this the water had to be conducted in races for some distance over rough terrain and storage dams provided. By October 1865 hydraulic mining of the terraces was becoming the characteristic feature of the Waimea Diggings:

"On almost every stream in the district races are to be seen winding their way along sides of slopes, in some places the water being carried through flumes, in others through tunnels cut into the bottom and usually terminating at a terrace where large scale sluicing is being carried on." 18

Hydraulic mining structures reported from the Waimea at an early date included a storage dam built across the mouth of an 80 foot wide gully with a 50 foot embankment sheathed with planks, 19 and trestle flumes of timber carrying water races 100 feet above the river bed. 20 By late 1865 water races were under construction in all parts of the goldfields. Sluicing made profitable the re-working of ground previously mined by tunnels, and after periods

17. West Coast Times, Aug.13th, 1866.
18. West Coast Times, Oct.16th, 1865.
19. Ibid., Oct.28th, 1865.
20. Ibid., Oct.16th, 1866, quoting newspaper Waimea Chronicle.
of heavy rain, work at the claims continued day and night to make fullest use of available water. Water power was used not only for sluicing on the terraces but races were also led on to the flats to work overshot wheels attached to drainage pumps in the shafts. In the long run water power proved more economical than steam power for drainage purposes and further uses for hydraulic machinery were found in driving the crushing batteries on the 'cement' workings and at quartz mines.

The first method of hydraulic mining to be employed was known as "ground sluicing". The water was led to the top of the face where it fell as a waterfall and loosened the wash dirt with the aid of the miner's pick and crowbar. The gravels were then put into the sluice box and the gold trapped between wooden riffles. The next development was "hydraulic sluicing", by which a jet of water under high pressure was directed at the face and the gravels broken down by water power alone, without the assistance of manual implements. A much higher face, thus deeper leads, could be safely worked than with ground sluicing. It is difficult to say when hydraulic sluicing was first employed in Westland as contemporary reports are confusing as to the meaning of the terms "hydraulic" and "ground" sluicing. R. J. Seddon, the future Premier of New Zealand, who had gained mining and engineering skills in Victoria, is credited with introducing hydraulic sluicing to work terraces in Waimea Creek early in 1867. 21 The first "hydraulic" was reported in the Arnold district in March of the same year. 22 However, as late as 1874, a lecturer addressing the first meeting of the Westland Institute, said that hundreds of claims were still being worked on the old principle of bringing a small volume of water through a canvas hose and allowing it to fall loosely on the face. 23 The Californian practice of using iron pipes and patent metal nozzle, to keep up pressure was described and it was reported that a representative of a Westland water race company had visited California to adopt the patent nozzle for use at Greenstone. It seems doubtful whether much sluicing was done by powerful hydraulic

22. Grey River Argus; March 2nd, 1867.
jet during the golden decade of Westland since few races had been constructed which could command a large and reliable supply of water available at high pressure. Ground sluicing, shaft sinking and tunnelling were the characteristic methods of mining during the years of the peak gold returns in 1863 and 1867.

In Westland there was a steady gradation in the gold content of the gravels varying from rich bonanzas to deposits with only slight traces of the metal. The cream was skimmed in the first few years by washing with comparatively small supplies of water, but as each successive advance of mining technique made available more effective methods of turning over the gravels a considerable extent of new ground became payable, and even old ground could be reworked, in some cases many times over.

The terraces, creeks and flats could be mined by methods developed on other goldfields but the techniques for saving fine gold from the ocean beaches had to be worked out in Westland. In the early stages of the rush the experienced miners, accustomed to the coarse gold of the alluvial gravels, pushed up the rivers into the terrace country and ignored the beach deposits as too fine to be payable. The beaches were regarded as a convenient highway and a base for operations inland but not as a likely source of wealth in themselves. It seems that it was the inexperienced "new chum" who, by haphazard digging, hit upon the extraordinary "leads" of auriferous blacksand.24 The gold was found in a manner not previously met with in alluvial mining although similar conditions have been reported from ocean beaches at the mouth of the Klamath River in North California. 25 From information available in New Zealand it is uncertain whether these were worked before the Westland beaches. In the first few months of the beach rushes the blacksands were laid bare by sinking paddocks a few feet deep. The auriferous sands were found in

24. This view was expressed by the West Coast Times on September 3rd, 1866. There were probably several unsuccessful attempts to work the beaches before the spectacular rush to the Auckland Lead took place on the Waimea beaches in the spring of 1865. In April, Haast had seen a party at work near Hokitika paddocking near high tide mark but he did not know with what results. The circumstance must have been sufficiently rash for Haast to make special mention of it. See Press, May 24th 1865.

narrow strips parallel to the shore varying from a few inches to two or three feet in depth. The wash dirt was thrown up and the gold recovered by cradling the black sand through a perforated hopper on to copper plates coated with quicksilver and the amalgam retorted. The sudden demand for copper plates and mercury could not be met immediately and blankets or sheep skins were recommended as alternatives, or sluice boxes lined with plush and supplemented with riffles of tree fern sufficed to give payable yields. From Okarito it was reported that after a "wash-up" when all visible gold had been gathered, sheep skin lining the sluice box was burnt and two ounces of gold dust recovered. On the beaches near Greymouth a common appliance was the sluice box, lined with a long matted blanket or clipped sheepskin, with a quicksilvered plate attached to the end of the box to trap the finest particles of gold. It was admitted at the time that these simple appliances gave a very inefficient recovery of the available gold, but the centuries' accumulation of black sand in the zone just above tide level gave phenomenal returns for a short period, indeed the most spectacular yields ever to be reported on the Westland goldfields. In the palmy days of the Auckland Lead rush the lowest wages earned by claim-holders were quoted as from £7 to £10 per week, while some fortunate parties earned between £100 and £140 per man per week. Earnings in the terrace country at the same time were from £2 to £12 per week.

The elevated beach leads inland were worked by shafts and tunnels and the wash dirt of cemented sands and marine gravels had to be pounded mechanically before the gold could be amalgamated with mercury. Various devices were used, hand crushing machines, iron balls attached with ropes to a horse and pulley; but the most common method was a simple battery of wooden

26. West Coast Times, Nov. 23rd, 1865.
28. West Coast Times, Aug. 13th, 1866.
29. Nelson Examinuer, Nov. 28th, 1865.
30. West Coast Times, Dec. 19th, 1865, and May 12th, 1866.
31. Ibid., Feb. 10th, 1866.
stampers shot with iron and powered by water wheel, horse or steam engine.

Although to the climatologist the rainfall of Westland might appear to be copious and well distributed, the alluvial miner during the golden decade was embarrassed with an alternating surplus and shortage of water supply. In the words of one of the mining wardens, "the proverbial wet of the west coast is now proved a fallacy, and those who have depended on it have experienced bitter disappointment". The numerous references in the contemporary press and wardens' reports leave no doubt about the "depressing effects" of a fortnight's fine weather on the mining industry and the consequent "dullness of trade" experienced by the business people of the mining camps. The numerous creeks draining the terrace country of Westland have small catchments and except after heavy rain they carry only a small volume of water. In 1868 although there were 580 water races in the County of Westland their average length was only two-thirds of a mile. Few claims had reliable supplies of water after a week of dry weather and piles of wash dirt stacked awaiting the next rainfall were a familiar sight. Periods of dry weather of course greatly benefited claimholders on the flats who were normally troubled with water in the shafts. On the other hand, floods damaged claims in the creek beds, swamped shaft workings in the flats, burst dams and swept away wash dirt piled up in the paddocks. Satisfactory control of water supplies was not achieved until late in the 1870's when long distance water races were constructed by the state or by subsidised private companies tapping lakes and reservoirs, and rivers of larger and more regular flow. A comparison has been made of the monthly rainfall record for Hokitika from 1865 to 1871 and the monthly gold exports from Hokitika for the same period. From April to December 1867 there is a close relation between the fluctuations in the rainfall and gold output, the two lowest months of gold

32. Warden Keogh to Goldfields Commissioner: C.P.No.496, 1867.
33. See for instance, West Coast Times, Oct. 10th, 1868.
34. Compiled from information contained in 'Statement Showing the General Condition of the Gold Workings in the County of Westland', J.P.W.C.C., Sess.II, 1869.
Fig. 14c. Generalised profile of the alluvial gold workings showing the relationship between types of terrain, character of the gold and the time sequence of the predominant mining methods. The diagram portrays conditions in the lowland area between the Aramara and Taramakau Rivers and, although not exactly repeated elsewhere, particular segments of the profile have counterparts in many places in Westland. In this instance small remnants of older moraine nearer the sea are not shown.
export coinciding with, or just following the lowest troughs on the rainfall graph. Except in a few cases there is little consistent relation between the two sets of data for the other years in the period. The figures available are probably not precise enough for satisfactory analysis. Gold export figures are not available for periods of less than a month and these may have fluctuated with the frequency of Australian shipping services or the condition of the Holditika bar rather than with supplies of water available on the goldfields. Newspapers, however, leave little doubt that short period fluctuations in rainfall had considerable effect on the tempo of life in the mining communities and were probably more significant to these people than to most present day farmers in New Zealand.

Regional Differences on the Goldfields.

Local contrasts in the character of the gold workings and their associated landscapes were soon developed although to the observer at the time the similarities may have been more striking than the differences. The forest was the ever-present backdrop to the mining scene.

Throughout the whole extent of Westland, the sea beaches had a generally similar appearance, pock-marked as they were with the paddocks of the blacksand miners and with their calico tents and tree fern whares sprinkled among the driftwood. From the lagoons behind the sandhills water races were laid on to the beaches to drive water wheels pumping from the paddocks below tide level, but apart from these, cradles and sluice boxes were the only appliances used. A couple of hundred yards or so from the shore stood the dark line of the forest. On the inland workings the forest still overshadowed the works of man. Locally, in areas of a hundred acres or so, the timber had been clear-felled for shaft sinking and paddocking and in these places large water wheels, steam engines, shaft derricks, trestle flumes carrying water races, and the ever mounting heaps of tailings formed landscapes that were essentially man made. Yet only at Ross did the 70 foot high poppet heads of a few of the shafts overtop the crowns of nearby rimu and kahikatea trees. More
commonly the goldfields formed an untidy scene of shaft head gear, open paddocks, heaps of wash dirt, sluice boxes and tail races and the log cabins of miners, all scattered in apparent disorder among stumps, fallen logs and clumps of standing trees. Along bush clad gullies ran the sinuous lines of small water races with here and there, a dam, or stage of wooden fluming carrying a race high above the stream bed, or perhaps a tunnel carrying water through an awkwardly projecting spur. The terrace sides were frequently riddled with horizontal drives, especially where the underlying clays and sandstones, known to form a bottom to the auriferous gravels, had been exposed in small cliffs by the downcutting streams. As mining progressed, the valley slopes and terraces became scarred with innumerable sluice workings as the gravels were broken down by hydraulic power and spread in cone-like debris heaps along the tail races in the stream beds.

Such were the elements of the mining landscapes which were to be seen in varying degree throughout the goldfields. Regional contrasts among the goldfields could be seen in variations in the type of mining appliances used and in the intensity and detailed patterns of the workings - features which reflected local conditions of terrain and geology as well as accessibility from ports of supply. Some fields were noted for the intensive nature of the workings and the amount of capital invested in machinery, dams, and water races. The Reefton quartz field and the alluvial goldfields of Ross, Waimea, Kaniere, Charleston, and Kumara stood out in this respect. Other localities such as the Southern beaches and the Grey and Inangahua Valleys were distinguished by their more widely scattered workings on a smaller scale and with simpler appliances. Reports published by the Westland County Council and the Nelson Provincial Council in 1868 and 1869,

36. 'Nelson South-West Gold-Fields; Commissioner's Annual Report', W.S.P.W.C.C., 1868, and 'Nelson South-West Gold-Fields; Wardens' Reports', ibid., 1869.
just after the peak of gold production, and by the general government in 1872 and 1873 provide a statistical basis for comparing the different fields although there are some irritating gaps in the record. For administrative purposes the goldfields were divided into Wardens' districts and although the boundaries were altered in the course of time these districts covered areas which were more or less distinctive in the character of their workings at any one time.

The Southern Beaches, with their administrative centre at Okarito, formed the most attenuated of the gold mining districts of Westland and the one where the methods of mining were the simplest and most uniform. The terrain consisted of sandy beaches backed by lagoons and swamps and cut off from one another by bold cliffs of moraine and large, turbulent rivers. Blacksand deposits on the beaches were the only source of gold and of all parts of Westland the harvest here was the most ephemeral. Leaping suddenly into prominence late in 1865 and supporting between 3,000 and 4,000 people for a short time, the southern beaches were all but worked out by 1867. Whereas some men made between £300 and £1,200 for three months' work in the hectic days of the rush, gold production fell from almost 80,000 ounces in 1866 to 10,000 ounces in 1867. For the remainder of the golden decade about 500 people continued to make a living by reworking old ground with better appliances, but annual yields never again rose above 8,000 ounces. Although more than a dozen beaches were worked between Ross and Jackson's Bay the most intensive activities were carried out in the central part of the district, at Three Mile and Five Mile Beaches, south of Okarito, and at Gillepsie's Beach. Three distinct phases can be recognised in the progress of mining on the southern beaches. In the first phase thousands of men dug the shallow layers of

### MINING APPLIANCES 1868-69.

<table>
<thead>
<tr>
<th>District</th>
<th>Miles of Water Races</th>
<th>Crushing Machines</th>
<th>Steam Engines</th>
<th>Whips</th>
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<tr>
<td>Charleston</td>
<td>82</td>
<td>80</td>
<td>70</td>
<td>10</td>
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<td>Grey Valley</td>
<td></td>
<td></td>
<td></td>
<td>some</td>
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<td>Arnold, New River and Greenstone</td>
<td>143</td>
<td>4</td>
<td>-</td>
<td>-</td>
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<td>Cobden</td>
<td>?</td>
<td>1</td>
<td>5</td>
<td>?</td>
</tr>
<tr>
<td>Waimea</td>
<td>113</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Kaniere</td>
<td>81</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ross</td>
<td>25</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Okarito</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>1</td>
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### MINING APPLIANCES 1872-73.

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<tr>
<th>District</th>
<th>Miles of Water Races</th>
<th>No. of Stamp Heads in Crushing Plant</th>
<th>Steam Wheels Engines Whips Days</th>
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<td>Charleston &amp; Buller</td>
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<td>250</td>
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<td>Inangahaus</td>
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<td>75</td>
<td>-</td>
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<tr>
<td>Upper Grey &amp; Akaura</td>
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<td>-</td>
<td>15</td>
</tr>
<tr>
<td>Middle Grey, Arnold &amp; New River</td>
<td>283</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>Waimea</td>
<td>169</td>
<td>15</td>
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</tr>
<tr>
<td>Kaniere</td>
<td>41</td>
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</tr>
<tr>
<td>Okarito</td>
<td>55</td>
<td>-</td>
<td>19</td>
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</tbody>
</table>
washdirt which was barrowed or carried in bags to lagoons behind the beaches where it was washed in cradles or sluice boxes. After the rushes, the lagoon outlets were dammed and small races led on to the beach to work Californian pumps draining deeper workings and to wash the blacksand more efficiently. This phase is apparent in the statistical returns for 1868-9. Rich areas were sometimes found between old claims but after heavy freshes in the rivers the lagoons breached the sandbars, drained the reservoirs and brought mining to a standstill. In the third phase larger races were brought from inland sources to drive large water wheels for the claims below tide level, a trend reflected in the table for 1872-3. When these leads were abandoned beachcombers continued to work intermittently, cradling the small patches of blacksand which were thrown up after periods of heavy seas.

The Ross district, southernmost of the inland goldfields, was the only Westland instance of the deep lead alluvial mining so common in Victoria. The district was outstanding in the amount of capital invested in shafts, steam engines and pumping appliances. The Ross gold workings formed a compact district consisting of two rich flats, Jones' and Donoghue's, about two miles apart, with a line of workings on the spurs and gullies between. Jones' Flat was the richest piece of alluvial gold bearing ground in New Zealand and for some years it was the busiest and most intensively worked portion of the Westland goldfields. There were at least eight layers of washdirt resting on false bottoms and dipping steeply seawards. By virtue of these deep leads, Ross was able to maintain a large population for some years after the initial rushes and was the only town in Westland to show a substantial increase in population between the census years of 1867 and 1871. It is reported that five tons of gold, or 163,000 ounces, were recovered from the flat, most of it before 1873. At an average value of £4 per ounce, this

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40. West Coast Times, Aug 12th, 1866.
represents £652,000, or a return of £10,800 per acre for the
sixty acres mined. The first shafts with hand windlasses were
sunk near Donnelly’s Creek in the drier, upper part of the
basin-like flat. (See map of Ross Goldfields, Fig. 14). Horse
whims soon replaced manual haulage but as the workings went
deeper it became impossible to cope with the infiltration of
water and by 1868 steam drainage engines were installed. On
the deeper parts of the flat and beneath the business area of
the town itself, five acre leases were taken up by companies
employing as many as 60 men working day and night in ten hour
shifts. 42 Shafts were sunk to a depth of 300 feet and were
fitted with steam driven pumps which drained water from the
inter-connected workings and thus assisted the three dozen horse
whim claims further up the flat. Photographs taken at the time
show tall chimneys and poppet heads of shafts towering above
buildings in the town and a network of flumes feeding the sluice
boxes criss-crossed the flat in all directions, even extending
over the main street and business areas. At night the flat was
lit up by flare lamps and the town echoed to the incessant chatter
of steam engines. There were similar, although not so successful
shaft workings at Donoghue’s, (See Plate 14), while the spurs and
gullies between the two flats were worked by paddocking, tunnelling
and ground sluicing. When the deep level workings on Jones’ Flat
were abandoned after 1872 due to the inadequacy of the pumping
equipment, increasing attention was given to these hill workings,
and by the late seventies some of the most powerful hydraulic jets
in Westland were at work there.

During the golden decade Ross was the only part of the
Westland alluvial goldfields characterised by large companies
employing men on wages, and it seems to have been the only place
where a large private fortune was made from a speculative venture

42. Statement Shewing General Condition of Gold Workings in
County of Westland’, op.cit., p.xxxvi; and East Coast
Times, Aug.1st, 1868. The later reference has a very
full description of the mode of working in one of the
larger claims.
in alluvial mining. In 1872 Ross stood pre-eminent in the amount of capital invested in mining appliances. Machinery, water races and dams were valued at £132 per miner employed on the field compared with £77 per miner on the newly developed Inangahua quartz field. With the cessation of deep level workings the circumstances were soon reversed and by 1880 the Ross district was distinguished by a low value of mining equipment per man employed. (See map Fig. 27 b). As an illustration of the vicissitudes which may suddenly befall a thriving goldfield community, we cannot do better than quote the report of the district warden for 1873.

"The visitor of a few years back could scarcely recognise in its present lifeless and desolate aspect the place then teeming with life and activity. Where five steam engines were busily at work, nothing now remains but great heaps of tailings and skeleton poppet heads. Had capitalists had present experience to guide them, they would have put their money into races and water wheel pumps rather than steam power."

North of Ross moraine deposits extend almost to the shoreline and apart from some beach workings near Lake Mahinapua there was a 15 mile gap in the goldfields until the Hokitika Valley was reached.

The Kaniere District was more varied in character than Ross. The heart of the goldfield was the rich flat lying just to the west of the ridge of terminal moraine extending across the floor of the Hokitika Valley. This flat was worked principally by shafts with windlasses and horse whins but between 1933 and 1953 the whole of the ground was mined again at great profit by the electrically-powered Kaniere dredge. On the south bank of the Hokitika River, at Woodstock and Arthursatow, there were tunnel

43. M. Cassius, a German-born Hokitika business man is credited with obtaining 22,000 ounces of gold in two years' working of a deep level claim. (See, 'Report on the Gold Fields of New Zealand', 1906, p.109.) Part of the claim lay under the main street of Ross and the tailings heap near the site of the old shaft can still be seen near the town's court.

44. Comparable figures for the Charleston district could not be obtained from the official returns and comparison with this field is not possible.
workings in the terrace sides while on the high terraces on the north side of the river, from Hau Hau to Blue Spur, were found the southernmost of the raised beach workings in Westland. This area was mined principally by shafts and tunnels and the cemented black sands heated in kilns and crushed with heavy iron balls or small stamp mills. The full extent of the Kaniere goldfield was not determined until 1882 when gold was discovered at Rimu Terrace on the south bank of the Hokitika River. The circumstances were remarkably similar to those at Kumara - a late discovery on a densely timbered terrace high above a large river valley, and close to areas which had been prospected since the earliest years of the Westland gold rush. In view of the proximity of Kaniere to Hokitika, the main port of entry and source of supply to the goldfields, it is not surprising that many new methods when introduced to Westland, were first tried out in this district. The first instances of the co-operative working of adjacent claims were reported from Kaniere as were the first uses of horse whimis, steam engines, water-wheel pumps and 'cement' crushing machines. Many miners on their arrival in Westland first gained experience at Kaniere before trying their luck on the more distant goldfields, while the first Chinese mining claims in Westland were taken up in this locality. In many respects the busy flat workings adjacent to Kaniere Township, had a very similar appearance to Jones' Flat at Ross, with steam engines, huge water wheels, impressive fluming, and wooden tramlines radiating into the bush to provide timber for the boilers of the pumping engines. Distinctive features were the elevated tramlines running through the township itself from the shaft claims for discharging tailings into the Hokitika River. (See Plate 20).

The Waimea Goldfield, extending over some 35 square miles, between Kapitea Creek and the Arakura River, was less compact than Kaniere or Ross and showed greater variety in mining methods.

46. Wardens' Reports, J.P.W.C.C., 1874, p.42.
46. West Coast Times, August 15th, 1867.
47. Wardens' Report to Goldfields Commissioner, C.P.No.1322,1886.
and in the character of the gold-bearing deposits than any other alluvial field in Westland. The goldfield comprised an outer rim of moraine and river terraces with an inner zone of gold-bearing fluvio-glacial gravels carved into undulating hills. Waimea Creek ran transversely through the heart of the goldfield and on a tiny floodplain scroll of this stream was Stafford, principal town and administrative centre for the district. Gold was found in the creek beds and sea beaches, in alluvial flats and "cement leads" at the base of ancient sea cliffs and on spurs and terrace sides. The Waimea had a transitional character between the compact, intensively worked fields with a large investment in machinery and the less intensive fields employing simple methods. The district had the first sea beach workings in Westland; there were rich tunnel workings on Ballarat and Scandinavian Hills, numerous shafts on Piper's Flat and cement crushing machines on the Lamplough Lead, but the Waimea was best noted as a sluicing field and it was the scene of some of the first large hydraulic appliances in Westland. Yet until the late 1870s the Waimea was noted rather for the great number of hydraulic appliances than for their size and efficiency. In 1873 almost 900 small storage dams were recorded in the district compared with 63 in 1869, but the length of water races had increased very little and the recurrent complaint was still "water is needed to develop our resources". The caustic remarks of the district surveyor, Gerhard Mueller, depict conditions on the Waimea field but they indeed expressed the problem of the entire West Coast goldfields at that time:

"In some parts . . . the hillsides are so thoroughly cut up by paltry little races that it is impossible to get a supply of half a sluice head by going a less distance than three - sometimes four - miles. The drainage from every little knoll has been registered by two or more diggers; every one in the district holds a little water-right, and very few hold enough to work their ground to advantage, and fewer still can boast of a regular supply of water."

Unlike many Westland mining districts which experienced a rapid growth to a peak population followed by a steady decline,

the Waimea had a history of recurrent exodus and influx for at least three years after the initial rush. The district seems to have provided "unemployment relief" between the rushes elsewhere. Because of its central position on the Westland goldfields, handy to the main port and land routeways, the Waimea was a convenient jumping off place for new diggings while in the considerable extent of dissected terrace country the diggers could always be certain of finding ground which would pay for "tucker". Waimea was notable as the scene of the first extensive Chinese mining activity in Westland although their first few claims had been taken up near Kaniere. From a total of 18 Chinese in the Waimea goldfield in March 1872 the figure increased to 266 a year later, by which time the Chinese formed 22 percent of the district's mining population.

The Kumara Goldfield, unknown for more than a decade after the first Westland rush, showed in the late 1870's resemblances to scenes which on the other fields had then passed into memory. For several years after the Kumara rush in 1876, at a time when hydraulic sluicing was becoming predominant on the other fields, the Kumara deposits were worked by shafts and tunnels on account of the lack of a reliable water supply. In 1877 two-thirds of the claims were worked by tunnels and sluice boxes and the remainder by shafts and windlasses, while in 1880 Kumara had 26 of the 35 horse whim claims in Westland. Kumara was the most compact of the Westland goldfields, claims being grouped in a small contiguous area of about 600 acres, yet for its size it was the most productive of all the alluvial fields. Auriferous deposits lay in old out-wash channels beneath or just to the west of the group of terminal moraines which extend across the Taramakau Valley in crescentic ridges. Unlike Ross and Kaniere the problem of drainage of shaft claims did not arise at Kumara for the workings lay on a terrace.

49. This is apparent from a study of the fortnightly estimates of population contained in the Waimea district Warden's reports from 1865-67.
between 200 and 300 feet above the adjacent Taramakau River. Indeed no part of Westland was better fitted by terrain conditions for large scale sluicing operations. For six miles south of Kumara, high level terraces and smooth moraines made it an easy matter to construct large water storage dams, while the high level of the workings themselves gave ample fall for discharging tailings into the Taramakau River. The river was a natural sludge channel into which vast quantities of spoil could be disposed without fear of litigation by agricultural interests as frequently happened in Otago and California. However, the promise of successful sluicing operations at Kumara did not become reality until the 1880's.

The Grey District, for the purposes of this account, included all the gold workings from the Taramakau River to the head of the Grey Valley. It included the Greenstone and New River goldfields as well as the diggings in the watershed of the Grey. The political division between the provinces along the Grey and Arnold Rivers did not reflect any contrast in the character of the gold workings, yet at one time two different sets of goldfields regulations were in force on either side of the boundary. Greymouth was the administrative centre for the area between the Taramakau and the Grey-Arnold Rivers, while the wardens' offices at Cobden and Arahura served the Nelson portion of the district. There were blacksand workings on the sea beaches between the mouth of the Taramakau and Point Elizabeth and "cement" leads inland between Rutherglen and Wohhman's, but the distinctive feature of the Grey district was the great extent of comparatively poor auriferous ground in the glacial outwash gravels. The gold country consisted of finely dissected gravel hills rising to 1000 feet with fringing suites of terraces. Creeks were generally bordered by cliffs of sandstone or mudstone surmounted by the gold bearing gravels thus making it comparatively easy to remove the wash dirt by driving or sluicing, but it was difficult to find nearby sources of high pressure water. Tunnelling and ground sluicing were the predominant methods of mining in the Grey district during the
golden decade and apart from the cement workings near Greymouth the district had no steam engines or crushing machines. In contrast to some of the southern fields, workings were on a small scale and widely dispersed and in 1868 the area had no public companies or leases of large blocks of land for mining purposes. 51 It was not that co-operative effort would have been unrewarding in the Grey district, but in the early years when communications were difficult and the cost of living high, the capital available for investment in mining enterprise was chiefly derived from the mercantile community at Hokitika and was attracted to the richer deposits near that town. The Grey district was handicapped, perhaps to a greater degree than any of the other Westland goldfields, by the lack of a reliable water supply for sluicing. It is from this district that complaints about dry weather were loudest and most frequent and it was stated that after a week of dry weather most miners were idle. 52 The dissected hills near the workings had little flat summit surface to serve as high level storage sites for rainwater and the flow in the numerous little creeks soon dwindled in fine weather. By 1872 the district was less backward in its mining techniques than in 1868 and operations were being conducted on a larger scale. There were more than two dozen water wheels for draining creek-bed claims, tunnels had been driven 1,000 feet or more to trace gold bearing wash, some 700 small dams had given a measure of control over water supplies, and construction was proceeding with a 16 mile water race from Lake Hochstetter to Nelson Creek, for the first large, government-constructed race in Westland. The cultivation of crops on the fertile alluvium of the Grey River floodplain at Totara Flat made for lower living costs in the Ahaura and Middle Grey goldfields, especially the price of horse feed for animals used in working claims and bringing supplies to the mining camps. There were more than

51. 'Statement Shewing the General Condition of the Gold Workings in the County of Westland', op. cit., 1863, p.xxxiii.
52. loc. cit.
1,200 acres under oats in the middle Grey Valley in 1873, and
200 acres in potatoes and 1,250 acres in sown pasture. But
improvements in mining techniques and living conditions failed
to check the declining gold returns and a series of disastrous
floods in 1872 followed by a prolonged drought in 1873 had a
depressing effect on the Grey goldfields. The Beafton quartz
mines were a magnet to the dishuntardated alluvial diggers and in
the wake of the departing Europeans there came a steady inflow
of Chinese miners taking up the abandoned ground.

The goldfields of the Charleston-Westport District
comprised blacksand workings on the sea beaches and on elevated
terraces inland where lenticular layers of buried ironstone marked
ancient shorelines. The gold workings, discovered at a
comparatively late stage in the Westland rushes, extended in a
broken line from Brighton in the south to Mokihinui in the north
with Charleston and Westport serving as administrative centres
for the district. Brighton and Mokihinui at the extremities
of the line of diggings, had a brief but spectacular boom and
quickly fell into decline but production was maintained for a
longer period at Charleston and Addison's. The notable feature
of the mining landscapes was the great number of cement crushing
machines powered by steam engines and water wheels, while the
general landscape of the district was unique in its background
of treeless open plains in marked contrast with the forested
setting of the other Westland goldfields. Successive terraces
rose as bleak tablelands to a height of 300 feet and were
separated by streams entrenched in forested gullies. The high
level terrace surfaces gave favourable sites for water reservoirs
both for sluicing and for operating the crushing batteries. In
some places, notably at Charleston and Brighton, where the black-
sand deposits were overlain by a shallow overburden of marine
sands and gravels, the claims were worked by open 'paddocks', but
in other cases, especially at Addison's and the terraces north
of the Buller River, the leads were buried sixty feet or more
and had to be driven out by shafts or tunnels. Charleston, the

53. 'Wardens' General Reports', V.A.P.N.P.G., 1873, p.31.
most intensively worked of the goldfields in the district, showed within a small area most of the features typical of the district as a whole. During the phase of surface workings in the first few months of the Charleston rush it was found profitable to wash even the fibrous surface soil and roots of plants for gold, but soon the deeper layers of rusty-brown iron sand and 'cement' became the mainstay of the diggings. At first the auriferous cement was heated in crude kilns and crushed manually by pounding with wooden beaters. Later, horse driven crushing plants were introduced and by 1868 crushing batteries employing steam or water power were in general use. As late as 1873 the crushing power of the Westport-Charleston batteries, expressed in the number of stamp heads, was more than three times that of the quartz batteries in the Inangahua and Lyell districts. Much of the gold, being coated with iron oxide, was not recovered at the battery amalgamating tables and was carried along the tail races to the sea until, liberated from contact with the iron, the gold particles were washed up on the beaches to be gathered by the quicksilver cradles of the beachcombers. At Charleston and Brighton the auriferous marine gravels sometimes lay directly above thick seams of low quality coal and Westland's first open cast coal mines were pits worked by pick and shovel to supply the batteries and domestic fuel at these mining towns. Probably in no other part of the Westland goldfields was there such a complexity of rights held to water supplies, and other mining privileges as at Charleston. The legal and administrative problems there reflected the great diversity of natural and man-made features of local geography. (See map Fig. 7b). Bald knolls of gneissic granite were found in close association with gravel terraces and streambank exposures of Tertiary sandstones,

54. 'Nelson South-West Gold-Fields; Commissioner's Annual Report', V.A.P.N.P.C., 1868, p.20.
55. West Coast Times, Aug. 2nd, 1867.
57. 'Nelson South-West Goldfields; Wardens' General Reports', V.A.P.N.P.C., 1872, p.5.
shales and coal seams. Within a mile radius of the town of Charleston was a confusing assemblage of shafts and open paddock gold workings, abandoned tailing heaps, coal leases, water races, dams and fluming, steam engines and the cumbersome wooden water wheels of the stamper batteries, clumps of bush, spots of river-bank cultivation, residence sites, roads and wooden tramlines. Workings and water races even extended between buildings in the town of Charleston itself and the discharge of tailings soon rendered useless the small harbour of Constant Bay.

The Inangahua Goldfields were made up of three contrasted groups of workings - small scale alluvial diggings in the creeks draining the fluvo-glacial terraces on the eastern side of the Inangahua Valley, quartz lode workings at Reefton, and quartz and alluvial workings at Iyell. The alluvial gold deposits of the Inangahua were of comparatively low grade and were considered all but exhausted by 1870 when attention was turned to the lodes in the mountains. However, the over-rushing of the Reefton field and the limited employment offered by the quartz mines in the early years stimulated a thorough re-working of abandoned alluvial claims, principally by ground sluicing. Of approximately one thousand Inangahua miners in 1873 only one half were employed in quartz mines. By the late 1870's much of the poorer ground had been taken up by Chinese miners but the creek diggings were again worked from time to time by Europeans during temporary recessions in the quartz industry. It was the quartz workings, however, which set the Inangahua goldfields apart from all the others in Westland. The first mines in the Reefton district were at Murray Creek on spur 2,000 feet above sea level and two miles east of the town. There were seven quartz crushing batteries at work here in 1873 and others were under construction at Boatmanson and Larry Creek, four and seven miles to the northeast respectively. These areas, together with the Crushington group of mines lying between Murray Creek and the Inangahua River, were responsible for virtually all the Reefton quartz output during the 1870's. A number of claims were taken up at

Morrijigs and Globe Hill to the south of the Inangahua River in 1876 but these districts did not give significant returns until the 1880's. The mountainous relief of the lode country favoured the development of mines by adits driven into the hillsides but stupendous efforts were sometimes required in bringing machinery to the reefs. For the Ajax mine, massive stamp boxes and a four ton boiler had to be manhandled up a steep forested hillside to the battery site, 1,500 feet above Murray Creek. Early crushings from the weathered free milling ore gave what was thought to be handsome returns but recovery methods were inefficient and much gold was unwittingly lost in tailings discharged into the Inangahua River. The few companies who had the unusual foresight to stack their battery residues were well rewarded in later years when the tailings were treated again with more efficient appliances. The Reefon goldfield was favoured with an abundant supply of timber for supports in the underground workings and with easily tapped sources of water power and coal near at hand. Infaulted and downwarped strips of coal measures containing good steam coal were found in such close proximity to the lodes that some mining companies worked coal and gold mines on adjacent leases. Coal workings had commenced in the thick seams of Murray Creek as early as 1872 when a short tramway conveyed fuel to the boilers of a quartz crushing battery. The coal was won from the outcrop by driving or opencast methods but in a typically haphazard manner, thus inaugurating a history of wasteful and inefficient working which in some respects has characterised the Reefon Coalfield to the present day. At Lyall the quartz workings lay on the flanks of a mountain torrent tributary to the Buller River and access to the mines lay up a narrow track with log bridges and ladder gangways. The quartz lodes consisted of small but remarkably rich veinlets which

60. Inangahua Herald, Sept.11th, 1873. J. Henderson: opcit. p.213 states that the first coal was mined in Murray Creek to supply the Ajax battery late in 1870, although the first record of quartz crushing in the Warden's reports is for 1872.
62. West Coast Times, Aug.5th, 1870.
petered out within a short distance of the surface. Unlike Reefton, only one mine at Lyell was worked to a considerable depth below the outcrop. The numerous gold bearing leaders were intersected by horizontal tunnels driven high on the hill slopes and the quartz was run down shoots to stamper batteries in the valley. The plant of a typical Lyell gold mine comprised a tramway connecting several adits to an ore shoot which stood on timber piles at an angle of 45 degrees. The shoot led three-quarters of a mile to the valley floor where a crushing battery of eight stampers was driven by a water race from Lyell Creek.

Unlike the other goldfields of Westland, the Inangahua lode country in the 1870's was still in the development stage and the fruitful years of peak production were yet some decades away.

It is apparent from this survey that despite many general similarities in the Westland goldfields during the first decade of their exploitation there are significant contrasts to be drawn between them. The differences arise in part from the terrain and the mode of occurrence of the gold bearing deposits on the individual fields and partly from the varied combinations of mining appliances used to work them. Statistics of gold returns were unfortunately not collected for separate districts in the early years to allow a comparison of their relative productivity. After the golden decade, as yields progressively declined and hydraulic sluicing became the general method of alluvial mining, the regional differences which we have described became less apparent and the landscapes of the Westland gold country came to be stamed in a more uniform mould.

The output of Gold. For almost 30 years, from 1865 to 1894, the production of the Westland goldfields surpassed that of Otago or the Coromandel Peninsula, the single exception being

63. Henderson: op.cit., p.128. The Alpine Mine at Lyell, which worked continuously from 1872 to 1893, reached a depth of 1200 feet, whereas eight of the Reefton gold mines exceeded this depth.
64. Inangahua Herald, April 8th, 1872.
1871, the bonanza year at Thames. The relative importance of Westland during the gold rush era can best be seen in a comparison of the output of the three major New Zealand goldfields during their respective first decades of production. Westland, in the first decade of production accounted for 57 percent of the New Zealand gold output, surpassing that of the other fields in their first ten years. Although its highest annual output, in 1866, was somewhat less than the Otago peak in 1863, the decline in Westland was less rapid and values remained above a million pounds annually for six years compared with four in Otago.

<table>
<thead>
<tr>
<th>Goldfield</th>
<th>Million Ounces</th>
<th>Value</th>
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<tbody>
<tr>
<td>Otago (1861-70)</td>
<td>2.563</td>
<td>£10,583,000</td>
</tr>
<tr>
<td>Westland (1865-74)</td>
<td>3.105</td>
<td>£12,291,000</td>
</tr>
<tr>
<td>Coromandel Peninsula (1868-77)</td>
<td>1.126</td>
<td>£4,110,000</td>
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In Otago the gold bearing alluvium was of finer texture and would be worked more rapidly by simple equipment than the boulder-strewn wash dirt and compacted gravels so common in Westland. Thus the relative difficulty of working the Westland deposits may account for the longer period of high returns there but the startling fall in Westland production after 1864 can be attributed more to the Marlborough and Westland rushes than to the working out of its gold deposits. The peak of production in Westland was reached within two years of the first rush compared with three years in Otago where in the first year only one field, the Tuapeka, was in production. Had it not been for the easily won harvest from the blacksand beaches the Westland peak would probably not have been reached in 1867. Gold returns fell off sharply between 1866 and 1872 and then more gradually until the end of the century although there were slight upward trends in 1873 and 1877 resulting from the new discoveries at Reefton and Kumara. It was not until 1895 with the gold dredging boom in Otago and the application of the cyanide process to the complex Chinemuri ores of the

65. There is an informative graph of annual production by goldfields from 1857 to 1928 in J. Henderson; "Gold in New Zealand", M.Z.J.S.T., Vol.XII, No.3, Dec.1930, p.161. Henderson's summary table on page 160 is obviously incorrect, giving a much higher value for detrital gold from Nelson than is indicated on the graph. A table with annual statistics of goldfields production appeared for many years in the Mines Statement of the Appendices & Journals of the House of Representatives.
Fig. 14d. Output of major New Zealand goldfields in the first fifty years of production. In the gold rush peaks of the 1860's and 1870's easily-recovered alluvial gold and the free-milling bonanza ore at Thames in the Coromandel Peninsula were recovered by thousands of diggers using simple appliances. The reduced production in the last 25 years of the century came mainly from hydraulic sluicing in the South Island. The second boom in production during the early twentieth century was due to technological advances - gold dredging in the South Island and the use of the cyanide process on the complex, low-grade ores of the Coromandel Peninsula.
Coromandel Peninsula that Westland was to be relegated to third place among the New Zealand goldfields.

During the first decade of production the Nelson South-west Goldfields were responsible for two-fifths of the total Westland gold output. Forty-eight percent of the total was exported through Hokitika, most of this being produced south of the Taramakau River. A further 13 percent was shipped through Greytown, being the produce of the West Canterbury and (after 1867) the County of Westland goldfields between the Taramakau and the Grey-Arnold Rivers. Westport accounted for 13 percent of the total gold export while the remaining 20 percent was shipped through Greymouth from the southern part of the Nelson goldfields.86 Reefton bullion was chiefly exported through Greymouth.

Returns of the average gold yield per miner are subject to the limitations of population estimates, but it appears that in Westland the average returns at the height of the boom were only slightly less than in Otago's best year, although substantially less than the best year in Victoria when, in 1862, gold to the value of £338 per miner was recovered.87 The average number of miners in Otago was estimated by Vincent Pyke to be 14,000 in 1863,88 giving an average yield of £170 per man.

Assuming the figure of 12,800 miners in Westland given in the official census of 1867 to be correct, the average yield for that year was £157 per man. If, as there are good reasons to suspect, another one thousand miners were not enumerated in the census the value would have been £146. In Otago by contrast, in the same year the output was only £107 per man. Hope dies slowly on a goldfield. For the three years, 1872-74 the yield declined to an average of £30 per man and fluctuated near that figure for more than a decade before falling to £39 per man in 1887. The proportion of this sum available in wages for working

86. Figures are compiled from annual returns in Statistics of New Zealand.
87. Vincent Pyke in 'Departmental Records', V.& P.O.P.C., 1862, p.19, quoting a report of the Secretary of the Mining Board of Victoria.
miners would have been substantially less than during the rushes, since dividends to non-working shareholders in the larger companies and interest payments on machinery, dams and water races absorbed a larger percentage of gold production than previously. This would suggest that many alluvial miners were prepared to accept progressively lower standards of living in order to retain the independence and freedom of a life they were familiar with and enjoyed. On the other hand the cost of provisions on the goldfields became cheaper with improvements in communications and a substantial proportion of the remaining alluvial diggers were Chinese content with a modest subsistence.
## ANNUAL PRODUCTION OF MAJOR NEW ZEALAND GOLDFIELDS

(Thousand Cunces)

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<th>Coromandel Peninsula</th>
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<td>1862</td>
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<td>62</td>
<td>100</td>
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<td>1889</td>
<td>64</td>
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<td>1890</td>
<td>63</td>
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<td>1891</td>
<td>87</td>
<td>109</td>
<td>45</td>
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<td>1892</td>
<td>82</td>
<td>103</td>
<td>46</td>
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<tr>
<td>1893</td>
<td>78</td>
<td>99</td>
<td>46</td>
</tr>
<tr>
<td>Year</td>
<td>Otago</td>
<td>Westland</td>
<td>Coromandel Peninsula</td>
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<tr>
<td>1894</td>
<td>76</td>
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<td>1909</td>
<td>120</td>
<td>95</td>
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</tr>
<tr>
<td>1910</td>
<td>100</td>
<td>92</td>
<td>286</td>
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</table>
Apart from the gold workings the main evidence of human activity to be seen in the landscapes of gold rush Westland were the towns and townships. Since the beginning of European occupation the population patterns in Westland have shown a marked tendency towards urban or clustered settlement in small townships. Dispersed rural settlement has always formed a comparatively small proportion of the total population. It is difficult to estimate the "urban" dwelling percentage of the gold rush population as the census returns of 1867 and 1871 give no record of the smaller centres. The three commercial towns of Westport, Greymouth, and Hokitika alone contained 30 percent of the population in 1867. In 1871, these three towns together with Charleston and Ross, accounted for 40 percent of the total population whereas in 1874 the three towns and eleven principal townships contained 50 percent of the people.

These figures do not give a full measure of the importance of nucleated settlement during the golden decade since many small centres, unrecorded in the early censuses, were "urban" in character. Apart from the half-dozen towns and townships of more than 500 people, the typical unit of settlement in Westland was the small township or mining camp - sometimes containing a few hundred people but often less than a hundred. There were about 80 of these small settlements during the golden decade and together with the larger towns they contained the bulk of the region's population. It is probable that dispersed population living in scattered diggers' tents and huts did not amount to more than one-fifth of the total.

The map of goldfields settlements in north Westland (Fig. 14b) shows the distribution and functions of towns and townships which owed their origin to gold mining. Eightyseven of the settlements were established during the golden decade and another twelve appeared after 1875, seven of them in the Reefton quartz field. Three of these, Kirwan's Hill, Waiuta and Alexander Mine, did not develop until the twentieth century. Settlements were most numerous in the long narrow belt of inland
gold country between Ross and Lyell. Two areas had a relatively high concentration of settlements, near Reefton and on the alluvial gold workings between Hokitika and Kumara. Many of the mining camps shown on the map in the Reefton district were not established until after 1880 and were distinctive for their high-altitude sites. The Hokitika-Kumara area was probably the most productive part of the alluvial goldfields in the first decade and the pattern of ridges and valleys and the distribution of the gold deposits favoured the growth of a closely spaced pattern of small settlements. In the Buller coastlands, by contrast, the number of settlements was remarkably small compared with the peak population of the area. The Buller had only ten urban settlements in 1867 but the district had about 30 percent of the Westland population. The concentrated nature of the gold deposits on sea beaches and on level terraces favoured the growth of large mining towns rather than numerous scattered clusters of settlement. In South Westland there were few townships. Okarito alone had any stability, although bustling townships of calico flourished for a few months on the ocean beaches at Three Mile, Five Mile, Gillespie's and Haast.

Town Sites and Functions.

There is no satisfactory quantitative measure of the functions of settlements in gold rush Westland so a qualitative and descriptive classification must be adopted. On the map five types of settlements are distinguished according to the functions they performed. The three "Class I" settlements, Hokitika, Greymouth and Westport, were seaports and the gateways to the goldfields. They are best described as commercial towns being characterised by a predominantly non-mining population. Hokitika, Greymouth and Westport were regional centres providing distributing, retail, administrative, social and even some industrial services for the goldfields of their hinterlands. Contemporary writers were greatly impressed with the dozens of hotels and grog shanties which gave refreshment and accommodation of a sort to the large floating population of miners "on the spree" or in transit to new diggings; however, the prosaic buildings such as warehouses,
bonded stores and banks were a truer indication of the functions of these three towns in the economic life of Westland. Hokitika and Westport had administrative status as provincial sub-capitals for the West Canterbury and Nelson Southwest Goldfields respectively during the three year period of administration by Goldfields Commissioners. Hokitika became the capital of the independent county government in 1868 and was the capital town of the short-lived Province of Westland.

The trade hinterlands of the three towns as at 1868 have been defined on the map of goldfields settlements, the information being derived chiefly from the local newspapers for that year. The boundaries fluctuated in the course of time, the principal long term changes being the expansion of the hinterland of Greymouth into territory formerly supplied from Westport and Hokitika. In 1868 Westport supplied the Buller coastlands and the small scattered population of alluvial miners in the upper Buller and Inangahua Valleys. The Brighton diggings, approximately halfway between Greymouth and Westport, were at that time a sphere of intense trade rivalry between the two towns. The only land routes were by packhorse and most supplies were landed on the beach by small sailing craft out of Greymouth and Westport. With the sudden exhaustion of the Brighton gold deposits and the opening up shortly afterwards of the Reefton quartz field, the zone of trade rivalry shifted inland. In the sixties and early seventies the high freight costs up the Grey Valley by boat and across the Inangahua saddle by packhorse made it difficult for Greymouth merchants to compete in the Inangahua district. When the railway to Brunner and a dray road from there to Reefton were constructed in the late seventies, Greymouth secured a firm foothold in the trade of the Inangahua Valley, and Westport suffered eclipse. The hinterland of Hokitika in the 1860's extended north of the Taramakau River at two points to include the Greenstone district and Bell Hill, northeast of Lake Brunner. The Greenstone district was more

accessible to Hokitika than to Greymouth until a dray road was made across the ridge between the Hohonau and New River watersheds. At Bell Hill, an isolated diggings supporting about 50 miners, the Hokitika hinterland made a deep salient into the Nelson Southwest Goldfields. This area was not accessible from the Grey Valley and supplies were taken from Hokitika by waggon along the Christchurch road to the "Paddock" near Lake Brunner. From there the goods were carried by boat across Lake Brunner and up the Crooked River to Lady Lake and finally reached Bell Hill by horse track. To the south, the Hokitika hinterland extended as far as Jacksons Bay and an irregular steamer service provided a tenuous link with the blacksand miners on the southern beaches. Then as now, Hokitika had the most attenuated hinterland of any town of comparable size in New Zealand. The Kumara gold rush took place near the boundary of the Hokitika and Greymouth hinterlands and for a time there was vigorous trade rivalry between the two towns on the new diggings. Greymouth was more successful and by the late seventies Hokitika had been shorn of the Greenstone salient as well as Kumara on the south bank of the Taramakau.

The class II townships shown on the map were district centres serving smaller hinterlands than the three commercial towns. They fell into two groups, administrative and distributing towns and mining townships. Cobden and Ahaura were the only two townships in the first group. Cobden, on the north bank of the river opposite Greymouth, was the first administrative headquarters for the Nelson Southwest Goldfields. Because shipping facilities were much better on the south bank, Cobden never competed with Greymouth commercially and throughout the golden decade its population did not exceed 200. It was essentially a political feature of the Westland landscape. But for the provincial boundary along the Grey River the town might not have been established. As it happened, the first important rush into the Nelson goldfields took place at the southern extremity of the province and Cobden was the only convenient place to establish the headquarters of the police and the offices of the goldfields wardens. Cobden did play a minor commercial role in supplying
the beach diggings to the north of the town, but the goods were
all landed first at Greymouth, and in 1867 there were only eight
commercial establishments listed in a business directory for
Cobden. 2 Ahaura was the supply centre and warden's and police
headquarters for the goldfields of the middle and upper Grey
Valley. It was not on a goldfield itself but was the main
terminal for boat traffic up the Grey River and each morning
strings of loaded packhorses set out from the town for the up-
country diggings.

The second group of class II townships combined the
functions of mining camps with those of distributing centres
and administrative headquarters for a neighbouring group of
gold workings. Stafford served a hinterland of approximately
35 square miles although the others served a more restricted
area. The townships had banks, the offices and courts of
the district mining wardens and police camps; at the height of
their prosperity five of the seven towns, Charleston, Reefton,
Kumara, Ross and Okarito published their own newspapers. These
towns were located on goldfields and a large proportion of their
population consisted of miners. It was their administrative,
social and re-distributing functions which distinguished them
from the mining camps.

The class III settlements, the mining camps and
distributing camps were single function townships. The mining
camps were clusters of diggers' huts together with hotels and
shops supplying the immediate neighbourhood. They lacked social
and administrative services and had virtually no hinterland. Here
size was no criterion of the functional status of a goldfields
township. Brighton, Nokihinui, St. Kilda, and Five Mile Beach,
were large townships of spectacular mushroom growth. At one
time Brighton ranked fourth in Westland in the number of
commercial establishments, but none of these towns had any hinter-
land. All of them were short-lived and their decline was as
sudden as their growth. The distributing camps grew up on
trade routes at points where goods were transferred from river

2. Chapman's New Zealand Almanac and Directory, Melbourne, 1867-68.
LIST OF GOLDFIELDS TOWNS AND SETTLEMENTS. (Key to Fig. 14b)

District Centres: Name and alternative names with date of establishment of town.

Charleston, or Pakihi 1866
Reshton 1871
Cobden 1865
Ahaura 1865
Kumara 1876
Stafford, or Halfway Township, or Peg Leg, or Stafford's Halfway 1865
Kaniere 1865
Ross or Totara 1865
Okarito (In South Westland) 1865

Mining Camps and Distributing Camps:

1. Mokihinui or Kynnersley or Waimarie
2. Waimangaroa
3. Fairdown
4. Caledonian Terrace
5. Lyell
6. Berlins
7. Addison's Flat, Waite's Pakihi or Skibereen
8. Crominville
9. Inangahua or Christie's Junction
10. St. Kilda
11. Brighton or Fox's
12. Barrytown
13. Inangahua Landing
14. Colinton or Larry Creek
15. Capleston or Boatsmen's or Georgetown
16. Kirwan's Hill (established 1880)
17. Kynnersley or Fern Flat
18. Cement Town or Murray Creek
19. Black's Point
20. Crushington
21. Soldiers
22. Progress Junction
23. Globe Mine or Corishtown
24. Merrijigs
25. Big River (established 1887)
26. Squaretown
27. Antonio's Flat
28. Adamstown
29. Blackwater
30. Waipata (established 1906)
31. Alexander Mine (established 1924)
32. Granville
33. Noble's
34. Napoleon's Hill
35. Orwell Creek
36. Little Grey Junction
37. Totara Flat
38. Sullivan's
39. Callaghan's
40. Moonlight
40a. Upper Moonlight
41. Upper Blackball
42. Candlelight
43. Hatter's Terrace or Nelson Creek
43a. Camptown
44. Twelve Mile Landing
45. Redjack's
46. Notown
47. Paddy's Gully or Kangaroo Creek
48. Arnold Landing
49. Bell Hill
50. Orima or Maori Gully
51. South Beach
52. Paroa or Saltwater
53. Lagoon Township
54. Rutherglen
55. Marsden or Victoria Lead Township
56. Nemona or Noname
57. Dunganville or Maori Creek
58. Cliffton or Eighteen Mile Township
59. Teremakau Township or Whitcombe
60. Greenstone or Pouama
61. Hohonu Township
62. Dillmanstown
63. Larrikins
64. Callaghan's
65. Chesterfield
66. Scandinavian Hill
67. Goldsborough or Waimea Township
68. Piper's Flat
69. Six Mile Beach Township
70. Arahura River or Lagoon Township
71. Ballarat Hill
72. Fox's
73. Humphrey's
74. Blue Spur
75. Hau Hau or Big Paddock
76. Arthurtown
77. Woodstock
78. Rimu
79. Donoghue's
80. Totara Lagoon
81. Redman's

In South Westland and not shown on the map of Goldfields Settlements:

Three Mile Beach
Five Mile Beach (both south of Okarito)
Gillespie's Beach
Haast
boat to packhorse or at ferry sites at the mouths of rivers. They were clusters of packers' shacks, grog shanties and accommodation houses on routes of travel. Nine of the 13 townships in this group were in the Inangahua and Grey Valleys where heavy goods were brought in from the seaports by river craft but where the gold diggings themselves were beyond the limits of navigation. Thus Inangahua Landing was the upper limit of river navigation on the route from Westport to Reefton. Twelve Mile Landing was the transhipment point for the Notown diggings (see Plate 7), and Totara Flat and Hohonu performed the same function for the Granville and Greenstone diggings respectively. Some of the distributing townships were as ephemeral as the mining camps they served. The Totara Lagoon Township lost its raison d'etre when the lagoon, used for boat traffic, was drained off by a breach in the sea beach during a storm. The township of Kynnersley on the north bank of the Waiaha was the distributing centre for the early alluvial workings in the Inangahua Valley but with the shift of interest to the Murray Creek Lodes in the early seventies it was abandoned for Reefton. The only settlement in Westland during the golden decade which did not owe its origin to gold mining was Brunner, which at this time was merely a cluster of workmen's huts near the mine mouth (plate 25).

Riverbanks, beach ridges and terrace surfaces were the principal sites of settlement. Riverbank sites were the most numerous, a reflection of the dense forest cover and the use of the river beds as the first routeways. Sometimes the sites of townships were selected by the mining wardens but more frequently the smaller townships sprang up hastily on sites selected by the spontaneous action of the storekeepers and diggers. Because of the high proportion of riverbank and beach ridge sites most of the goldfields towns suffered from floods or high seas. Only three settlements were established on hilltop sites during the golden decade - Scandinavian and Ballarat Hill in the Waimea district and Napoleon's Hill (Plate 22). Most of the late discoveries of gold were made at high altitudes and hilltop and terrace sites formed a high proportion of the goldfields towns
established after 1875. Some settlements had an upper and lower township on terrace and river flat such as Ross, Greenstone, Nelson Creek, and Ahaara, or on marine terrace and sea beach as was the case at Brighton and Charleston.

Classification of Sites of Westland Goldfields Towns and Townships.

<table>
<thead>
<tr>
<th>Terrain of Site</th>
<th>Number of Towns Established Before 1875</th>
<th>Number of Towns Established After 1875</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand beach</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>River bank and river flat</td>
<td>49</td>
<td>2</td>
</tr>
<tr>
<td>Terrace</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Dual sites</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>Hilltop</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Another method of classifying the settlements of gold rush Westland is by commercial rank according to their number of business establishments and hotels. A New Zealand business directory for 1867-68 lists all the commercial enterprises in most of the larger and many of the smaller towns. The newspapers and an official list of the Grey Valley settlements help fill the gaps but information is lacking on three important townships, Addison's Flat, Kaniere and Okarito. When the settlements are plotted on a graph in order of commercial rank, there are several gaps in the progression from large to small centres which suggest a classification in four major rank groups.

Classification of Westland Goldfields Settlements According to Commercial Rank

<table>
<thead>
<tr>
<th>Rank Group</th>
<th>Towns and Townships with number of commercial establishments including hotels in brackets</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Hokitika (394)</td>
</tr>
<tr>
<td>II</td>
<td>Charleston (194), Greymouth (164), Brighton (143), Ross (119), Stafford (85), Westport (73), St.Kilda (55).</td>
</tr>
<tr>
<td>III</td>
<td>Pipers Flat (32), Goldsborough (23), Nelson Creek (20), Waimea Track (17), and probably Addison's Flat, Greenstone, Kaniere, and Okarito</td>
</tr>
<tr>
<td>IV</td>
<td>All other townships ranging from Scandinavian Hill and Redjacks (12 each) to Notown, Antonio's and Blackball (2 each)</td>
</tr>
</tbody>
</table>

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It would be unwise to set much store by conclusions reached from this classification since the varying fortunes of the goldfields produced constant changes in the commercial rank of individual towns. However, it does provide the one objective measure of the relative importance of the goldfields settlements and gives a "snapshot" of the urban geography of Westland about the time of its maximum population and gold output. General stores and hotels, most of them grog shanties with little provision for accommodation, formed the highest proportion of commercial enterprises in all settlements. The higher ranking townships had the greater range of commercial services. Hokitika stands out clearly as the pre-eminent commercial centre of the goldfields. It had twice as many commercial establishments as Charleston, the town second in rank.

Hokitika provided a full range of urban services. Hotels and eating houses accounted for 25 percent of the commercial establishments and wholesale and retail shops and warehouses for another 40 percent. "Industrial" activities, varying from saw-milling, brewing, bread baking and blacksmithing to handicraft industries such as footwear manufacture, building and construction and tinsmithing made up 20 percent of the commercial enterprises. Financial services formed six percent of the total and medical and personal services five percent, a higher proportion than in any other town in Westland.

The second rank group, with seven settlements, included two commercial towns with extensive hinterlands, three mining towns with more restricted hinterlands and two mining camps supplying a population in or immediately adjacent to the town site. The figures for Brighton and St. Kilda given in the table are abnormally high since the information for the directory was collected at the peak of the boom on the Buller coastal gold-fields. In addition to the large number of hotels and retail stores, the towns of this group had banks and medical services, newspapers (except for Brighton and St. Kilda), a number of blacksmiths and craftsmen as well as bakeries, breweries and cordial manufacturing plants. Townships in the third rank group
lacked financial, medical, and social services and "industrial" activities were limited to baking and blacksmithing. The towns-
ships in the fourth group consisted of little more than stores and hotels with an occasional bakery. The mining camps were
distinguished by a higher proportion of stores than hotels whereas in the distributing camps on communication lines the
reverse was the case.

The remarkable speed with which towns sprang up was a feature common to all the settlements in Westland. Haast's
party, approaching Hokitika in 1865, "could hardly conceal
(their) astonishment that in so short a time so large a town
could have sprung up", where a year before there had only been
a desolate sandy beach. Charles Money wrote of the growth
of Stafford "in the heart of a dense and almost untrodden bush a
street had arisen as if created by the magic wand of an enchanter.
Swift as the walls of Aladdin's palace, stores, shanties, public
houses, butchers and bakers were to be found on every side".
The rapid formation of Brighton was notable even in the annals
of goldfields. About five thousand people rushed the district
and in less than a fortnight a mile long street of closely packed
buildings had been formed. At Mokihinui there was a great
spurt of activity for a few weeks as hotels and stores were
hastily erected. However, the blacksand leads there were
quickly exhausted and formation of the town was abruptly
checked before many of the buildings were completed.

Many townships had alternative names and some place names,
well known to the gold rush community have since disappeared
from the nomenclature. Stafford was known successively as
Peg Leg or Halfway Township, then as Stafford's Halfway and
finally Stafford. Mokihinui, Addison's Flat and Capleston had
three alternative names while 18 townships had two

6. Superintendent's Address to Provincial Council, V. & P.N.P.C.
1867, p.3.
7. This was also a notable feature of the California gold country.
See H. F. Raup: 'Place Names of the California Gold Rush',
alternative names in common use. Some towns were officially renamed when they were surveyed several years after their establishment but the original miners' name was often retained in popular usage. Thus Ross was commonly referred to as the Totara; the official names for Maori Gully, Maori Creek and Greenstone were Orima, Dunganville and Pounamu respectively but these did not gain popular currency. In the Grey Valley the European names for some of the distributing camps have been replaced by earlier Maori names for the localities; thus Twelve Mile Landing has become Kamaka, and Camptown, Ngahere; Arnold Landing is known as Kokiri, Lower Moonlight as Atarau, and Squaretown as Maimai.

Town Patterns and Urban Landscapes.

The three commercial towns in Westland had many striking similarities. All were established at river mouth sites and had their first buildings among driftwood on the sand dunes. The busiest part of the commercial area in each town faced the river-bank quayside. The towns were subject to the frequent ravages of sea, fire and flood. The greater part of the original commercial area of Westport was swept away by floods in the Buller River in 1872. There was also a grave fire hazard created by the closely packed wooden buildings with their canvas partitions, candles and kerosene lamps. Greymouth, for instance, suffered from three major floods in 1867, 1872 and 1887, while fires destroyed considerable areas of the business district on five occasions between 1869 and 1892. At first the towns consisted of commercial areas and little else; businessmen lived on their premises and the travelling miners bedded down for the night on the floors of the bars and saloons. Residential areas were gradually carved out of dense forest when freehold title was granted for town sections; Harper described the suburbs of early Hokitika as "a wilderness of gigantic stumps".

Since the commercial nucleus of each town was formed at the point of landfall on the river banks, later suburban development progressively displaced the business district to a marginal position within the town. In the physical appearance of the buildings the commercial towns of Westland differed little from the host of nineteenth century gold mining towns in California, Victoria and Otago. The calico shacks of the first few months gave place to buildings of wood and corrugated iron. So rapidly did the towns grow up that local sawmills could not be established quickly enough to supply the demand for dressed timber. In Westland, good timber trees were often felled and burnt in order to clear the ground for buildings made of North Auckland kauri, Stewart Island rimu and joinery of Baltic pine. The imported timber was used especially for the "false fronts" of the commercial buildings, impressive facades which were sometimes sand-painted to give the impression of stone. Few street verandahs are to be seen in the earliest photographs of Westland towns but they were common in the early seventies, perhaps an adaptation to the heavy rainfall. Shops and hotels occupied extremely narrow frontages, often as little as eight feet. Retailers relied on a rapid turnover of stocks and it was in the interests of the provincial governments to cram as many commercial enterprises as possible in a small area since they derived a large revenue from the sale of business and hotel licenses.

The street patterns of the West Coast towns give little suggestion of their mushroom growth and gold mining origin. Westport had been surveyed on a rectangular grid some years before a town grew up on the site. In Hokitika the main business thoroughfare of Revell Street was the only legacy of the spontaneous and haphazard period of the town's growth. Surveyors from Canterbury schooled in the current English views

11. The origin of the street verandah as a distinctive feature of New Zealand towns is obscure. A study of the problem would make an interesting contribution to urban geography.
on town layout were soon on the scene. They surveyed the remainder of the town on a rigid grid pattern with wide streets making generous reservations for parks and public gardens, and for administrative, educational and religious purposes. A large reserve was made for a market place, incongruous as this may have seemed in a goldfields town hemmed in by forest. This is a curious instance of the application of some of the ideals that inspired the founders of the Canterbury settlement in 1850—that provision be made for a complete civic life, reproducing as far as possible the best features of the English market town. As it happened the four large public squares were more than adequate for the small Hokitika population and three of them were later disposed of for residential purposes.

Descriptions of Hokitika by contemporary writers, a street directory for 1866, and a map made early in 1867 of buildings in the commercial area, make possible a fairly detailed reconstruction of the geography of the town in its hey-day. (See Fig. 18). Revell Street, a narrow thoroughfare along the crest of low sand dunes, and Gibson's Quay following the curve of the Hokitika River were the twin axes of the town's growth. Revell Street was laid out for business sites early in 1865 among the driftwood, the only area near the landing place free of standing timber. Formed hastily by two police officers who lacked surveying experience, it was somewhat variable in width and direction. Revell Street could not be integrated in the town plan so the Canterbury surveyors formed Tancred Street in the swampy hollow behind the sandhills and used this as the basis of the grid pattern for the remainder of the town. Two thirds of the business and administrative establishments listed in the 1866 directory were in Revell Street. The functions of

the buildings were very heterogenous. (Plate 22a) All of the
ten land use categories shown on the map (Fig.18) with the
exception of churches were represented here. Hotels and retail
shops were the most numerous, there being few retail shops in
Hokitika outside Revell Street. This street also had the
largest building in town - the Prince of Wales Theatre - where
audiences of 1400 could hear variety shows from Victoria, the
stalls patrons having to stand on the earth floor. The west
end of Gibson's Quay and the neighbouring Camp and Wharf Streets
formed an area with more specialised functions. Here, close
by the quayside, were most of Hokitika's banks, warehouses, bonded
stores, shipping and commission agents. (Plate 2%). By day
these streets and the wharf area were thronged with packhorses,
carts and bullock drays loading for the diggings. Weld Street,
the widest street in the town, and the scene of most new building
activity in modern Hokitika, derived its special character in
1866 from its industrial establishments - breweries, bakeries,
printing works and cabinet and joinery manufacturers. Two
compact areas were devoted to administrative functions; one a
police camp strategically situated in the heart of the town, the
other containing the government offices on the up-river margin of
the commercial core. Residential development by 1867 extended
furthest along Revell Street and Gibson's Quay in both streets for
half a mile beyond the commercial buildings. Gibson's Quay was
described as "the picturesque and artistically laid out part of
the town", with its villa residences and flower gardens. 15
Here lived the leading merchants, barristers, accountants and
senior public servants, although the high class residential
character was partly offset by the presence of the three largest
industrial plants in Hokitika, two sawmills and a brewery. The
cemetery, gaol and debtors' prison were given choice sites on a
terrace with a fine commanding view about a mile north of the wharf;

15. West Coast Times, Oct. 19th, 1869.
16. C.O.Preshaw: Banking under Difficulties, Melbourne, 1888,
p.175.
the hospital, the only one for the goldfields south of the Taramakau, had been established on the south bank of the Hokitika River. The site had been chosen during the height of the gold rush to Ross when it seemed that the centre of gravity of goldfields population would lie to the south of Hokitika. Watermen plied ferry services in small boats across the river from the lower end of Revell Street while a punt further up the river was used by the stage coaches on their journey south along the beaches to Ross. At the height of the gold rushes the business area of Hokitika presented a lively scene of bustle and activity.

"Carts were unloading and loading, and sheep and cattle driven to the yards; there was shouting and bell ringing, deafening to the passers by; criers at every corner of the principal streets, which were filled with people - a scene I had never before witnessed in New Zealand. Hundreds of diggers "on the spree" and loafers were everywhere to be seen, but principally near the spit and on the wharf where work went on with feverish haste." 17.

Whereas Hokitika developed from a single nucleus at the southern end of Revell Street, Greymouth grew from three separate nuclei at Mawhera Quay, Blaketown and Cobden (Fig. 49). The original settlement was the Maori pa of Mawhera. A map dated January 1865 shows the pa and some native garden patches on the block now bounded by Mawhera Quay, Tainui, Mackay and Werita Streets. 18 This area forms the heart of the business core of modern Greymouth. Nearby on Richmond Quay, just beyond the boundary of the Native Reserve was the first European settlement - the depot established by the Canterbury provincial government during the prospecting period of the early 1860's. After the Greenstone discoveries in mid-1864 a shanty town with hotels, packers' stores and a police station sprang up on Packers' Quay, Blaketown. This second nucleus stood on an old gravel beach ridge on the western shore of Erua Moana, a tidal lagoon running south from the Grey River mouth. The sheltered waters of the lagoon provided an anchorage for small coasting vessels. With the rush of gold seekers up the Grey Valley in the winter of 1865,

there was a mushroom growth of buildings along the river on Mawhera and Richmond Quays. Larger ships could anchor and unload here than in the confined space of the lagoon and the new town quickly outstripped Blaketown. The few Maoris at Mawhera pa removed their settlement to the base of the limestone hills and lived in unaccustomed luxury from the rents from quayside business leases. At the same time the third nucleus of Greymouth was established across the river at Cobden. (Plate 19). Since vessels could not tie up at the north bank the growth of Cobden was stunted until late in the nineteenth century when, with the construction of a bridge across the river, it developed as a residential suburb of Greymouth. The urban development at Greymouth was conditioned to a greater extent than the other Westland towns by the physical nature of the site. Since the area was cut up by the Grey River and an irregular pattern of tidal creeks and lagoons and was sharply bounded on the east by steep hills, a less uniform street grid had to be adopted than at Hokitika or Westport. Until 1890 most urban development took place on the alluvial flats and low terrace on the Native Reserve between Mawhera Quay and the Town Belt.

Whereas in its main street Hokitika had turned its back on the sea, Greymouth's faced outwards to the river. To travellers arriving by sea Greymouth had a cleaner and more substantial appearance than was given by the offshore view of Hokitika. Well-built, two storey buildings extended for half a mile along the gently curving quayside. There were buildings on only one side of the street but Mawhera and Richmond Quays had 55 percent of the commercial establishments in the town in 1866. Thus, unlike Hokitika, the principal hotels and retail shops as well as the warehouses, banks and commission agencies fronted the wharf area. The port had a smaller trade than Hokitika but many more small boats plied the river, one of the main functions of Greymouth being the transhipment of goods into river craft for the Grey Valley diggings. The influence of shipping and a river frontage in the selection of business sites is shown in

the fact that Mackay Street, now the main business street of Greymouth, had only 5 percent of the commercial establishments in the town in 1866.\(^{20}\)

Westport in the 1860's was commercially less of a 'one-street' town than it is today. The nucleus stood on an unprotected bank of sand and clay which was largely washed away by floods and the sea in 1872. Today the old commercial area is covered partly by a tidal lagoon and partly by reclaimed land at the northern end of the coal loading wharf. Gladstone Street (Plate 21) was the commercial hub with 40 percent of the business establishments in 1867, whereas Palmerston Street, which is virtually the only commercial street today, then had only three percent of the business establishments.\(^{21}\) After the devastating floods of 1872 there was much discussion as to whether the town should be re-located on the less exposed south bank of the Buller river and nearer to the main goldfields at Charleston and Addison's Flat. However, it was concluded that the future function of Westport would be chiefly as a shipping depot for coal and it was impossible to obtain deep water on the south bank. The commercial area was therefore rebuilt in Palmerston Street and by the 1880's extended between Wallabi and Henley Streets, today a decadent commercial area. Later development brought the centre of gravity of the business area still further south. Today it lies at the junction of Brougham and Palmerston Streets, almost three-quarters of a mile south of the 1867 business centre in Gladstone Street.

The mining towns and mining camps were in many respects, small-scale replicas of the larger towns. They consisted of a dozen or more stores and hotels built close together and forming a clearly marked "central core". This was surrounded by a straggling suburb of log huts and tree fern whares which gave way on the outskirts to a few tents set among the fallen trees and

\(^{20}\) ibid.

\(^{21}\) Chapman's New Zealand Almanac and Directory, 1867-8.

\(^{22}\) Provincial Engineer's Report on the Damage Done by Late Floods ..., op. cit., 1872.
undergrowth. A typical feature was the large external chimney sometimes taking up more than half the width of a two-roomed hut. These were made with wood and lined with clay or corrugated iron and are still to be seen in some of the older farmsteads and mustering huts in South Westland. Some of them are clearly visible in the photograph of Kaniere, (Plate 20). Goats and pigs roamed the townships and after a few years, fenced gardens and orchards began to appear in the mining townships. Fruit trees and American conifers are today the only signs of the sites of once-thriving mining camps. In some towns such as Ross and Kaniere, huts and stores were interspersed among the mining claims and tramlines, water races, fluming and the poppet heads of shafts formed part of the town landscape. Unlike many New Zealand towns which grew slowly as market centres for a rural hinterland, the business cores of the Westland mining townships were always compact. Most of the sites selected for townships were not intended for permanent occupation and the settlements were frequently not surveyed until their boom period had passed. At the scene of a new rush the mining warden would lay off a main street with tape and compass as the frontage line for business sites. Storekeepers and hotel keepers, eager to reap the profits from a new goldfield crowded in and solid rows of business houses soon appeared in the heart of the forest, (See Plate 22). The miners' huts and tents clustered haphazardly among the stumps and on drier knolls beyond the surveyed business core. A clear illustration of this feature can be seen on the maps of Kaniere (Fig. 20) and Stafford (Fig. 19). (Many features on the map of Kaniere can be identified on the photograph of the same town, Plate 20). The mining wardens were not very precise in their surveys and the miners and business men had little respect for the geometric rigidity of squares and rectangles favoured by New Zealand's nineteenth century town planners. Some years after the gold rushes when many of the townships were surveyed before granting permanent title to the businessmen and miners who remained, the surveyors were often confronted with the problem of making an irregular scatter of buildings and
fence lines conform to a grid pattern. The undated map of the township of Orima, in the Arnold district, redrawn for Fig. 21, is a striking example of this problem. In the original map of Stafford, used as a basis of Fig. 19, many of the commercial buildings can be seen encroaching a few feet on to legal roadways. Owing to the temporary nature of many of the townships and the flimsy character of their buildings a serious legal problem did not arise. Ross, Reefton and Kumara, the longest lived of the gold mining towns were fortunate in that the surveyors arrived soon after the miners and streets had been defined and sections laid out before the settlements had developed beyond the canvas stage.

**Lines of Communication.**

The dense forest cover and numerous turbulent rivers of Westland, the absence of safe harbours and the high intensity rainfalls were all formidable obstacles to providing satisfactory routes of travel. The problem was accentuated by the rapidity of the influx by the diggers and their wide dispersal over the region. It is not surprising, therefore, that a network of communications adequate to the needs of the region was not completed until about twenty years after the Greenstone rush. On the Otago goldfields, by contrast, there was a well developed pattern of transport routes within a decade of the discovery of gold. Difficulties of transport have always been among the major problems of the Westland region. In the golden decade the problem was rather one of getting people and supplies into and about the region than of bringing produce out.

A striking feature of the communications pattern shown on the map for 1868 (Fig. 22a) is the variety of methods employed in the circulation of goods and people; wooden tramways, dray roads, horse tracks, foot tracks, coastal shipping and river routes formed a combination of internal transport methods which was unique in New Zealand at that time. Although dray roads and tramlines ran from the principal towns to the nearer mining camps, horse tracks, generally of poor quality, were the principal links.
between the scattered settlements along the 200 mile extent of the gold country. Only in the lower Grey Valley and in the vicinity of Hokitika was there a close-textured pattern of communication lines. Little attempt was made during the rushes to establish an integrated system of trunk roads and tracks. Most routeways were constructed piecemeal after new rushes. The Nelson Provincial government, however, was able to make a bridle track up the Grey Valley as part of a plan for an eventual coach road from Nelson to Cobden. Administrators on the gold-fields were confronted with an almost insoluble problem in anticipating the needs of the miners, packers and storekeepers for it was often difficult to see whether a newly rushed diggings would prove capable of supporting a population for more than a few months. In West Canterbury, where the bulk of the government funds available for public works were spent on the overland dray road to Christchurch, it was left chiefly to private enterprise to provide means of travel between the mining centres.

The sea beaches, creek beds and navigable rivers and lagoons were the first routeways to be used by the miners. The ocean beach between Ross and Greymouth provided a firm sandy highway at ebb tide. This natural road ran along the flank of the most productive part of the West Canterbury goldfields for 45 miles and from the points of landfall at Hokitika and Greymouth, packhorse teams made their way north and south along the beach before striking inland up the creeks or rough bush tracks to the mining centres. To von Haast, travelling to the goldfields early in 1865, the beach appeared like "a great main road rather than an ocean beach. Horses and riders, packhorses and their drivers, men with swags, waggons drawn by horses or bullocks - the whole a picture of earnest activity - proved that we were advancing towards the great centre of the goldfields". Apart from the overland road to Canterbury the sea beaches were the only routes in Westland suitable for coach traffic in the 1860's. Coaches, with broad wheels adapted to the soft sands, ran mail and passenger services between Ross, Hokitika and Greymouth and

between Charleston and Westport. The 22 mile road between
Westport and Charleston ran for 17 miles along hard sandy beaches,
the only difficult stretch being three miles cut through the bush
near Cape Foulwind, where timber fascines covered with sand served
in place of road metal. The early establishment of heavy
machinery on the Charleston and Ross goldfields was made possible
by the relative ease of transport along the beaches. The
presence of a rocky or cliff lined shore between these goldfields
and their respective supply ports would have undoubtedly delayed
the exploitation of the Ross "deep levels" and the Charleston
"cement". In the early months of the Ross goldfields freight
costs by packhorse teams from Hokitika were quoted at 25 shillings
for 100 pounds or £1. 7. 0d per ton per mile. With the intro-
duction of four-wheeled wagons the rate of cartage on the beaches
was reduced to about 6/6 per ton mile in 1868.

In such thickly forested country tramways could be built
more quickly and were cheaper to maintain than macadamised roads.
Sleepers and wooden rails were cut from trees felled along the
route and goods and passengers conveyed in small horse-drawn
carriages. Three tramlines, built by companies of local
merchants, led out from Hokitika. One line ran three miles from
the quayside to the "suburban" mining town of Kaniere. From this
tramway two branch lines, extending half a mile into the forest,
brought logs to the Hokitika sawmills, pit props and boiler fuel
for the Kaniere mines and firewood for domestic use in the towns.
A second tramline climbed on to the terrace where the Hokitika
airport now stands and ran 3½ miles to the Hau Hau diggings.
Three branch lines radiated into the forest for hauling out fire-
wood and timber. The forest along the route was interspersed with
the cultivated patches, huts and tents of wood-cutters and charcoal
burners. A third tramline began in north Revell Street and ran

26. "Reports of Provincial Engineer and Goldfields Commissioner", 
Nelson Gazette, 1867, p.182.
27. West Coast Times, Sept. 28th, 1865.
29. West Coast Times, Dec. 7th, 1867.
along the sea beach to the Arahura River - the rails following a circuitous course among the low sandhills to avoid the gold mining claims which were being worked when the line was built. A bridge crossed the Arahura River and the line terminated near Stafford, eight miles from Hokitika and in the heart of the Waimea diggings; in 1869, seven cars ran daily on this tramline in both directions. In addition to a large passenger and merchandise traffic the tramline carried perishable produce to the Hokitika market, fish from the Arahura Lagoon and vegetables and milk from the small farms on the beach ridges and along the banks of the Arahura River. A tramline from Greymouth ran south through the beach diggings to Paroa before turning inland to cement lead diggings of Rutherglen. In 1869 the line was extended to Marsden, nine miles from Greymouth, and a supply centre for the scattered gold workings in the valley of the New River. In the Buller district a two mile tramline linked Brighton with St. Kilda, while at Charleston another short tramway conveyed merchandise and mining machinery from Constant Bay to the diggings. Tramlines were also constructed at Ross to bring heavy machinery from the sea beach (See plate 14) and to supply timber for the boilers of the deep level shaft claims. The route of an old tramway survives today in the street pattern of Ross, forming the only diagonal street in the town. Freight rates on the tramways in Westland varied from 10/- per ton mile on the Kanerie line in 1867, to 5/3 per ton mile on the Stafford line in 1869. Although information is fragmentary, it would seem that the tramway freights were somewhat higher than the rates on dray roads, beach waggons or river barges. It is reported that the tramway companies computed freight rates on calculations of profit at 50 percent, claiming that on a goldfield there was no assurance to the private investor that capital works would be required for more

30. loc. cit.
31. ibid., Nov.27th, 1869.
32. ibid., Dec.7th, 1867.
33. 'Report of Provincial Engineer and Goldfields Commissioner', op.cit., p.183.
34. 'Tolls on Kanleri Tramway', G.P., No.1683, 1867.
35. West Coast Times, Nov.27th, 1869.
than two years. When dray roads had been completed along nearby routes the tramways could not compete with them for traffic. After 1875 the tramways fell into disuse with the exception of the Greymouth-Kumara line which was not paralleled by a dray road.

Horse tracks and foot tracks were the principal features in the communications pattern of gold rush Westland and were the only links between outlying mining camps. Most of the tracks were cut by miners or groups of storekeepers at the outset of a new rush. The provincial governments generally supplied half the funds and the storekeepers were authorised to charge tolls for maintenance. In the absence of suitable supplies of road metal the tracks were often corduroyed with small trunks and tree fern but with the conditions of torrential rain and the heavy traffic after a new rush, the tracks became quagmires in which packhorses bogged girth deep. Haast wrote of the "channels of semi-liquid mire, intermingled with roots of trees..." which served as tracks on the Westland goldfields. As late as 1868, travellers on the "track" up the Hohonu River to Greenstone were obliged to wade across the stream at two dozen places on a seven mile journey, and for this pleasure tolls were charged. Horse tracks were the most common routes of travel in the goldfields of southwest Nelson. A trunk route for men and horses lay up the floor of the Grey Valley with several branches radiating out to the diggings in the hills on either side; goods traffic, however, went up the Grey River by flat-bottomed boat as far as Ahaura, or sometimes, Little Grey Junction. The bridle paths frequently carried a heavy traffic of pack horse teams; in 1867 between 40 and 50 loaded horses went out daily from Westport to supply the 3,000 diggers in the Addison's Flat district. From Bruce Bay to Mokihinui a horse trail led the full length of the gold country. In South Westland the route lay along sandy beaches alternating

38. 'West Coast Times', Oct.31st, 1868.
with great cliffs of moraine, at the base of which, men and horses picked their way among giant boulders, drenched with the spray of the sea. From Greymouth northwards, the various beaches were linked with short tracks blasted out over the bluffs while a considerable detour inland, between the Fox and Pororari Rivers, avoided the jumbled limestone hills and seaciffs near Perpendicular Point. In some parts of the goldfields, foot tracks, often beaten out along the sides of water races, were the only access to outlying clusters of diggers' tents. Freight charges for supplies carried on men's backs in remote gullies of the New River district were quoted as 27 per ton per mile. \(^{40}\) In Westland during the golden decade there were few bridges and only one across a major river – at the mouth of the Arapahora. Instead, punts and ferries, maintained by tolls, were placed at the more important crossing places. Rivers, however, took a heavy toll of lives, and in 1865 almost every issue of the \textit{West Coast Times} contains a report of a drowning accident.

Navigable waterways played an important role in bringing heavy goods to the inland diggings. Canoes on the Buller River and Taramakau carried men and supplies to the early goldfields at Lyell and Greenstone, and as late as 1868 the weekly mail service to Greenstone was carried by boat from the mouth of the Taramakau. The Hokitika River was the first avenue of communication between the port and the Kaniere goldfield. In the early stages of the Ross gold rush, flat-bottomed boats from Hokitika competed with packhorses using the sea beach until a storm breached the sandbank and drained off two miles of the upper part of the Totara Lagoon. \(^{41}\) The waterway to Ross led up the black, peat stained waters of Mahinapua Creek, across the shallow lake Mahinapua to a portage and thence eight miles along the Totara lagoon. The Grey River was the principal artery of heavy traffic in the Grey Valley lowland and carried the greatest volume of merchandise of any waterway in Westland. At the peak of the rush to the upper Grey district a correspondent

\(^{40}\) \textit{West Coast Times}, Dec. 30th, 1869.
\(^{41}\) \textit{Ibid.}, Sept. 26th, 1865.
of the Nelson Examiner counted 38 boats passing up the river in one day laden with stores for the diggings. One stream of traffic branched up the Arnold River to Arnold Landing while in the main river, boat traffic terminated at Ahaura or Little Grey Junction, 25 and 30 miles from Greymouth respectively. In fair weather boats carrying five tons of supplies could make three return trips to Ahaura in a week. Each boat required four men and three horses for poling and towing. In 1871, between 60 and 70 tons of goods weekly were taken from Greymouth to the up river diggings.

The only bulky outward traffic on any of the communication lines in Westland were the cargoes of coal brought from the Brunner mine in barges to the quayside at Greymouth. Mining had begun in the outcropping seam on the Nelson side of the river in 1864 to supply the bunkers of steamers in the Nelson and West Coast trade. With its natural drainage, gravity haulage and thick seam of clean coal, the mine could be worked with very little capital outlay. The coal was discharged direct from the main drive into bins and shot into the waiting barges. The transport by barges was expensive of manpower and was frequently interrupted by floods or shoaling in periods of dry weather. In consequence, the Brunner coal could not compete in New Zealand markets with New South Wales coal and until the railway replaced river transport in 1876 the annual production from the mine did not exceed 15,000 tons.

With the opening of the Inangahua quartz field the Buller River gained new significance as an artery of travel. Goods and

44. James Hector: 'The West Coast of the South Island', Report of Geological Survey During 1866-7, Wellington, 1869, p.25. The output was 12,700 tons in 1869 and 13,700 tons in 1872. Early workings in the Brunner mine were carried on by private leasees in a wasteful and dangerous fashion; pillars supporting the roof were split and re-split and drives were widened in times of sudden demand in order to get coal cheaply. (See the indictment of the mode of working by James Burnett: 'Report on the Brunner Coal Mine', V. & P. N. P. C., 1868.) Because the conditions of the lease were not being carried out the provincial government of Nelson took over the mine in 1868 and worked it for a number of years. Thus the first coal mine in Westland was also New Zealand's first State colliery.
Mining machinery were taken by boat from Westport to Lyell and from Westport to Inangahua Landing and thence by dray or waggon to Reefton. Towing paths were made along the river banks and two horses could tow a five-ton boat to Lyell or Inangahua Landing and make two return trips each week.\textsuperscript{45} The middle gorge of the Buller River was much more difficult to negotiate than the lower one; freight rates for the 30-mile journey from Westport to Inangahua were £4 per ton in 1872 whereas from Westport to Lyell, a further 15 miles upstream, the rate was £10 per ton.\textsuperscript{46} In the early 1870's freight costs to Reefton favoured Westport over Greymouth as a source of supply, the rate from Westport being £7 per ton compared with £10 per ton by boat and waggon from Greymouth. However, with the construction of the Brunner railway and a trunk dray road up the Grey Valley and across the Reefton saddle, the bulk of the Reefton trade was captured by Greymouth.

Among the records of the Nelson Provincial Council there is the manuscript of a traffic census made at Greymouth over a two week period in June, 1866.\textsuperscript{47} It provides us with a random "snapshot" of the ever-changing patterns of trade of a goldfields commercial town and shows, at the same time, how the commercial hinterland of Greymouth straddled both sides of the inter-provincial boundary between Canterbury and Nelson. The census was made shortly after the opening up of the alluvial diggings in the Inangahua Valley and before the town of Westport had assumed any commercial importance. The analysis of the flow of goods from Greymouth is as follows -

- 82 tons was carried in 52 boats up the Grey River to destinations on the Nelson side of the provincial boundary.
- 11 tons was carried in 9 boats up the Grey River to diggings on the Canterbury side of the boundary. (This would be to the Arnold district).
- 30 tons was consigned by Greymouth merchants by sea to Westport; thence by canoe up the Buller River to the new rush in the Inangahua Valley.

\textsuperscript{45} 'Report on Inland Communication' by A.D. Dobson, V.& P.N.P.C., 1873, p.41.
\textsuperscript{46} loc.cit.
\textsuperscript{47} T.A. S. Kynnersley to Provincial Secretary: 'Division of Customs Duty at the Grey', N.P., No.550, 1866.
34 tons went by dray or packhorse to points south of Greymouth.

12 tons went by dray or packhorse to beaches north of Cobden.

The high cost of internal transport made Westland the most expensive of the New Zealand goldfields in terms of living costs. The high transport costs were due in part to the high cost of importing horse feed, for except in the Totara Flat district in the middle Grey Valley, virtually no hay or oat crops were raised in Westland. In the first year of the rush internal transport charges to the more distant goldfields in the hinterland of Hokitika were said to have added 200 to 300 per cent to the price of commodities landed at the port. Comparative figures for commodity prices on the mining districts of New Zealand are first available in 1872. From a number of selected items it is clear that the variation in prices between different goldfields centres in Westland was much greater than in Otago or the Coromandel Peninsula.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Westland</th>
<th>Otago</th>
<th>Coromandel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flour: 200 lbs.</td>
<td>£1/16/- to £3</td>
<td>£1/12/- to £2</td>
<td>£1/14/-</td>
</tr>
<tr>
<td>Beer: hogshead</td>
<td>£5 to £12</td>
<td>£6/5/- to £7</td>
<td>£5</td>
</tr>
<tr>
<td>Cheese: lb.</td>
<td>9d to 2/-</td>
<td>9d to 1/6</td>
<td>8d to 1/-</td>
</tr>
<tr>
<td>Tobacco: lb.</td>
<td>5/- to 8/-</td>
<td>5/- to 6/-</td>
<td>5/- to 6/-</td>
</tr>
<tr>
<td>Butter: lb.</td>
<td>1/3 to 2/-</td>
<td>1/6 to 2/6</td>
<td>1/- to 1/6</td>
</tr>
<tr>
<td>Wheat: bu.</td>
<td>6/- to 15/-</td>
<td>5/- to 8/-</td>
<td>5/-</td>
</tr>
<tr>
<td>Beef: lb.</td>
<td>6d to 11d</td>
<td>4½d to 6d</td>
<td>5d to 9d</td>
</tr>
<tr>
<td>Mutton: lb.</td>
<td>6d to 11d</td>
<td>3d to 5d</td>
<td>4d to 6d</td>
</tr>
<tr>
<td>Milk: qt.</td>
<td>6d to 3/-</td>
<td>4d to 1/-</td>
<td>6d to 7d</td>
</tr>
</tbody>
</table>

The quartz mining centres of Thames and Coromandel were readily supplied by sea from Auckland while the goldfields of Otago were interspersed among livestock rearing and arable farming districts and were linked with a good network of dray roads. The lowest prices in Westland, on diggings nearest the three ports

48. West Coast Times, Sept. 26th, 1865.
compared favourably with those in the other two principal
goldmining regions of New Zealand but the price gradient in
Westland increased steeply inland. This feature is shown
strikingly on the map depicting variations in the price of
flour in 1880 (Fig. 37a). The most costly places to live
were at Iyell, Greenstone and the Arnold where even at that
date, all supplies were brought by boat or packhorse.

Overland Routes.

Four routes led overland into Westland. From Nelson
through the Buller Gorge to Iyell there was only a horse track
infrequently used. A coach road linking Nelson with the
goldfields was not completed until after the abolition of the
provincial governments. A stock route leading from the Hanmer
basin crossed Amuri Pass and led down the open river bed of the
Ahaura to the goldfields markets of the middle Grey while the
old prospectors' track over the Hurunui saddle into the
Taramakau continued to be used by sheep and cattle from North
Canterbury. A third stock route led up the Wilberforce
tributary of the Rakaia, crossed Browning's Pass at an
altitude of 4645 feet and led into the Hokitika Valley by the
Arahura and Styx Rivers. The steep eastern face of Browning's
Pass made it impassable for cattle and because of the heavy
snow cover the route was available for sheep only in late
summer and early autumn. Although it provided a more direct
route than Arthurs Pass for sheep from mid-Canterbury, the
hazards were greater and a few years after the making of the
track it seems to have been little used.

Of the four overland routes the dray road from
Christchurch to Hokitika by way of Arthurs Pass was by far the
most important. Its wider significance as the first transisland
coach road in New Zealand should not obscure the fact that the
economic value of the road did not compensate for the high cost
of construction. As the only good road in Westland during the
1860's, it is easy to over-estimate its role in the flow of
goods and people.

Consideration of the road as a feature of Westland
geography calls for some comment on the attitude of East
Canterbury towards the western goldfields. The alpine road was not so much an expression of Canterbury's administrative responsibilities on the goldfields as of the hopes of the Christchurch merchants to share in the goldfields trade. They wanted to emulate the success of the Dunedin merchants who had gathered in so much of the golden harvest on the Otago diggings. They looked with envious eyes on the escorts bringing gold from inland Otago to the Dunedin banks and misguidedly thought that the mere passage of gold would somehow bring prosperity to the eastern plains. There was little doubt, said the Christchurch Press, that roads to the diggings would result in a large proportion of the gold being "attracted to the rich and fruitful slopes stretching eastwards from the Southern Alps to the Canterbury seaboarding.\(^{50}\) The same newspaper had previously urged the making of a bridle road to Westland so that "the gold may find a free channel into the Christchurch banks", although it was admitted, at the same time, that Christchurch was unlikely to reap much benefit by trade in goods to the diggings.\(^{51}\) This simple mercantilist faith in the possession of bullion was heady wine to the Christchurch citizens and the government of Canterbury. For the great cost of the alpine road, most of it being debited to the revenues raised in Westland, and the attempt to establish a gold escort was one of the principal grounds for Westland's agitation against political control by Canterbury.

The attitude of Canterbury to the goldfields has frequently been misunderstood. Several writers, including Galvin,\(^ {52}\) Wilson,\(^ {53}\) and Clark,\(^ {54}\) have interpreted an article in the Lyttelton Times of July 30th, as reflecting typical

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51. \textit{Ibid.}, Aug. 5th, 1863.
52. P. Galvin: \textit{The Handbook of New Zealand Mines}, Wellington, 1887
Canterbury opinion on the matter of goldfields:

"If a gold field is after all to be forced upon Canterbury without the consent and contrary to the expressed desire of the settlers they must nevertheless submit to fate....And should the natural feelings of discontent, swelling up in their prudent bosoms when fortune's gold favours are thrust into their hands, be somewhat hard to subdue, the consolation exists that the gold field has turned up in the remotest corner of the province."

This is clearly a piece of cynical writing, perhaps making fun of the attitude of the respectable "old guard" who by this time were a small and scarcely audible minority of the Canterbury settlers. Full publicity had been given in the Canterbury newspapers to gold prospecting activities and the Provincial Council's offer of a reward for the discovery of a payable goldfield was made after much popular clamour. Whatever fears the worthy citizens of Christchurch might have held about a goldfield being a "sink of iniquity" were dispelled when they saw Dunedin reaping such substantial profits from the goldfields at its hinterland.

When the gold fever struck Christchurch in February 1865 public opinion was insistent that a suitable overland road be made to the diggings so that "Canterbury merchants may reap the advantages of a goldfield within the province instead of the benefit it entails being monopolised by their neighbours in Nelson."

Exploring parties were sent into the headwaters of the Waimakariri and in May work had begun on a bridle road by way of Arthurs Pass. Shortly afterwards it was decided to make it a dray road and in less than ten months the route was open for coach traffic. From the Otira gorge the road lay along the Otira Valley where open tussock flats gave feed for travelling stock. In the Taramakau Valley much of the road followed the shingle river bed and was subject to frequent interruption by floods. West of Mount Turiwhata the road left the Taramakau Valley and crossed over a low ridge of moraine into the Kawhaka Valley, then through the farmlands of the lower Arakura to the natural highway of the ocean beach.

55. Press, April 12th, 1865.
The presence of the Arthurs Pass road was one of the chief considerations in determining the route of the Midland Railway and thus in channelling the future traffic flow by land from Westland. It is, therefore, worth while examining the original arguments in favour of the selection of this particular route for the road to the diggings. Along the entire length of the alpine divide in Canterbury, Arthurs Pass and Harpers Pass were the only two routes by which it was possible to make a dray road. The Arthurs Pass route involved much heavy work in the deeply cleft gorge of the Otira on the western side of the pass; the road had to zig zag down an unstable scree of giant boulders and in places be blasted out of perpendicular rock faces or be supported by wooden staging. No part of the Hurunui route would have presented such engineering difficulties but the total cost of a road by this route was estimated to be twice as much as by Arthurs Pass. From the existing road terminal at the Waitohi gorge to the junction of the Taramakau with the Otira, 36 miles of the road would have been hill sidling involving a great deal of rock cutting and bridging. Some sections of the Hurunui route would have been in the Nelson province and would have raised the question of the right of one government to carry out works in the territory of another. Another advantage of the southerly route was that it was fifteen miles shorter from Christchurch to Hokitika and a dray road had already been made as far as Lake Pearson, only 20 miles from Arthurs Pass.

There was some difference of opinion in Canterbury as to the likely volume of traffic on the road; the Press thought that cheap and bulky goods would always go by sea; John Hall, a leading squatter-politician, said it was "childish to think Canterbury could compete with Nelson in the goods traffic" and considered a bridle track sufficient for live-stock.

57. ibid., p.52.
58. ibid., p.52.
60. Lyttelton Times, March 14th, 1865.
little reflection might have suggested to the authorities that the steep gradient on the eastern margin of the mountain ranges up to Porters Pass would in itself be a costly obstacle to drays and waggons laden with merchandise. However, the protagonists of the road seem to have closed their eyes to the possible freight costs of a 150 mile land journey and to have considered only the dangerous nature of the bar harbour at Hokitika and the high insurance rates on shipping cargoes. The toll of shipwrecks on the Hokitika bar throughout 1865 gave the Christchurch merchants grounds for hoping that the safer and more reliable land route would compete with sea traffic.

The road, however, carried few coach passengers, no merchandise and no gold. Although a coach journey could be made from Hokitika to Christchurch in 13 hours with an overnight stop at the Bealey, a return ticket on the twice weekly coach cost £9 a person. A journey to Christchurch would have absorbed three week's earnings of the average miner. Little wonder, then, that the mail coach often carried no passengers. The business interests of the Westland merchant were in Melbourne, Dunedin, or Nelson, and if he wished to travel he went by sea. For a period of 7½ months in the boom years of 1866-67 an average of only 340 persons per month, or eleven per day, passed in either direction across Arthur's Pass.

This figure included foot travellers and horse riders as well as coach passengers. Although agencies of the banks in Hokitika had warned early in 1865 that they were unwilling to incur the delay and risk of sending bullion overland, an attempt was made to divert the flow of gold towards the "rich and fruitful slopes" of East Canterbury. For a gold escort, the police in Christchurch assembled thirty horses, four waggons, twelve gold boxes and fifteen swords; but on the one trip made by this impressive convoy to Hokitika the gold boxes were brought back empty. The Christchurch merchants gained little,

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61. Superintendent's Address to Provincial Council, Canterbury Gazette, Nov. 22nd, 1865, p.360.
63. Canterbury Gazette, 1865, p.358.
if any of the economic benefits so confidently anticipated on
the outbreak of the rush and during the boom years on the
western diggings the Christchurch papers were persistent in
their complaints about the "dullness of trade". 64

All of Westland's trade other than livestock went by
sea. All the gold produced there was either consigned direct
to Australia or was sent there by way of Nelson or Wellington.
The main function of the overland road was as a route for
livestock and it is certain that a less expensive bridle path
would have served this purpose just as effectively as the dray
road. As it was, the construction costs of the Hokitika-
Arthurs Pass section of the road absorbed more than the whole of
the gold duty derived by the Canterbury government in the three
years during which the goldfields were under its administrative
control. A small section of the Canterbury community - the
squatters - did derive economic benefit from the diggings,
and Westland in turn secured more regular and cheaper supplies
of meat than could be supplied by sea. At the commencement of
the gold rush the tussock grasslands of the eastern plains and
mountains, which had been parcelled up in vast grazing runs
before 1860, were becoming fully stocked with merino sheep.
Wool was the only exportable product and there were no newly
opened grazing lands requiring surplus sheep for building up
their flocks. Cattle runs on the coastal swamplands from
Longbeach to Amberley and along the foothills of the mountains
were carrying more stock than the Christchurch markets could
absorb. The opening up of a profitable market on the West
Coast thus came at an opportune time to the pastoral runholders.
In the two years from July 1865 to August 1867, 48,000 sheep
and 19,800 cattle were recorded as passing overland from East
Canterbury to the Westland diggings. 65

64. R.R. May in 'The West Canterbury Gold Rush to 1865', University
of New Zealand Thesis in History, 1953, has a fully documented
analysis of the hopes and failure of the Canterbury merchants
to share in the West Coast markets, pp.135-148.

65. The stock numbers are made up from the following sources:
'Return of Sheep and Cattle passing Waitohi Gorge for Hurumui
Pass, 1st July, 1865 to 8th Nov, 1866', unpublished M.J.,Canter-
bury Museum, C.P.,No.1679,1866; 'Return of Cattle and Sheep
driven on their Road to Hokitika from 1st December 1865 to 30th
September, 1866', J.P.C.P.C., and 'Report of Select Committee on
Petition of Certain Inhabitants of Westland', A.J.L.C., 1867,
(Telegram from Provincial Secretary of Canterbury).
there would have been other livestock using the Brownings Pass route and Amuri Pass. There were 2½ million sheep in Canterbury in 1867 and 61,000 cattle; the Westland market was thus of greater relative importance to eastern cattle graziers than to sheep farmers. Because of the absence of natural grazing for sheep in Westland they were sent over the ranges in a regular stream of small mobs. Cattle, on the other hand were frequently sent over as stores and fattened on bush grazing runs which were taken up on the less densely timbered parts of the West Coast river flats. Even in the supply of livestock, Canterbury had no monopoly of the Westland market. In 1866 some 3700 sheep, 330 cattle and 380 pigs were landed by sea at Greymouth, chiefly from Nelson and Wanganui. Cattle were also brought from Australia but the trade was handicapped by the high freight charges and injuries suffered when vessels had to wait tossing in the roadsteads for days or even weeks at a time until the river bars were safe to cross.

Seaports and External Trade.

The focal points in the communications pattern of gold rush Westland were the river ports. The sea was the main highway of external trade and travel. Many seaports, both in New Zealand and Australia shared in the Westland trade but probably one half of the commerce was enjoyed by Melbourne. Detailed information on the source of imports from other parts of New Zealand is not available for Greymouth or Westport, but an unpublished report in the archives of the Canterbury provincial government\(^66\) gives a valuable picture of the origin of Hokitika trade. The information is shown in graph form on Fig. 23. The Australian colonies provided 63 percent of the value of the imports, Victoria alone supplying 54 percent. Otago and Nelson both supplied a higher percentage than Lyttelton, whose share was little more than that of New South Wales. Melbourne and Dunedin merchants were well acquainted with the needs of gold-fields markets. They acted promptly and were willing to take

\(^66\) G.S.Sale to Provincial Secretary: 'Customs Revenue at Greymouth', C.P., No.1545, 1867.
\(^67\) loc. cit.
risks in order to be first with their goods on the scene of a new rush. Victorian initiative was responsible for providing the first steam tugs for towing vessels over the bar at the entrance to the Hokitika river. Many business concerns in Hokitika were branches of Melbourne or Dunedin firms. Others had moved with the tide of gold seekers and several retailers in Hokitika advertised with some pride their peregrinations around the goldfields of the South Pacific - Ballarat, Bendigo, Lambing Flat, Tuapeka, Dunstans, Shotover, and finally, Hokitika. Nelson's nine percent of the value of Hokitika trade is not a full measure of the significance of its trade with the western goldfields since Nelson was more closely connected with Greymouth, Westport and Charleston. The small proportion of overseas vessels calling at Westport, despite its safer harbour entrance compared with Hokitika and Greymouth, suggests that a high proportion of its goods and passenger trade was with Nelson; in 1868 four times the volume of letter mail was despatched by ship from Westport to Nelson than was sent by the overland coach from Hokitika to Christchurch. There was, on the other hand, a good deal of entrepot trade from Greymouth where overseas goods were landed and shipped by smaller coastal vessels to Westport and Charleston.

Of the separate commodities imported into Westland, most of the oats, chaff, livestock, butter and timber came from New Zealand ports, whereas the bulk of the ales, wines and spirits, flour and general merchandise came from Australia. Cheese was about equally divided between New Zealand and Australian sources. It is illuminating, but not surprising to find that in 1866 Greymouth and Hokitika accounted for one quarter of the New Zealand customs revenue derived from spirits and that three times the quantity of spirits were imported into West Canterbury as to

68. 'Tenth Annual Report of the Postal Service of New Zealand', A.J.H.R., E.1, 1869. Much of the Nelson mail was probably intended for despatch to Australia. Further confirmation of the relative importance of the Nelson trade with Westland is the statement that 90 coasting steamers left Nelson for West Coast ports with about 1100 passengers in 1872. (See: 'Correspondence Relating to Inland Communication', V.6.P.N.P.C., 1873, p.47.)
East Canterbury ports. The return flow of trade from Westland was, by contrast, of limited variety and small bulk; gold bars consigned to Australian banks, hides and sheepskins of animals slaughtered for the local meat trade, and portions of dismantled wrecks were the only items to appear in the export columns of the local newspapers in the first three years of the rushes. By 1870 three sawmills near Hokitika had built up a small export trade in timber, chiefly to Victoria, amounting to some two million superficial feet per year. The principal species cut was white pine (Kahikatea), for use as packing cases in the Australian meat preserving industry. The trade increased to 5 million feet by 1874, but with the decline in the trans-tasman shipping trade in the late 1870's, the Westland timber industry suffered depression. The native forests of Southland and the Marlborough Sounds were more accessible to the principal markets in Wellington, Christchurch and Dunedin.

Although the Hokitika River was more hazardous to the navigator than either the Grey or Buller, Hokitika had the dominant position in the overseas trade of the Westland region. In 1866 it was second only to Auckland among New Zealand ports in the number of overseas vessels calling. From Hokitika schooners and small steamers ran to Otarito and Bruce Bay, supplying the blacksand diggings of South Westland and also maintained a coastal passenger and goods service with Greymouth and Westport. In perhaps no other New Zealand seaport were

<table>
<thead>
<tr>
<th>Port</th>
<th>Vessels</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hokitika</td>
<td>573</td>
<td>118,700</td>
</tr>
<tr>
<td>Greymouth</td>
<td>137</td>
<td>36,300</td>
</tr>
<tr>
<td>Westport</td>
<td>32</td>
<td>4,400</td>
</tr>
</tbody>
</table>

the physical conditions of the harbour less suitable to shipping

with the constant heavy swell offshore, the confused mass of breakers at the river mouth, and the frequent changes in the depth and position of the bar. Yet at few other times and places were the profits to be derived from the trade so alluring and keenly sought after. The port of Hokitika was notorious for its wrecks. At one time, of 33 ships in the port, seven were ashore on the beach or bar.  

In 1865, one-quarter of the shipwrecks on the New Zealand coast were at Hokitika, while in the following two years 23 percent of New Zealand shipping disasters were on the South Island West Coast.

Two main types of vessel were engaged in the Westland trade, steamers of between 400 and 800 tons and schooners of 20 to 100 tons. The trans tasman passenger trade was lucrative to the Melbourne ship owners but conditions must have been anything but luxurious for the passengers. On the steamer "Wallaby" diggers from Melbourne on an eleven day voyage to Hokitika lived in treble tiers of bunks stacked in the hold.

The 500 ton steamer "Egmont" brought no less than 300 passengers from Dunedin to Hokitika on September 12th, 1865. Passengers were generally landed by paddle tugs which met the steamers in the roadstead but at times of floods or unfavourable bar conditions, no vessel could leave or enter the port. In August 1865, when the bar was unworkable for a fortnight, a whole fleet of steamers and small craft, laden with merchandise, stood in the roadstead while prices steadily rose for the depleted stocks of provisions in the town.

Fast passages were frequently made from Melbourne and in some respects Westland was the "front door" of New Zealand. Hokitika was often the first part of New Zealand to receive the English and Australian newspapers and Christchurch frequently heard its international news first by telegraph from Hokitika. The 15 knot steamer "Albion" crossed from Melbourne in 4 days 16½ hours; on the other hand there

70. West Coast Times, Oct.6th, 1865.
73. West Coast Times, Sept. 4th, 1865.
74. Ibid., Jan.11th, 1866.
were often vexatious delays in entering port; the schooner "Margaret Dashington" crossed the Tasman in seven days only to wait in the Hokitika roadstead for another twelve.

The close trade affinities of Westland with the Australian colonies were reflected in business transactions and in the flow of mail. Information is not available for the Westland region as a whole but in 1868 there are statistics which permit a comparison of the County of Westland with the provincial districts of New Zealand. In no other part of New Zealand did the volume of money orders issued on Victoria exceed those issued on the United Kingdom. Westland County, with only seven percent of the European population of New Zealand accounted for thirty percent of the colony's letter mail traffic with Australia. Had statistics been available for the Nelson portion of the goldfields it is probable that the Westland region may have accounted for nearly one half of the mail traffic between New Zealand and Australia. Westland County was the only statistical division in New Zealand in which the volume of correspondence with Australia exceeded that with the United Kingdom.

It would seem, therefore, that the Westland population had cut its ties with Great Britain to a greater extent than the majority of the New Zealand population and that it was more "Australian minded" than the rest of the colony. Westland to a large degree was part of the economic hinterland of Melbourne. It was a trading field in which Dunedin and Nelson both held important shares but from which Canterbury derived little advantage except as an outlet for surplus stock. The economic and social ties between Westland and Australia have never been as strong, and the ties between Westland and Canterbury have

75. Ibid., Oct. 20th, 1865.
76. Information on mail and money orders has been derived from statistical tables in "Tenth Annual Report on the Postal Service of New Zealand", or cit. Letter traffic between Westland and the Australian Colonies was three times as great as that between Westland and the United Kingdom. For New Zealand as a whole there was twice as much letter traffic with the United Kingdom as with Australia.
never been weaker as during the golden decade. The commercial interests of Melbourne in Westland dwindled during the 1870's. Although there was a significant Australian influence in Westland affairs for some decades, notably in the interchange of coal miners and quartz miners and in the sphere of labour union activities, the growth of coal mining and sawmilling tied Westland more closely with the remainder of New Zealand. After the angry words and mutual recriminations which had led to their political divorce in 1867, Westland and Canterbury opinion came to see that the economy of both areas was really complementary. From 1890 onwards the leading political and business people on both sides of the Southern Alps fought a long and vigorous battle to secure the completion of the Midland Railway. However, in gold rush Westland, the orientation of trade had an important bearing on political relations with neighbouring regions and it is to a consideration of this aspect that we now turn.
Two aspects of political geography seem to be significant to a study of Westland in the golden decade: firstly, the relations of the goldfields to the older settled 'core' areas of the provinces of Nelson and Canterbury; secondly, the presence of a provincial boundary bisecting the Westland region along the Grey and Arnold Rivers. The goldfields were discovered in remote portions of two provinces, Nelson and Canterbury, and were cut off by mountain barriers from easy land communication with the capital towns. Westland was thus organised politically in two distinct parts which had a greater degree of community of interest with each other than with the older-settled areas of their respective provinces. It was to be expected, and indeed it was anticipated, that the profound social and economic differences between central and peripheral areas of the provinces, which were bound to appear with the opening up of the goldfields, would give rise to tensions and to agitation for local government. In Canterbury the effort to harmonise the contrasted societies of east and west, in a single political unit proved too much of a strain to both sides. The growth of a vigorous local consciousness in the west bore fruit in the dismemberment of the province. Most writers who have touched on this topic seem to have regarded the outcome as nothing less than inevitable and have ignored the important question of why the Nelson Southwest goldfields failed to separate from the parent body or to make common cause with the goldfields area south of the Grey River.  

1. W.P. Morrell in The Provincial System in New Zealand, London, 1932, has only an indirect reference to the Nelson Southwest goldfields in two lines on page 192. The majority of historians do not seem to have been aware of the extent and importance of the Nelson portion of the West Coast goldfields; yet this area accounted for 40 per cent of the gold produced in the Westland region during the golden decade. G.T. Wilson in an unpublished history of the Grey District (The Golden Grey, University of New Zealand Thesis in History, 1931), makes occasional indirect reference to the problem. The neglect of the topic may be attributed to the fact that writers have tended to look at Westland history with Canterbury or Hokitika eyes or have accepted the West Canterbury goldfields or the County of Westland as the most convenient unit of study. The only historical and narrative written from a Nelson viewpoint was by a mining warden who had formerly served at Charleston and Reefton. See Lowther Broad: The Jubilee History of Nelson, Nelson, 1892.
Even discounting the physical barriers and economic contrasts, the creation of a new political entity on the West Canterbury Goldfields would not have been very surprising; the provisions of the New Provinces Act of 1853 made it remarkably easy for disaffected outlying districts to break away and form new provinces provided the central government was agreeable. There was the precedent of the three thinly settled pastoral districts of Hawkes Bay, Wairau and Murihiku, which had broken away from Wellington, Nelson and Otago respectively to form new provinces - and with less substantial reasons than those put forward by the Westland Separation League in 1867. Superimposed on the physical contrasts between east and west in Canterbury was the contrast between an agricultural and pastoral society on the one hand and a mining community on the other. The cleavage of interests was intensified by the feeling of separation created by the presence of a wide mountain area, empty of settlement. Most of the population in West Canterbury were recent arrivals from Australia or had lived but a short time in other provinces of New Zealand, chiefly Otago and Nelson. They had little desire to form a close attachment to the land, and provincial institutions and provincial sentiment had little appeal to them.

In 1853 the whole of New Zealand had been apportioned among the six provinces but at the time when the boundaries were defined, only a very small portion of each province was effectively occupied. There was no provision for an area to have political status other than as part of a province - no subordinate status akin to the United States "Territory" which often preceded the admission of newly settled areas to statehood. Such a form of limited local government, with legislative powers reserved to the central government, would have been well adapted to the needs of the Westland goldfields; something of the sort was, in fact, suggested by the Christchurch Press. But under the terms of the Goldfields Act of 1853 and its subsequent amendments, the existing provincial governments were responsible for administration of any goldfields that might be opened up within their borders.

For some months after the Greenstone rush of 1864, the only evidences of political authority in Westland were a handful of police and a provincial government agent with vague and limited powers.\(^3\) In the absence of effective administration, conditions resembling the rough and ready democracy of the Californian mining camps prevailed. Disputes on boundaries of claims were settled by juries elected by the diggers themselves.\(^4\) Once the size and payable qualities of the auriferous country had been confirmed, a goldfield was officially proclaimed and administration placed in the hands of commissioners - officers delegated with very wide powers to supervise all branches of provincial government activities on the goldfields.\(^5\) The commissioners were, in effect, sub-superintendents and responsible only to the Executives of the Canterbury and Nelson Provincial Councils. Since they also held posts delegated by the central government the two Westland goldfields commissioners were the nearest approach to benevolent autocrats to hold office in New Zealand since the granting of responsible government in 1853. Administrative headquarters were set up at Hokitika for the West Canterbury Goldfields and for the Nelson Southwest Goldfields, at Cobden before transfer to Westport late in 1866. The method of political organisation of a newly settled district was unique in New Zealand; it reflected the remote location of the goldfields from the provincial capitals and the rapidity with which the diggers swarmed into unoccupied country. Circumstances required that someone in the nature of a dictator should be on the spot to administer justice, to superintend public works and surveys, and to decide on the best sites for towns, wharves, tracks, roads and ferries. Decisions had to be made quickly and sufficient funds had to be available to carry out works promptly so as to provide for the ever-changing

\(^3\) The early arrival of the police was probably an important factor in the remarkable absence of serious crime on the Westland goldfields. Would-be desperados from Australia found the police waiting at the Hokitika wharf on their arrival.

\(^4\) W.H. Revell to Provincial Secretary; C.P., No. 2404, 1864. See also, Nelson Examiner, May 30th, 1865.

\(^5\) See for example, 'Letter of Instructions to G. S. Sale, Esq., Commissioner for the West Canterbury Gold Fields', J.P.C.P.C., Sess. XXIII, 1865.
requirements of a fluctuating population. 6

Local grounds for the separation of the West Canterbury goldfields are not difficult to seek, but it is also necessary to look farther afield. The complaints of the Westland petitioners to the General Assembly in 1867 fell on fertile ground. During the parliamentary session of that year the struggle between "provincialist" and "centralist" factions had gathered momentum. 7 The "centralist" ministry under Stafford saw, in the Westland plea for divorce from Canterbury, an opportunity to weaken the provincial system by dismembering one of the strongest of the provinces. The possibility of eventual separation had been foreseen by some Christchurch people before ever the goldfields were settled. 8 Seed, reporting to the general government in the early months of the rush, forecast early agitation for the creation of a separate province. 9 Rumbles of discontent were heard from the merchant community of Hokitika in 1865 and the newspaper, West Coast Times, led agitation for separation in thundering editorials on the evils of the Canterbury administration. 10 Agitation subsided until July 1867 when matters were brought to a head with the formation of a Separation League at Hokitika. It culminated with the despatch of a petition to the Legislative Council praying that the district west of the main divide in Canterbury be made into a separate province.

6. In Otago the responsibilities of the Goldfields Commissioner were not as all-encompassing as in Westland and Nelson. The headquarters of goldfields administration were in Dunedin instead of a provincial "sub-capital" such as Hokitika or Westport.


8. A typical comment was an editorial in the Press on April 13th, 1863: "It is only artificially ... that the Buller can be said to be in Nelson, or the Grey, the Chitika or Jackson's Bay in Canterbury ... They are not really so; the moment they are peopled they will not be so". On February 20th, 1865, as the main stream of diggers was setting under way, the same journal thought that Canterbury would gain more by Westland's progress "under an independent government than by its languishing under the rule of the Government Buildings in Christchurch".


10. West Coast Times, Sep. 23rd, 25th, 1865.
Separation of West Canterbury.

The very attempt on the part of Canterbury to impose unity on the two dissimilar parts of the province by building the transalpine road, only served to aggravate the cleavage. Westland people wanted the money which was raised on the goldfields to be spent on harbour improvements and tracks and roads linking goldfields with the ports. Westland already had its trade links with Australia, Dunedin, and Nelson. There was no need for a costly alpine road, the sole purpose of which as Westland saw it, was to enable the merchants and squatters of Canterbury to make money from the goldfields markets. A heavy burden of debt had been incurred and since the cost of the Arthurs Pass-Hokitika section of the road was debited to the Westland revenues, funds were not available for local works which would have been more useful to the diggers and West Coast merchants. The inevitable delays in granting Westland a voice in the affairs of the Canterbury Provincial Council irritated the businessmen of the goldfields towns although the miners themselves apparently took little interest in politics. A further source of grievance was the delay in authorising expenditure on public works such as tracks to new goldfields. It was essential that the chief representative of government in Westland should have authority to spend money without delay; but as Canterbury's financial position deteriorated Commissioner Sale's discretionary powers were reduced and new works could be approved only after lengthy delays in correspondence between Hokitika and Christchurch. 11

Eastland, for its part was not eager to maintain the

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11. Commissioner Sale considered that this was the only reasonable ground of complaint which the people of Westland had against the Provincial government. "It is essential", wrote Sale, "that the representative of government on the West Coast should have very large powers, much larger than would be held by any one member of a constitutional government under ordinary circumstances", - G.S. Sale to Provincial Secretary: C.P., No.1295, 1887.
Indeed the chief architect of the County of Westland Act was John Hall, a Canterbury man himself, and several of the Canterbury members of Parliament voted in favour of the bill in 1867. The overland road was seen to be a costly mistake, and although many of the eastern pastoralists had made handsome profits by the sale of surplus stock on the goldfields, the market would have been there had Westland been part of another province from the outset. A less expensive bridle path would have sufficed for carrying mails and for stock driving. Canterbury in three years had spent more on the West Coast than had been derived in revenues from it. There was indeed little purpose in retaining the administrative responsibilities in an area where Australia and other provinces were gathering most of the economic fruits by seaborne trade. There were also political grounds why East Canterbury in 1867 should regard the union with Westland as "nothing better than a sham" and an "oppressive encumbrance". It may have been an exaggeration to say that the "strong democratic breeze of the West Coast disturbed the placid, wealthy and aristocratic East", but the behaviour of the Westland representatives in the Provincial Council did not endear them to their eastern colleagues. Because of the evenly balanced strength of the parties in the Provincial Council the five Westland members had a strength out of all proportion to the numbers. There was a strong danger that if the goldfields representation were increased, as indeed it must have been had the union been maintained, the Westland members would have formed an irresponsible group holding the balance of power.

12. The term "Eastland" was commonly used in newspapers on both sides of the ranges at the time to refer to Canterbury east of the main divide. Recently the word "Eastland" has been suggested for academic purposes to describe a region on the east coast of the North Island for which there is no popular or officially recognised name. See K.B. Cumberland: 'Agricultural Regions of New Zealand', Geog. J. Vol. 112, Nos. 1-3, 1943, pp. 23-62.

13. Total revenues amounted to £339,613 and expenditure on the goldfields, including the cost of the Arthurs Pass-Hokitika road, was £466,352. The construction of government buildings cost more than was received in revenue from publicans licenses. See: Statement of Revenue and Expenditure, West Canterbury Goldfields 1, J.P.C.P.C., Sess. XVII, 1868, Item 5.


wonder then, that the Lyttelton Times could see no reason why, "if the West Coast desire to break off the connection, we of the East should put ourselves to the least trouble to maintain it." 17

The miners as a class were apathetic to politics and they left it to the traders, storekeepers and publicans to take the leadership on political questions. 18 Although enfranchised by virtue of possessing a miner’s right, the small polls for provincial and parliamentary elections suggest that few miners took the trouble to exercise their vote. Likewise, it should not be assumed that the separation petition of 1867, although purporting to express views of public opinion on the West Coast, did in fact receive unanimous support. The move for separation had its origin in Hokitika and of the 2400 signatures attached to the petition none was collected north of the Taramakau River.

Public opinion in Greymouth, although willing enough to throw off the yoke of Canterbury, was not anxious to see the rule of Christchurch replaced by the rule of Hokitika, especially when fully one-half of Greymouth’s trade hinterland lay in the Nelson province. Thus the agitation which led to the creation of the County of Westland was essentially local and centred on Hokitika. Greymouth’s dissenting opinion received little attention and Hokitika, by making the loudest noise at the appropriate time, got largely what it wanted. Regional consciousness in Westland, as shown in unity of political outlook, had yet to develop.

Opinion in Greymouth favoured annexation of the northern part of the West Canterbury goldfields by Nelson, 20 a view which had the support of the miners of the Arnold district. 21 Thus

17. Lyttelton Times, Aug. 10th, 1867.
18. T.A.S. Kynnersley, member for Buller in the General Assembly, said of the miners on the Nelson goldfields that they knew there were two governments: "One at Wellington 220 miles away and another at Nelson 200 miles away. . . They wondered why the necessity for two governments." New Zealand Parliamentary Debates, 1870, p. 593.
19. Grey River Argus, Nov. 12th, 1867. W. Moorhouse, the member for Westland in the House of Representatives, said that an overwhelming majority of the signatures to the petition were from Hokitika and were the names of traders rather than miners. See Grey River Argus, Oct. 10th, 1867.
20. Ibid., Aug. 8th, 1867.
21. Ibid., Aug. 15th, 1867.
even in Westland there was a divergence in the aspirations of the central area and the periphery. Greymouth's attitude seems to have been based on three general arguments: first the desire to attain the political unity of the Grey Valley and to avoid wasteful duplication of expenditure on similar services on the two sides of the river; secondly, satisfaction with the efficient manner in which the Nelson goldfields had been administered; and thirdly doubts as to the ability of a purely goldfields district to assume the responsibilities of provincial status. It was feared that without a land fund, goldfields revenues were too precarious a basis for separate government; it was argued that there was no class on the goldfields able to supply political leadership and command the respect of other parts of the colony. Finally, there was the strong possibility that the old conflict between central and outlying parts of the provinces regarding the disposal of public funds would still be present if Hokitika replaced Christchurch as the centre of political authority in Westland. A memorial, signed by 1200 persons in the district between the Tararua and Grey-Arnold Rivers, asking for the area to be annexed to Nelson province was despatched to Wellington. However, the ship carrying the Greymouth representative was delayed and reached Wellington three days after the parliamentary session for the year had ended. By that time the County of Westland Bill had been hastily prepared and passed. On the first day of 1868 the fourth and final partition of the original six provinces of New Zealand became effective.

The new political unit was given a status unique in New Zealand. Rather than add to the already cumbersome machinery of provincial governments the general government decided to experiment with a more economical method of local government and establish in Westland a county with administrative powers only. Existing Canterbury legislation remained in force unless altered

22. These matters were discussed in a number of issues of the Grey River Argus between August and November, 1867.
or added to by the general government. The parochial interests of separate localities were satisfied by establishing road boards in areas roughly similar to the existing mining warden's districts. The road boards supplied a measure of "grass roots" democracy and were responsible for maintaining local tracks, roads, bridges and ferries with funds provided by the county. The county government in turn was responsible for main roads, bridges, hospitals, gaols, education, goldfields administration and harbours - in fact a province in all but name and without legislative powers. The experiment was not a conspicuous success for the county was saddled with 30 per cent of the Canterbury debt and was committed to heavy maintenance expenditure on the Arthurs Pass road at a time of declining revenues from the goldfields. In 1867 it was widely anticipated that a county system would soon be adopted as a means of granting local government to the steadily increasing number of scattered pockets of settlement in New Zealand. This hope was premature. Since the General Assembly was required on several occasions to spend time in purely local legislation for the county of Westland it was decided in 1873 to end its anomalous political status. For a short time from 1874 until the abolition of the provinces in 1876, Westland had full status as a province although the change was of little significance. Thus, during the golden decade the southern part of the Westland region experienced a three-fold cycle in its political organisation - firstly administration under a commissioner responsible to political authority in a distant centre; secondly an administrative county with wider functions than any subsequent county in New Zealand has ever had; and finally, full provincial status just before the death-knell of provincial institutions in New Zealand was sounded. Political status, therefore, was a further factor in making for the unique character of Westland as a region.

The Problem of South-West Nelson.

If the political separation of West Canterbury is to be regarded as the logical outcome of the dissimilar interests of the two societies separated by physical barriers, then the failure of the Nelson Southwest Goldfields to break away from the Nelson province raises some interesting problems. For the contrasts between the proverbially "sleepy hollow" of the Waimea Plains with its mercantile and agricultural interests and the mining community of the West Coast were just as marked as those between east and west in Canterbury. The western goldfields were separated from the provincial capital at Nelson by barrier ranges just as formidable as the Southern Alps. A full investigation of the problem is probably beyond the province of the geographer but some tentative suggestions are made. Three general factors seem relevant to the matter: the manner of the administration of the goldfields, especially the wide discretionary powers delegated by the Nelson government to its commissioner on the goldfields; the personal popularity of the commissioner; and the distribution of population in the northern part of the Westland region.

Nelson had already undergone geopolitical surgery when the pastoral lands of the Waimea were formed into the province of Marlborough. With this experience as a warning, Nelson made it clear when the southwest goldfields were first proclaimed that all revenues raised in that district would be expended there. It has been mentioned in an earlier chapter that Nelson had previous experience in dealing with the requirements of a mining population and had taken an early and active interest in making known the resources of the West Coast. Nelson had closer commercial relations with its goldfields than had Christchurch and because sea communication was easy there was no temptation to construct a costly overland dray road to the diggings. Funds were therefore available to be spent more liberally on tracks in the goldfields areas themselves. Within six months of the

proclamation of the goldfields, 115 miles of tracks and horse roads had been built on the southwest goldfields, chiefly in the Grey Valley. The distribution of the gold workings in relation to ports of entry, and the nature of the terrain, made it easier to provide routes of travel at a lower cost than was often possible on the Canterbury goldfields. The trunk road, built up the Grey Valley by the provincial government, was readily supplemented by lateral tracks branching off to the diggings on either side of the valley. There were no great obstacles of terrain in making a good coach road from Westport to Charleston and small sums of money spent on blasting snags from the Buller and Grey Rivers made it possible to bring heavy goods by water far into the heart of the gold country. The miners and goldfields merchants saw these public works, as intended for their own benefit instead of serving the interests of merchants and graziers in a distant seat of government. The first centre of Nelson government activity on the goldfields was in the extreme southwest just across the boundary from Canterbury; the lower Grey Valley received little attention from the Canterbury administration in Hokitika and the contrast in the roads and tracks provided on either side of the provincial boundary was readily noticed by the diggers and merchants in the locality. A major factor in preventing discontent on the Nelson Southwest Goldfields was the speed with which public works were carried out when a need had been established. The discretionary powers of the commissioner enabled money to be spent promptly without waiting for approval from Nelson.

The personal popularity of the goldfields commissioner, T. A. S. Kynnersley, seems to have been a factor of no small consequence. Among a mining community of spirited and often wilful young men, personal affections and dislikes were stronger than abstract political attitudes. Although only 25 years of age when he was granted almost plenipotentiary powers on the goldfields, Kynnersley was described as "the most popular man

on the gold fields of the West Coast" and able to command the "uninterrupted respect of the large and everchanging body of miners". His popularity was undoubtedly one of the main reasons why there was so much support in the Greymouth district for annexation to Nelson in 1867. A less able and popular "autocrat" could well have promoted such dissatisfaction in the Nelson goldfields that the area to the north of the Grey River might have made common cause with West Canterbury in 1867 and have led to separation from Nelson and possibly the amalgamation of the two parts of the Westland goldfields into the one new county or province.

The distribution of population on the Nelson Southwest Goldfields did not favour the growth of any considerable agitation against a government centred in Nelson. The focal points of political action on the goldfields were the larger towns. The separation movement in West Canterbury was, in effect, a struggle by the merchant community of Hokitika to obtain local self-government for its hinterland. As the sixth town in New Zealand its voice claimed attention. On the Nelson goldfields the only considerable merchant community was.

29. Gray River Argus, Aug. 27th, 1867.
30. Kynnersley has received almost no mention from historians of Westland although they have made frequent reference to the Canterbury commissioner, George Sale, an Oxford graduate and later a foundation professor at the University of Otago. Both men were able administrators but Kynnersley seems to have made a more direct appeal to the miners as a class. Kynnersley had been an officer in the Royal Navy and settled in the Marlborough Sounds for health reasons. On the outbreak of the Whakamarina gold rush in 1864 he was appointed warden there and thus gained experience of miners and mining administration before his transfer to the West Coast. After the termination of commissionership control of the goldfields, Kynnersley represented the Buller in the General Assembly and the Nelson Provincial Council. A promising political and administrative career was cut short by his early death in 1874. It seems incongruous that although scores of unknown prospectors have given their Christian or nicknames to creeks and gullies in the gold country, the most prominent and popular man in the gold rush community should have been given no place in the nomenclature of Westland. For contemporary opinions as to the influence of Kynnersley on the early Westland society see Gray River Argus, and Taranaki Herald, Feb. 3rd, 1874, and Westmorland Times, Feb. 6th, 1874.
at Westport where the total population of the town was only 1500 in 1867. Westport could not claim to speak for the Grey Valley where the main centre of commerce was across the provincial boundary line at Greymouth. Public opinion in Greymouth was more concerned with securing some form of administrative unity for the hinterland of the town than with supporting agitation on either side of the river for separation from Canterbury or Nelson.

A movement for the separation of the Nelson Southwest Goldfields was, in fact, organised in Westport in 1869. By this time a telegraph had been well established throughout the goldfields and government through a resident commissioner with wide powers had been dispensed with. The immediate cause of the 'revolt' was a refusal by the Superintendent of Nelson to spend a large sum of money without authority of the Provincial Council in flood protection at Westport. Parliament was petitioned with a request to constitute the Southwest Goldfields as a county similar to Westland. About 3000 signatures were attached, more than signed the Westland petition in 1867, but the claims were rejected on the grounds that many of the signatures were not in order. Local opinion was by no means unanimous in its advocacy of separation, and public feeling probably did not run much higher than a desire to see a river bank protected. There was the likelihood that if a new county were to be established it would merely spawn a new separation movement in the Grey Valley. The financial difficulties experienced by the Westland County in its brief period of independent status had given little ground for enthusiasm with the county system of local government. Thus the Westport separation movement seems to have been little more than a teacup storm, stirred up by the merchant politicians

31 Westport Times; April 16th, 1869.
32 Journals of the House of Representatives, 1869, pp.XVI and 21
33 A Charleston correspondent writing to the Nelson Examiner on May 5th, 1869, thought that since the miners were a fleeting population and many of them signed the petition not from conviction but "as a bit of fun".
of Westport rather than an expression of a deep cleavage between the outlying goldfields and the central area of the Nelson Province. Further cause for discontent was allayed by increasing the goldfields representation on the Nelson Provincial Council and by granting through Local Revenues Boards a measure of local control in the spending of money on public works. Six local revenues districts were established with functions very similar to the Road Boards in the County of Westland.35

The Grey River Boundary Problem.

The provincial boundary between Canterbury and Nelson on the West Coast was unique in New Zealand as the only boundary line which became an important routeway and a centre of population and commerce. When Governor George Grey and his advisers so arbitrarily apportioned New Zealand among the six provinces in 1853, they made the boundary between Canterbury and Nelson in an unoccupied and virtually unknown wilderness. Little did they foresee the anomalies which were to arise. "What nature had intended for one district the New Zealand government had made two" said John Hall; but having recognised the mistake, the New Zealand government seemed unable or unwilling to deal with the problem. The Nelson government had to duplicate at Cobden administrative services, which were already provided by Canterbury a few hundred yards away on the other side of the provincial boundary. Two wardens and magistrates with separate jurisdiction, and two police headquarters with no provision for harmony of action between them, were within sight of each other at Greymouth and Cobden.37 Both governments had the expense of making roads on opposite sides of the river where the one would have sufficed. Different sets of mining regulations

35. See Nelson Gazette, 1873, pp.41 and 122.
were in force on either side of the river and a miner crossing from one side to the other would have to pay for a new miner's right while the six months residential qualification disenfranchised the roving gold digger. Harbour and river protection works were not carried out owing to lack of agreement between the two administrations; the delay in beginning the Brunner - Greymouth railway may have been due to the same reason. There was difficulty in making an equitable division of customs revenues on goods imported into Greymouth since there was doubt as to the proportion of the goods consumed on either side of the river; for the proportion of gold duty due to each province, the authorities had to rely on the statements furnished by miners and storekeepers to the trading banks as to the source of their gold. It was obvious that the development of the Grey coalfield could be best carried out under the one administration for the most accessible seam of coal outcropped a few yards from the Nelson boundary and dipped under covering beds on the Canterbury side.

Between 1867 and 1872 some of the public spirited citizens of Greymouth devoted a good deal of effort to organising petitions to parliament in an endeavour to remove the vexatious boundary line. Hardly a year passed without the matter being raised in parliament and although several bills were prepared none was proceeded with. The various alternatives suggested read like a list of practical experiments in political geography; one suggestion was to erect the Grey Valley into a separate territorial unit such as a county; another was to connect the north bank watershed of the Grey and its tributaries with the County of Westland; a third suggestion and the one most seriously considered, was to annex to Nelson that part of Westland County between the Taramakau and Grey Rivers. Since the Taramakau River was a barrier rather than a link, and until

1876 had very few people living near it, this river had fewer objections as a political boundary line. Nelson, however, being one of the few provinces which had managed to avoid falling heavily into debt, was not anxious to take over a large piece of territory from the debt-ridden County of Westland. Parliament, for its part, was not inclined to make any further piecemeal changes in the provincial structure of New Zealand except as part of a comprehensive scheme applicable to the whole colony.

With the abolition of the provinces in 1876 the four counties which were formed on the West Coast did define fairly accurately the community of interest zones of the four principal towns, Westport, Reefton, Greymouth and Hokitika. The unity of the Grey Valley for local government purposes was established by creating the Grey County between the Taramakau River and the Waihohonu or Big Grey River. The upper portion of the Grey Valley was included in Inangahua County, but at that time the area had closer trade affinities with Reefton. Part of the original Inangahua County was later formed into Murchison County, an area in the middle Buller Valley which is not considered to be part of the Westland region. Developments since the late 1870's have produced some discrepancies between the county boundaries and community of interest areas but these are of little consequence. In their functions the modern counties are little more than enlarged road boards and their range of administrative activities is much narrower than those of the old provinces. The Westland Land District is used by general government as a unit for statistical and certain administrative purposes. It thus includes a portion of the old Nelson Southwest Goldfields and is larger than the old Provincial District of Westland, (1874-1876) and the County of Westland (1838-73) of which the

northern boundary was the Grey and Arnold Rivers and hence a line from Lake Brunner to Harper Pass. (See Fig.1).

A few general conclusions may be offered on the political geography of Westland in its first decade of settlement:

(1) The division of a fairly homogeneous geographical region between two provinces was a result of the arbitrary division of New Zealand in 1853, a time when much of the country was unexplored and little of it settled. The boundary proved to be inconvenient since the Arnold and lower Grey Rivers became a centre of population, trade and travel. Despite the anomaly the 1853 decision remained effective on the political map of Westland until 1878.

(2) The goldfields were remote from the earlier settled 'nuclear areas' of the two provinces, Nelson and Canterbury. To meet the needs of the emergency created by the rushes a unique form of administration through commissioner with delegated power was applied to the two parts of Westland for three years after the proclamation of the goldfields.

(3) Tensions were generated between goldfields and nuclear areas in both provinces but were stronger and more significant in Canterbury, giving rise to the fourth partition of the original six provinces of New Zealand. That separation was granted was largely a reflection of the strength of the 'centralist' faction in the General Assembly at the time and its desire to weaken the provincial system of government.

(4) Political sentiment and political activities were local rather than regional and were centred on the larger towns with their non-mining population; the lack of unity in the political aspirations of people in the Westland region was illustrated by the independent separation movements in Hokitika and Westport, and in the pre-occupation of Greymouth with securing administrative unity for the hinterland of the town.

To conclude this account of the geography of Westland in its golden decade an attempt is made at a summary description of the landscape and society as it may have appeared to an observer at the time.
The Personality of Gold Rush Westland - A Summary.

The Westland gold rush produced the most considerable change in the pattern of settlement in New Zealand during the 1860's. The discovery of gold had brought a flood of people into one of the most humid and densely forested regions of New Zealand in a manner which could have been effected by no other combination of natural resources. Yet despite all the feverish activity and the thousands of people who had flocked into the region, Westland at the end of the golden decade was essentially a forested land upon which man had made little impression. The snow-covered ranges, the hills and rivers and the far-spreading mantle of dark green forest were the features which captured the observer's eye; the gold workings, the clearings in the bush, the townships and the patches of cultivation, when viewed from afar would scarcely affect the landscape. The signs of human activity appeared as a pattern of scattered spots against a universal background of forest. Forests hemmed in the settlements; the tracks, roads, and tramways were narrow lanes threading through the forest; and the gold workings were but scattered enclaves in the forest, seldom more than a few acres in extent. The spread of settlement in Westland is to be seen not so much as a broad advancing frontier, but rather as a series of thrusts along narrow lines of penetration.

Thus in the human geography of gold rush Westland it is the patterns of spots and patterns of lines rather than patterns of areas which claim attention. It is true that the spots and lines on the maps of gold rush Westland show a marked concentration in a long narrow zone between Ross and Inangahua Valley with a secondary concentration on the coastlands of the Buller. In alpine Westland, apart from the transisland routeways, and in South Westland, apart from the ocean beaches, there was no sign of human activity. Even the populated zones gave the superficial impression of emptiness. Of approximately five million acres in the area which we have somewhat arbitrarily defined as the Westland region, probably not more than 15,000 acres had been cleared of forest for mining, farming,
town sites, timber supply and routeways. An additional few thousand acres of sea beach, creek bed and open grassland would complete the list of areas which were utilised by the gold rush community. Settlement was found on three types of terrain, the ocean beaches, the dissected terraces and the alluvial floodplains. Of these, the ocean beaches afforded the most ephemeral basis for settlement while the terrace lands were the most important parts of Westland economically, and contained the bulk of the population outside the three commercial towns. On the floodplains there was a little sawmilling near the ports, and some scattered patches of farm development, but apart from these insignificant activities the alluvial flats were used only as routeways and as the rivermouth sites of the three principal towns.

To the traveller approaching Westland from the sea the first view would be of the surf-fringed beaches, littered with piles of drift-wood and in places pockmarked with the workings of the blacksand miners. At the river ports of Hokitika, Greymouth, Westport and Otarito, masts and heaps of splintered planks of wrecked vessels lined the beach and bar. Nearby were the busy commercial towns built on sandspit or riverbank, with their tightly packed buildings of calico, corrugated iron, and unseasoned timber. The narrow streets were scenes of constant bustle and activity and of round-the-clock drinking in hotels and grog shanties. Teams of packhorses, heavily laden, made their way along beaches or bush tracks to the diggings; small boats, crowded full of merchandise were poled up the rivers or towed by horses over shallows; tramlines ran from the towns to the nearer diggings past spots of cultivation creeping into the bush. Then there were the straggling mining camps set in bush-fringed gullies, where building sites had been picked out on the dry spots without regard to the geometric street patterns of the surveyors. Here were irregular huddles of calico, wood and iron buildings with the same imposing false fronts as faced the main streets in the larger towns. The unformed streets were sometimes quagmires of mud and waterholes
and sawn-off tree stumps; sometimes corduroyed tracks where the public spirit of the storekeepers had taken the initiative. Here lived the small groups of tradesmen, bakers, craftsmen, builders, shanty keepers and the flotsam and jetsam of idlers that gather for a time at any gold diggings. On Saturday nights the townships were lively places as diggers from the neighbouring gullies and prospectors from the back country crowded in to drink, gamble and dance. In the surrounding gullies and terraces were the networks of small water races and dams, the terraces riddled with shafts and drives, the fluming and water-wheels, the piles of wash dirt stacked awaiting rain and the mounting heaps of tailings from the abandoned workings. In a few places on the goldfields there was intense activity such as at Reefton and Charleston with the rumbling stamper batteries, or at Ross where by night the workings were lit up by kerosene flare lamps and the rattle of steam engines was heard unceasingly.

In some places there were the beginnings of other economic activities made possible by the goldfields markets but which were destined to outlast gold mining and to spread and to profoundly alter the character of the Westland landscapes and the regional economy. On the banks of the Grey River at Brunner work had commenced in 1854 on the first coalmine in Westland and the first bituminous coalmine in New Zealand. As yet, it was just an insignificant hole in the hill, with a collection of rude hutsments, a tiny coke oven, and some flimsy wooden staiths. Only 50 tons of coal daily were taken to Greymouth by barge for steamers in the goldfields trade, but from trial shipments for gasworks, steam raising and smithy purposes a reputation for the high quality of West Coast coals spread throughout the colony. At Hokitika at least three sawmills, using boilers and machinery recovered from the wrecks of ships driven on to the beach, supplied the town and struggled to build a small export trade in white pine. There were other sawmills at Greymouth and Westport and at some of the larger mining towns
cutting for local needs. Although there were spots of garden and orchard cultivation near many of the gold diggings, farming was a full-time occupation in only three districts in Westland - the lightly timbered river flats of the middle Grey Valley, the lower Arahura Valley and the Kokatahi area in the Hokitika Valley. Later farming development in Westland has been based almost entirely on pastures and livestock but these early farming districts were characterised chiefly by their crop production, the growing of oats for horse feed and of potatoes and vegetables for markets in the mining towns. At Totara Flat there were 27 farms in 1872 occupying 1270 acres. Of these, 930 acres were under oats, some fields having been cropped for five years without respite; 180 acres were in potatoes and only 150 in grass. Further south in the Grey Valley, between the Aahura and Arnold Rivers were another 32 "farmlets" most of them carried on in conjunction with gold mining. On 340 acres of farmland there were 130 acres in oats and 110 in potatoes. In the Arahura Valley, travellers on the overland coach to Christchurch passed the snug homesteads, gardens and fields of more than twenty farms. On the small flood-plain scrolls between the river and the bordering terraces a correspondent wrote of "good clover paddocks and large patches of produce cultivation neatly fenced and neatly kept." Here it was difficult for the observer to imagine himself on the outskirts of a young goldfields town since "everything looks English and therefore pleasing." According to the Census of New Zealand, 1871, there were some 4100 acres of improved farmland on the coast. Only 53 per cent was in sown grassland and one fifth of that was cut for hay. Oats (together with 13 acres of wheat) occupied 15 per cent of the area, potatoes 12 per cent, gardens and orchards 9 per cent, minor crops 3 per cent and 7 per cent of the area was broken up but not under crop. One half of the improved farmland was in the Grey Valley. The total area of 4,100 acres is equivalent

41. Figures are from Grey River Argus, Feb. 9th, 1872.
42. West Coast Times, Nov. 5th, 1869.
43. loc. cit.
to the present area in grass in the Waitaha Valley — one of the smaller Westland farming districts to the south of Ross. At no subsequent time has the proportion of grassland to improved farmland been so low. In addition some 17,000 acres of Crown were rented for pastoral purposes, one half of it in the Grey Valley. The pastoral runs had a nucleus of sheep grazing land on the braided river beds and cattle browsed in the nearby bush. The runs were used as temporary holding grounds for butchers' livestock driven overland from Canterbury.

Today the gold country of Westland is all but deserted of population. The forest grows over the tailings and the once-bustling townships; water races have crumbled and old routeways are forgotten but the place names remain. Few features in the Westland gold country had Maori names and the miners found in the innumerable creeks, gullies, spurs and terraces of this closely dissected terrain ample scope to add to the nomenclature of Westland especially as they had swarmed over the country before the surveyors had done more than fix the positions of the major rivers. Some features were named after prospectors: Moonlight Creek, Capleston, Hunts Beach, Scotch Jocks, Nobles and Red Jacks Gullies; others were named after the various national groups who made up the gold rush population: German Gully, Italians Creek, Scandinavian Hill, Chinaman Creek, and Greeks Gully. Some names, such as Ballarat Hill, commemorate other goldfields while gold mining terminology gave rise to Big Nugget Gully, Duffer's Creek, Cradler's Gully, Half Ounce Creek, Crushington and Reefton. In their naming of coastal features the miners were severely utilitarian and did not display the geniality and inventiveness typical of the terrace land nomenclature. Coastal features which had no Maori names, or where the Maori words were too difficult for the miners to remember, were named simply by the number of miles from the point of landfall; thus Three Mile and Five Mile Beaches were named from their distance from the port of Okarito; Six Mile Beach Township lay that distance north of Hokitika, while Nine
Mile Creek and Fourteen Mile Bluff on the coast north of Greymouth earned their names in similar fashion. The circumstances which led to the adoption of many other place names in the official nomenclature of Westland can only be surmised — such names as Deadman Creek, Pretty Woman Gully, Rough and Tumble Creek, Tin Pot Gully, Dirty Mary Creek or Notown — names which enliven the modern topographic map and which will still give an atmosphere of romance to the terrace lands of Westland when the last of the tailing heaps are overgrown by the forest.
(1) The unspoiled Westland: Lake Mathieson with the Fox Glacier and Mounts Tasman and Cook.

Photo: M. Lysons, National Publicity Studios.

(2) Westland as man has so frequently left it; cut-over forest, Nelson Creek.
HOKITIKA and its setting: The closely packed buildings in the extreme foreground occupy minute sections surveyed as business sites in 1865. The old banking and warehouse area north of the wharf shed shows signs of decay as the commercial heart of the town has moved northwards. In 1865 and 1866 a forest of masts from scores of ships frequently lined the quayside for a mile up the river. Apart from the drudge tailings at Kaniera and a sawmill nearby, the immediate hinterland of Hokitika appears empty of human activity. Four successive terraces rise east of the town and merge into the morainic ridge of the Blue Spa Range. On the second terrace, with a road leading up at left, the Hokitika Airport has been laid out since the photo was taken. At the base of the distant bush-covered terrace are the old gold workings of the Hau Hau "lead", the most southerly of the black sand deposits, inland from the present beaches. To the right of the smoke plume in the Ahuriri Valley is the low level gap into the Taramakau Valley - a route followed by the old Christchurch coach road. The Hohau Range forms the skyline on the left with the low hills of the Waimak goldfield between them and the Ahuriri Valley.

Photo: V. C. Browne.

5. Slip face of pulverised schist at the Alpine Fault on the Paringa-Raest track in South Westland.

6. High level fluvio-glacial terraces, 500 feet above the Inanga-hua Valley at Capleston. The hummocky terrain in the middle distance is the steeply dipping coal-measures of the Capleston coalfield. Hills in the foreground are greywacke and at the point where the photo was taken were traversed gold bearing quartz lodes.

7. Kahikatea swamp forest and flax bordering Mahinapua Creek near Hokitika. In the early months of the Ross gold rush supplies from the port of Hokitika were taken by boat up this creek and across Lake Mahinapua to the head of the Totara Lagoon.
(8) Blocks of schist transported by ice, are strewn on the surface of the Cascade Plateau and recall the schist tors of Central Otago.

(9) The open surface of the Cascade Plateau. An unexpected sight in an area with 200 inches of annual rainfall.
(10) THE ARAHURA VALLEY:
This photo emphasises the interest which two successive cultures, Maori and European, have taken in the mineral resources of Westland. From the gravel bed of the meandering Arahura River the Maori gathered pounamu after floods. The gold dredge in recent years has crawled over the low terrace in the foreground turning up a hummocky desert of stones. The alluvial soils of the small floodplain terraces were the first areas in Westland to be developed for intensive farming and today they support some of the best dairying pastures of the West Coast. The terraces on both sides of the valley were milled early this century. They have been frequently burned since then and a sporadically grazed as run-off for dry cattle. The moraine ridge of the Blue Spur Range in the middle distance carries reserves of rimu timber, now being milled.

Photo: V. C. Browne.
(11) The Buller Gorge: Westland's first goldfield. The earliest workings were on gravel beaches such as those in the centre of the picture.

(12) Greenstone; site of the discoveries in the winter of 1854 which touched off the Westland gold rush. The granite mass of the Kohonau Range in the background.

(13) The stony open plain between the Taramakau River and Lake Brunner, known in the golden decade as "The Paddock" or "Bruce's Pakhii". A fern gathering area for the Maori's on the old greenstone route to Kalapoliha, this patch of open country offered the only natural grazing for horses and travelling stock on their way from Canterbury to the diggings. The depression between the mountains follows the Alpine Fault.
(14) SHAFT SINKING AT ROSS, 1868: A view at Donoghue's. On the right are tailings from whim claims and shallow paddocks with miners' huts scattered among the workings; ground sluicing on terrace at right. The appearance of steam engines and the poppet heads of large shafts in 1868 marked the beginning of company workings of the deep level alluvial leads. This area was later worked on an open face by hydraulic sluicing and elevators in the 1880's and was the site of one of the first electric power plants in New Zealand.

Photo: courtesy Mrs. M. Grimmond.

(15) ALLUVIAL MINING FROM HILLSIDE TUNNELS. The wash-dirt was trucked along the wooden tramway to the sluice boxes. Mining made heavy demands on timber supplies for sluice boxes, flumes and pit props but in Westland supplies could be readily obtained near at hand.

Photo: courtesy H. Osmer.
16a. Mining with primitive ground sluice and low pressure hydraulic hose in a creek bed near Ross, about 1867. The nozzle of the hydraulic is merely a wooden box. The large fluvio-glacial boulders are stacked on the left and across the bridge in the immediate foreground. The finer material is washed down a tail race where the gold lodges against wooden slats in the floor of the race.

No other photograph of gold rush Westland cayes so vividly the impression of a tough environment, the forest, the rain, the wet conditions of working, the buried timber and the boulders that had to be laboriously moved by hand.
16b. An early high-pressure hydraulic jet supplied from a canvass hose but with metal nozzle. The wooden tail race can be seen in the foreground. With greater hydraulic power at his command the impact of the miner on the landscape becomes greater.

Photos 16a and 16b: Evans Collection, Canterbury Museum.
17. High level storage zone for the Kumara and Waimea water races. A view from the summit of Mount Tuhua across the moraines and high-level fluvo-glacial terraces in the area between the Arakura River and Taramakau River. The two water surfaces seen are Lake Mudgie and the Kumara reservoir.
18. A GOLD RUSH MINING CAMP.

Sailors Gully Ross, about 1868. Typical of the string of small diggings settlements at the mouth of each gully between the town of Ross and Donoughue. The canvas tents of the early months have given way to wooden cottages but only the most essential forest clearance has been done. As this was not a surveyed township dwellings and gardens are scattered haphazardly among the mine workings and tailings while the charred trunks of the largest trees remain standing.

Photo: Enys Collection, Canterbury Museum.
(19) EARLY COBDEN: the small township on the north side of the Grey River, opposite Greymouth, was essentially a "political" feature of the Westland landscape, an expression of the provincial boundary line drawn between Canterbury and Nelson more than ten years before the gold rushes.

Photo: Turnbull Library.

(20) KANIERI TOWNSHIP in the 1860's: a view along the "main street". The elevated tramline was used for dumping tailings from the shaft claims behind the town into the Hokitika River. Horse-drawn carriages on the lower tramline ran a frequent passenger and freight service to Hokitika.

Photo: Turnbull Library.
GLADSTONE STREET WESTPORT: the original business hub of the town until the area was washed away in the flood of 1872. Note the carcasses of meat hanging outside in the street - the dog nearby and an open drain in front.

Photo: Turnbull Library.

NAPOLEON'S HILL, in the heart of the Ahaura goldfield, 1868. This is one of the few street scenes to have survived of a mining camp at the height of a rush. Roofs are of shingles or canvas and the corduroyed road still contains stumps of large trees. The locality has been deserted for many years and now lies at the centre of the first State Forest in Westland to be managed for sustained production of indigenous timber.

Photo: Greymouth Borough Council Collection.
22a. HOKITIKA about 1866

A panoramic view of the commercial area of the town from Revell Street. Note vessels ashore on the bar.

Photo: Canterbury Museum
A.D. Dobson Album
23a. AYLMER STREET ROSS, ABOUT 1867

Photo: Enys Collection, Canterbury Museum.
ROSS FLAT ABOUT 1868, showing poppet heads of shafts, tailings heaps and fluming which supplied water to the sluice boxes. This five acre flat with its deep level auriferous leads was the most intensively-worked alluvial gold-field in New Zealand.

Photo: Enys Collection, Canterbury Museum.
The Hokitika waterfront in the late 1860's. The warehouses on Gibson's Quay, the steam paddle tug which took vessels across the bar, the schooners in the river and the crowns of the rimu trees rising above the suburbs of the town can all be identified. Note the two boilers just above the small boat in the foreground. These were frequently taken from vessels wrecked on the bar and were later sold by auction to mining, sawmilling or brewing companies.

Photo: Turnbull Library.
(25) BRUNNER COAL MINE on the banks of the Grey River 1866. Workmen's cottages on left and on hillside above; coke ovens at riverbank, with main drive through the out-cropping coal seam in centre of picture. A rake of trucks leads on to timber staging where the coal was tipped into the bins and loaded by staiths into barges for transport to Greymouth. Drainage tunnel near water level at left.

(26) Trucking coal by manpower at the Brunner Mine in 1866.

Photos: courtesy Mr. C. N. Taylor.