

the first draining a basin-like area, between the limestone range at the back of Greymouth and the outcrop of the coal-bearing series on the south side of the Grey. The Waimea drains the northern slopes of the range of older rocks, extending from Brunnerton South to the water shed of the New River.

The Arnold has no tributaries of any consequence joining it from the south, nor, indeed, from the northern side of its water shed. It acts merely as a drain to carry off the surplus waters of Lake Brunner. The main stream of the Crooked River to the crossing of the track from the Teremakau to Bell Hill, and the southern branch throughout, traverse low alluvial grounds similar in character to and probably originating in the same manner as the larger alluvial tract of Bruce's Paddock. The sources of the Crooked River, in Mount Alexander, are mountain-torrents, the beds of which are bounded by vertical cliffs of schist rock, or clad with bush to the limit of forest growth. Mount Alexander, on this side, is more precipitous than on the southern face overlooking the Teremakau Valley.

The Orangipuku and the Big Hohonu Rivers are the principal streams draining from the south into Lake Brunner. The first of these has, like the Crooked River, its main course along the low alluvial grounds, formerly occupied by glacier-ice, and latterly traversed from side to side by the waters of the Teremakau River. At the present time its chief tributary creeks bring to the Orangipuka the drainage of the northern slopes of the Hohonu Peak Range, Mount Bruce, and the granite mountains between that and the Teremakau, opposite Rocky Point.

The Big Hohonu is a mountain torrent of considerable volume, which drains from the centre of the granite mountains, having Hohonu Peak to the north, and Mount French and Mount Smart on its western and southern borders. Before escaping from the mountains around its source the stream is confined within a deep gorge, along which, during floods, it carries a vast amount of detritus in the shape of huge angular blocks of granite, to the lower grounds. Below the bridge, on the road from the Greenstone to Lake Brunner, the stream cuts its way through glacier-deposits and lake-terraces considerably above the present level of the lake.

Lake Brunner itself is a fine sheet of water, extending five miles and a half in an east and west direction by about four miles in the opposite north and south direction. From its outlet into the Arnold River to where it receives the Crooked River the northern shore is low and far from picturesque; but between the entrance of the Crooked River and the lower end of Bruce's paddock, Tekinga or Paddock Hill, sends down steep spurs to the water's edge, and this, opposed to the Hohonu Peak range on the southern side, gives to the eastern end a totally different aspect to what obtains at the western end. The southern shore towards the west is formed by a series of shallow or deeper embayments, with bold projecting points between, formed by the descending spurs of the irregular hilly country and terrace-land to the south. The lake is said to be very deep, but I could get no reliable information on this point. The surface of the lake is 281ft. above the sea. It is reported to be in places 100 fathoms deep; hence part of its bed must be below sea-level.

*New River Valley.*—This has been eroded out of a sloping table-land declining westward from the water-parting between the New River watershed and those of Maori Gully and the Arnold River, &c. The drainage system has been established, and the whole valley of the New River excavated, since the disappearance of the glacier-ice from the low grounds west of the Granite Mountains. Undisturbed morainic deposits are still to be met with on the Hohonu-Greymouth Road immediately east of Fuchsia Creek, and from the glacier and river deposits spread over this area, and perhaps even more from the cutting down and removal of much material from gravels of older date—"Old Man bottom"—have resulted the valley gravels of recent date. These re-assorted gravels have proved rich in alluvial gold, the New River area being of great importance in this respect.

The main stream and its numerous tributaries have effected the erosion of their beds to the present level with great rapidity, owing to the fact that the rocks underlying the gravels are soft sands and sandy marly clays, which were easily cut into and undermined by the denuding agents, which applied to them were eminently effective for that purpose. Cock-eye or Caraboo Creek is a special instance of the manner in which the former sloping table-land has been cut into by the action of running water.

*Teremakau Valley.*—The Teremakau in the volume of its waters is less than either the Hokitika or the Grey River, but nevertheless it is a river system ranking with either of them in importance. By way of its upper valley the West Coast was first approached from the Canterbury side of the main range, and even now, by way of one its tributary valleys, is the only land communication being maintained between the settled districts of Canterbury and the northern part—and indeed the whole of Westland. Within the Teremakau watershed were made the first gold discoveries that rendered famous the West Coast of the South Island of New Zealand; and, scarcely had the richness of Maori Point and Greenstone Creek begun to decline, when another and more important gold-bearing area was discovered at Kumara, which since 1875 has maintained the largest mining population brought together on one field on the West Coast since that date. But in quite other respects the Teremakau Valley merits a special description. Its physical peculiarities are not to be passed unnoticed, and the majestic scenery of the mountain region in the middle and upper parts of the valley are of world-wide fame. Who has not heard of the glories of the Otira Gorge. And these are not alone, since the Teremakau Valley, from the Otira Junction to where the river leaves the mountains between Mount Smart and Turiwhate may be rivalled but not excelled in the grandeur and beauty of its scenery by any of the other river valleys of the West Coast or throughout New Zealand. Its lower course from Kumara to the sea is between moderately high banks, exposing the blue Tertiary clays that underlie the superficial deposits of the coastward region. On the northern bank the country soon becomes hilly, but on the southern side a broad terrace-plain, thickly timbered, extends to the Kapitea Creek and the northern foot of the Waimea Hills. In its upper part, towards Kumara, this plain has been formed by the action of the river alone; but, more to the westward, its lower levels are due to the united action of the river and the sea.