granite, and, from its source between Island Hill and Turiwhate to its junction with the Arahura, the beaches of this river have for the most part proved auriferous, and many of them have been worked more or less successfully. Payable gold, it is said, has been traced right to the very saddle leading into the valley of the Arahura-Wainihinihini. The morainic hills that lie between Fox's School-house and Whiskey Creek, and on the opposite side of the Kawhaka to the Arahura, opposite Humphrey's Gully, do not contain such a large proportion of granite stones as are to be found in the Kawhaka River-bed, and the granite masses of Turiwhate and Island Hill must be accountable for this difference.

The beaches of the Arahura were payable to work for gold as far up the river as the lower end of the first gorge, carved out of the huge moraine that has been already described; but the Humphrey's Gully Range, with its heavy deposits of older Pliocene gravels, extends to the sources of Caledonian Creek, and may have yielded thus far a large percentage of the gold found on the river beaches of the present day. But, at the same time, the morainic hills on the north side of the river have yielded gold, and are still considered worth prospecting; and these also would be, it is evident, a source of gold to the river-bed. The beaches of the Arahura thus far have been worked with good or highly payable result. After floods the same beaches were again worked, and are still worked, though with less payable results. Through the first gorge, and above it to the junction of the Arahura-Wainihinihini, the river-beaches, though not so rich as below the first gorge, yet paid to work for the first time. These are still being enriched by tribute from higher up the stream, or by the shifting of the river-channel, when new beaches are formed that are rich enough to be worked, though by no means are they equal to the beaches first worked.

A mile above the junction of the Wainihinihini, or at the junction of Mount Brown Creek, the granite belt is passed through and the mica-schist rocks are entered upon. The second gorge is cut almost wholly through mountains of mica-schist. On the south side of this gorge especially, there are heavy deposits of shingly matter, forming high terraces washed by the river. In floods, not only do the tributary creeks bring fresh material from the mountains, but cutting across these terraces they carry to the river channel large quantities of terrace material. This is carried along by the main stream, either into the flat country below the gorge, or, short of this, arrested for a time, it forms narrow terrace-flats along the lower part of the gorge, or beach deposits within the ordinary flood-mark of the river. Strange to say, though they yield a little gold almost everywhere, none of these deposits have yielded so as to lead to the systematic working of them. Prospectors finding a little gold in the deposits lodged in the gorge were led to believe that the gold came from the upper part of the river above the Crowbar Gorge, and usually made an endeavour to reach this part, where the river runs in a less confined course along a narrow mountain valley, and where also the rocks change from crystalline schists to the ordinary slates and sandstones of the Upper Taipo and the Otira Gorge.

Greater facilities certainly were afforded for the concentration of gold at particular places along this upper valley of the Arahura, but, though prospectors here and there worked a patch on a beach or the river bank, no regular workings, and so far as I have been informed, no paying deposits of any extent were ever found. For years past no attempt has been made to work for gold on any part of the Arahura above the first gorge.

Between Humphrey's Gully and the crossing of the Christchurch–Hokitika Road, the Arahura River-bed shows a great variety of different rocks and minerals. A collection of these was made, to indicate what might be expected from the rocks *in situ* in the upper part of the valley. The gravels being sluiced into the Arahura from the Humphrey's Gully workings are for the most part decomposed, so as to be easily distinguished from those brought farther down the river, and do not interfere with the determination of what belonged to the back country. Collections with the same object were made above Humphrey's Gully to the foot of the first gorge. The granite boulders of the river-bed were easily separable to Island Hill, and the Mount Tuhua Range on the opposite side of the valley. These seldom showed the presence of metalliferous minerals, except now and again iron-pyrites disseminated through the mass. But, in this connection, Mr. W. M. Harcourt obtained in the Kawhaka River-bed a granitic or gneissic boulder, intersected by a thin vein of quartz, highly charged with copper-pyrites. No such specimen could be obtained from the Arahura River-bed above the Kawhaka Junction. Report says that in cutting the Humphrey's Gully Water-race, along the slopes of Mount Tuhua, that a vein of quartz with copper was exposed. This would be in gneissic rocks or granite country; but I did not see the outcrop, as those with me had no knowledge of its exact whereabouts.

In the harder schist-rocks of the Arahura River-bed, copper-pyrites are plentiful, but generally as scattered crystals, disseminated through the other constituents of the rock, chiefly in highly siliceous actinolite schists. Copper also occurred disseminated through the softer grey mica-schists and sometimes in such quantity as to lead to the belief that particular parts of these schists might pay to work. In this case, the copper appeared to be intimately associated with the rock, and to the unaided eye does not exist as separate crystals.

Olivine and serpentine rocks are abundant in the shingle of the river-bed below Humphrey's Gully, and, higher-up, boulders of this class increase in number and in size greatly. These rocks frequently contain iron and copper pyrites and crystals of chromic iron. Many of the boulders of olivine rock resemble a dark form of jade or greenstone; thin splinters of the rock being translucent, and of a darker or paler green, according to the thickness of the specimen, and the manner in which it is viewed. Ruby-crystals, or ruby-bearing rocks, were also much sought for, as it was thought the valley of the Arahura would be as likely to yield these as that of the Hokitika.

Last year I accompanied Mr. Gordon in the course of an official visit to Rimu, Back Creek, and Ross. During this trip, while at Rimu on the 9th November, 1891, a student of the School of Mines at that place showed, as part of the collection of rocks and minerals collected from the claims in the neighbourhood, a sample of what in the school had been determined as corundum, or emery rock. This was massive, and of a dirty brownish-grey colour. Next day, in several of the