

the solid rock is probably 60 ft. below the gravel-surface. Up-stream the gravel filling will gradually decrease, but as far as the valley retains a similar profile the ratio of the width of gravel filling to the depth of filling will remain approximately the same.

Though the headworks in the Orongorongo are about the same distance from the sea as the reservoirs in the Wainuiomata, the two valleys are decidedly unlike. The latter is mature, with graded valley slopes; the former, which at this part is more than 300 ft. higher, is a youthful steep-sided V-shaped valley.

In the Orongorongo patches of flood-plain are small and discontinuous, and rock outcrops everywhere. But the stream-bed is encumbered with a considerable amount of debris, the bulk of which is subangular and quite unweathered. It has evidently not travelled far, and is, in fact, being brought into the main stream by a tributary entering from the east some 10 or 15 chains above the intake of the pipe-line. Three large scree slopes descending from high bare ridges in the basin of the tributary supply it with large quantities of waste. Above the tributary, the Orongorongo appears to carry the amount of debris normal to a stream draining steep mountainous country wooded to the summits.

10. MANANUI FLAT BOREHOLES.

(By J. HENDERSON.)

Mananui, a sawmilling township, about five miles south of Hokitika, was visited on the 9th March, and I traversed the sawmill tram-track for a distance of about three miles from the railway-station.

West from Mahinapua Stream to the Tasman Sea, a distance at Mananui of about 60 chains, the land is formed of Recent marine sands, which rise in a series of five distinct uplifted beaches to a height of about 25 ft. at the railway-station. There is a low foredune along the shore. Between the station and Mahinapua Stream the sands have a level surface. From the mill the tram-line rises on to gently undulating country on which the highest points for some miles are about 150 ft. above sea-level. The numerous outcrops along the line show that this higher area consists entirely of ancient glacial deposits.

A few years ago three boreholes were sunk with a Keystone drill at points beside the tram-line. The first bore, about 60 chains from the station, reached a depth of 151 ft.; a colour of gold was noted at 5 ft., otherwise the hole was barren. The second, 117 ft. deep, a mile farther on, passed through ground with a few colours at 19 ft. and 27 ft. There is a small stream at this point, and the colours are probably in the gravels of this stream. The third hole, a mile distant on one of the swampy flats that dot the surface of the old moraine, was drilled to 113 ft., gold colours being reported at 23 ft.

DOMINION OBSERVATORY.

REPORT OF THE DOMINION ASTRONOMER AND SEISMOLOGIST FOR THE YEAR 1928.

BUILDINGS AND EQUIPMENT.

THE buildings and equipment have been kept in good order and condition. The Observatory grounds are kept in order by the Wellington City Corporation.

ASTRONOMY.

Astronomical Observations.

Observations of the meridian transits of stars and the sun have been made for the purpose of controlling the time service. The meridian transits of the sun are observed on every fine day, except on Saturdays, Sundays, and Government holidays, and the stars are observed whenever necessary.

Reception of Radio Time Signals at the Observatory.

The following radio time signals were received at the Observatory: Mean-time signals from Honolulu, 293; Nauen, 238; Malabar, 166; Bordeaux, 123; Annapolis, 13; Elgin Watch-factory, 4; Rugby, 4; Chelmsford, 1. Scientific time signals were also received at the Observatory as follows: Bordeaux, 54; Nauen, 91; Rugby, 7.

The radio time signals received at the Observatory generally agreed with the Observatory clock within one second of time. Greater differences, however, have been observed in the following cases:—

					Differences from Observatory Clock.	
					From 1 to 2 sec.	Over 2 sec.
Honolulu (NPM)	..	..	..	..	5	10s·93 slow 23rd June.
Nauen (POZ)	..	..	..	..	2	
Malabar (PKX)	..	..	..	..	2	
Bordeaux (LY)	..	..	..	..	1	