

traversed by the Main Trunk Railway, but of these there is far from a complete record. Shakes were felt in the Te Awamutu district (over sixty miles north-west of Taupo) during June and other months, and one was recorded at Hamilton (about fifteen miles north of Te Awamutu) at 7.10 a.m. on Sunday, 15th October. Several sharp shocks were felt at Ohakune on Sunday, 3rd September, between 3 a.m. and 4 a.m. at a time when numerous tremors were being experienced at Tokaanu, thirty-seven miles to the north-east. About midnight on Thursday, 12th October, a "heavy shock" was felt at Taumarunui, thirty-five miles west-south-west from Taupo, and many "distinct" tremors followed during the next few hours. During the previous three weeks or more many light shocks had been felt. The Ohakune shakes no doubt had an origin in the Taupo fault-zone: those in the Te Awamutu-Hamilton and Taumarunui districts seem to have had independent origins.

9. PAINT-PIGMENTS NEAR PUKEITI HILL, SOUTH-WEST OF NEW PLYMOUTH, TARANAKI. (By L. I. GRANGE.)

On the 21st December, 1922, I examined the deposit of paint-pigments on Section 18, Block 7, Cape Survey District, the property of Pouakai Minerals (Limited). Mr. R. W. Davies, of New Plymouth, who has a wide knowledge of the locality, showed me the work that had already been done. I have to acknowledge his valuable help.

The pigments are ochres which consist chiefly of iron oxide and small amounts of wad, a dark-coloured oxide of manganese. They outcrop in a small branch of a tributary of Timaru Stream, about 20 chains north of Pukeiti Trig., a hill lying between Pouakai Range and Kaitake Hills, about ten miles south-south-west from New Plymouth. The deposit is reached from Saxon's hut on the Carrington Road by way of a walking-track. The company has prospected the material by sinking eight shallow pits with a maximum depth of 10 ft. All are situated on the banks of the creek and rills joining from the west, and are enclosed in an area $3\frac{1}{2}$ chains by 2 chains. Mr. Davies had bailed a pit which is the middle one of five on the west branch of the creek, and from the others, almost filled with water, a number of samples were taken. In the empty pit the succession is: Soil and subsoil, 2 ft.; wad, 2 ft.; golden-yellow ochre containing pockets of brown ochre and wad, 4 ft. A borehole 4 ft. deep from the bottom of the pit was in ochre. Of the other pits, three expose ochre as much as 6 ft. thick, and four wad up to 10 ft. thick.

Previous to my visit samples of the pigment were sent to the Dominion Analyst,* who reported favourably on them. The ochre is invariably free from gritty particles, and the colouring is constant. The two colours golden-yellow and brown could be kept separate in working. The greater part of the wad is exceedingly fine-grained.

Judging from the data obtained, I consider that the deposit is certainly worth further prospecting. The quantity cannot be estimated, but if the bed in the more eastern creek has a width of even a few yards several hundred tons of paint-making material are present. I recommend sinking on the bank a few yards west of the pit that was bailed in order to ascertain the depth, and trenching to find the width of the deposit on either side of the creek.

10. WANGANUI-HAWERA DISTRICT. (By J. MARWICK.)

During the first week of September, 1922, extensive collections of fossils were made by Dr. G. H. Uttley and the writer from the marine strata exposed along the beach from Wanganui west to Manaia. These specimens will furnish valuable material for the study of our Tertiary Mollusca, and for exchange with other institutions. Only a part of the material has as yet been sorted and identified, so that complete results of the faunal relations of the different localities cannot be given. The work already done supports Vaughan's contention that more attention should be paid to the study of faunas and their relation to disconformities. An erosion surface, additional to those described by Marshall and Murdoch, was observed on the beach about two miles west of Wanganui, between the Castlecliff and the Kai Iwi beds.

The Mollusca of the lowest horizon studied, that at Waipipi, were found to have fewer affinities with those of the Awamoan than had previously been supposed. This may mean either an important stratigraphical break with the arrival of a new fauna, or a long time interval between the two horizons, probably shown by a great thickness of sediments. The recent surveys in North Taranaki have demonstrated the presence of thousands of feet of strata at a higher horizon than the Awamoan, and the uppermost beds, the Onairo Series of Clarke (Bull. No. 12, 1911), according to the contained fauna, are well below the Waipipian.

11. PAINT-PIGMENTS, ONAHAU, NELSON. (Summary of Report by J. HENDERSON.)

Over thirty years ago a settler of the Takaka district named McKeoghant† manufactured paint-pigment from a deposit on his property, which is situated on the eastern side of the Onahau Stream, four and a half miles north-north-west from Takaka Post-office. At this locality the gravels forming the coastal plain contain a red-coloured ochreous band from which the pigment was obtained. Iron oxides leached from 3 ft. of gravels immediately beneath the soil have been redeposited in the clay matrix of the next 3 ft. of gravel.

A large quantity of paint-pigment no doubt occurs in this locality, but until further prospecting has been done no reliable estimate of the amount can be made.

* Dom. Lab. 55th Ann. Rep., p. 23, 1922.

† See Lab. Rep., No. 22, p. 49, 1887, and R.G.E., No. 20, p. 220, 1890. The name in both reports is printed Keoghan, which is believed to be an error.