

Soils.—Samples of soils and clayey subsoils from the neighbourhood of Huiakama and Te Wera have been analysed at the Dominion Laboratory. The results indicate that the soils of the river-flats have been formed chiefly by material derived from the sandy mudstones of the Onairo Series, but in some cases there seems to be a large admixture of weathered volcanic material. These latter soils are higher in alumina, iron oxides, lime, magnesia, and alkalis than those of the former class. The subsoils similarly fall into two classes.

II. Egmont Survey District.

Physiographic Features.

Egmont Survey District was apparently once part of the Wanganui coastal plain, but the volcanic eruptions that produced the towering cone of Mount Egmont and the less lofty Pouakai Range have completely altered its physiographic character. The summit of Egmont, 8,260 ft. above sea-level, is near the southern boundary of the survey district. Near its western boundary the Pouakai Range rises to a height of about 4,600 ft. In the neighbourhood of Inglewood, in the north-east corner of the district, are numerous low conical hills, each of which appears to have been the locus of a minor eruption of lava. The only other elevation worthy of note is the dome-shaped German Hill, north of Mount Egmont, which rises prominently above the surrounding country, and has a total height of 1,300 ft. above sea-level.

Throughout last summer and autumn Mount Egmont had ice on a portion of its southern face, but late in the season all snow had disappeared from the northern side, except at the summit. On the southern side of the mountain is the parasitic cone known as Fantham's Peak, which has a well-developed crater comparable in size to that of Mount Eden (Auckland), but of less depth.

As may be seen by the inspection of any map of Taranaki, numerous consequent streams flow radially from Mount Egmont, the chief of these in the Egmont Survey District being the northerly-flowing Waiongona and Waiwakaiho. The streams rising on the eastern slopes of the mountain after a few miles assume a north-easterly course, and go to swell the waters of the Mangonui, which, turning to the north, ultimately enters the Waitara. The gorges forming the heads of the streams taking their rise on Mount Egmont were, at the time of inspection last autumn, dry from their upper ends to distances varying from half a mile to a mile below the track that runs from Bell's Fall on the north side to Dawson's Falls House on the south side. Below the points where water appeared the various streams are supplemented by numerous small brooks taking their rise in the forest reserve. Near the heads of the Mangonui and the Waiwakaiho there is evidence of probable ice-action, indicated not only by material resembling fluvio-glacial drift, but also by striations or grooves occurring both on boulders and on solid rock surfaces.

General Geology.

The rocks represented in the Egmont Survey District are andesites of almost uniform type, agglomerates, tuff and pumice of andesitic composition, together with clays and surface material which also have a volcanic origin. No outcrop of the marine sedimentaries found in Huiroa and Ngatimaru survey districts has been found in any portion of the area that has been surveyed. The oldest visible rocks of the Egmont Survey District appear to be the andesitic lavas and allied rocks forming the Pouakai Range. In date these probably precede at least the upper part of the Onairo Series, but this cannot be definitely stated at the present stage of the geological survey. The andesitic lavas, agglomerates, and tuffs exposed to view on the slopes of Mount Egmont, together with the volcanic debris widely distributed over the surrounding country, are evidently of post-Onairo age, and may be placed in E. de C. Clarke's Pouakai Series.* In Bulletin No. 14, it will be remembered, the Pouakai rocks, with the possible exception of the andesitic rocks known as the Sugarloaves, are regarded as younger than the Onairo Series; but in order to include the rocks forming the Pouakai Range, and probably the core of Mount Egmont, it is now necessary to extend the meaning of the term "Pouakai Series," and to define it as embracing all the volcanic rocks of south-western Taranaki, whatever may be their age.

Owing to the amount of loose debris on the higher slopes of Mount Egmont, and of water-transported material on the lower slopes, the details of its geology will not be easily mastered. At a number of places massive faces of solid andesite, usually exhibiting a columnar structure, are prominent. To what extent these are connected with the central crater, and to what extent they represent flows from subsidiary orifices—all, except Fantham's Peak, now obliterated—cannot be stated.

The lava-flows that form the small conical hills near Inglewood, either wholly or in part, have already been mentioned. German Hill shows no outcrops of andesite or other volcanic rock, but probably is similar in origin to the Inglewood hills.

The fragmentary ejectamenta of Mount Egmont have been largely transported by water (and possibly in some degree by ice) to its lower slopes and to the surrounding country. The resulting deposits, being water-sorted, are, strictly speaking, sedimentary, but, as was done in Bulletin No. 14 with similar material, will be included in the Pouakai Series. The following section may be taken as typical of the streams flowing from Mount Egmont in the area outside the radius line: Immediately beneath the soil is usually a brown clay containing about one-third its bulk of andesitic pumice. This passes downward into clay free, or nearly so, from pumice, and is underlain by a bed of tufaceous material, usually of comparatively fine texture, the highest of a series of similar layers, almost horizontal in disposition, some composed of coarser material than others. Usually one or more carbonaceous bands, representing old surfaces on which vegetation flourished for a time, may be observed.

In the lower part of Mangorei Stream, a branch of the Waiwakaiho that rises in the Pouakai Range, thick beds of clay are exposed on the stream-banks. Nearer the Pouakai Range tufaceous beds have a considerable development.

* N.Z.G.S. Bull. No. 14, 1912, pp. 12, 21-26.