

It was impossible to discover the exact form and construction of the summit of Ruapehu, the whole mountain top being covered with a deep mantle of snow, which completely fills up and hides all the hollows between the peaks. Three prominent peaks are presented to view—Paritetaitonga, on which our station stands, is on the south-western end of the mountain; to the south-east of it, about sixty chains distant, is Ruapehu, which is the highest point of the mountain; exactly a mile to the northward of Paritetaitonga is the third peak, called Te Heuheu, not quite so high as Paritetaitonga. All between these three points, with the exception of the crater lake, is a great undulating snow field, intersected by irregular crevices of immense depth. From the vertical inward faces of the three peaks, their more gradual outside slopes and the general configuration of the mountain on the western side, it would seem that the peaks formed part of a circular crater ring, the diameter of which would be about one mile, and the western portion of the lips have been destroyed. The crater, in which the hot water now exists, would probably have been formed, with others, on the floor of the old truncated cone. As stated in my monthly report for April, I noticed on several days after our ascent of Ruapehu, a column of steam rising out of the crater and ascending high above the mountain top. I drew the attention of Te Heuheu, and several of the oldest natives in the district, to this fact, and they all agreed that it was quite a new thing, they had never heard of steam arising from Ruapehu before. I think it is more than probable, however, that a low state of volcanic heat prevailed in the crater throughout. Five years ago, when triangulating on the Kaimanawa ranges, I noticed a column of vapour arising from Ruapehu, in the position of the crater; but, not knowing of the existence of the lake, I thought it must be a clond or fog arising out of one of the gorges of the mountain, although it seemed very like a column of steam.

When observing angles at Paritetaitonga, although the stones which formed the station mound were frozen hard together, my instrument would not remain level; the same thing occurred at Hauhungatahi station, eight miles to the westward of Ruapehu, which was likewise frozen hard when I was observing there. Three years ago when taking angles on Ngaruahoe, I found the same difficulty in keeping my instrument level, although the ground on which it stood was formed of a solid conglomerate mass.*

LAKE TAUPU.

In the month of January last, I took a series of soundings of Taupo Lake, the details of which are shown on the map accompanying my report. The Lake covers an area of 154,680 acres; its greatest length, from Tapuaeharuru to Waihi, is twenty-four miles seventy chains; its greatest width, from Waihaha Bay to the mouth of the Hinemaia River, is sixteen and a half miles. The result of the soundings shows that the Lake has an almost level bed, the average depth being sixty-five fathoms, and the greatest depth, at a point nearly in the centre, being eighty-nine fathoms. Only in one place was shallow water found at any considerable distance from the shore, this point is the reef about three miles to the north of the Motutaiko Island, where the rock is covered by only seven feet of water.

Motutaiko Island is one of the most interesting features of Lake Taupo. It is formed of a column of rhyolitic lava ascending perpendicularly from the bottom of the lake to a height of 600 feet, half of it being below the water, and the upper half covered with stunted timber and scrub. Its construction points to the probability that it is the neck of lava which filled an old volcanic vent, and it was probably surrounded by a cone of loose ejecta, which had been worn away by denudation, and now cover the floor of the lake. To the north-east of Motutaiko Island, and extending northwards from near the mouth of the Hinemaia River along the shore for a distance of three miles, is a ledge running about two miles out into the lake; this ledge is covered by only from two to three fathoms of water, and at its edge the depth suddenly increases to over thirty fathoms. All along this ledge are lying large totara snags, many of them protruding above the water, and they seem to be in a good state of preservation. The Maoris have no knowledge as to how they came there, nor have they any tradition of a change taking place in the formation of the shore; it is more than probable that they were deposited by a slip occurring on the high land of the shore, at a time when the surface was covered with forest. A land slip on such a scale would scarcely have happened since the natives have inhabited the district, without their retaining some account of it, and it, therefore, seems probable that the timber has been lying there for 400 years, or more.

The evil spirit, or Taniwha, of Taupo Lake, called Horomatangi, is said by the natives to inhabit a cave in the reef which lies to the north-east of Motutaiko Island. They say that when a canoe approached the reef, Horomatangi lashed the water into foam, throwing up pumice and stones, and creating such a disturbance that the canoes were frequently capsized. Another interesting legend in connection with the reef was told to me by Te Heuheu. He said that a totara log possessing great mana (or power) floated in the neighbourhood; sometimes it lay near Horomatangi reef, and sometimes it appeared with its end resting on the shore of the lake. It had worn for itself a passage through the snags from the shore to the reef; it would lie for days touching the shore and then suddenly depart, and travel through the clear passage to Horomatangi, a distance of nearly two miles. An elderly native assured me that, when a young man, in a journey from Tapuaeharuru to Motutere, he had sat on the log to rest as it lay on the shore of the lake; on returning in a day or two after, he saw it floating far out on the lake on its way to Horomatangi. When the mission church was built at Motutere, the missionaries induced the natives to use the log in the building of the church; the native who dragged it out of the water died soon after, and all those who assisted in carrying it to the site of the church, or preparing it for the building, also died within a short time after. The movements of this log—which, no doubt, were considerably exaggerated—may be due to the current of the Hinemaia stream, which passes slowly through the lake, being deflected in the direction of Horomatangi's reef by the ledge on which the submerged timber lies; the log would thus be carried out by the current which extends to the reef, where it might remain till a westerly or a north-westerly wind drove it back against the light current of the river, until it again reached its former position on the shore.

*NOTE.—Mr. A. D. Wilson, writing on the 20th July, reports the same trouble, he says:—"I experienced great difficulty in keeping my instrument level when observing at Hauhungatahi, even though the ground was iron-bound with frost. I ascribe this less to present volcanic action than to the place where the trig. is, being an old crater, which having been filled up with very loose materials never properly consolidated, the slightest weight upon the surface is sufficient to depress it. I am led to assume this from the character of the stuff, taken out when digging the hole for the tube, which looked as if it had first been burnt and then put through a crushing machine."—Ed.