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# VOLCANIC ERUPTION AT TARAWERA

(PRELIMINARY REPORT ON THE), BY S. PERCY SMITH, ASSISTANT SURVEYOR-GENERAL, AUCKLAND.

*Presented to both Houses of the General Assembly by Command of His Excellency.*

PRELIMINARY REPORT ON THE VOLCANIC ERUPTION AT TARAWERA, 10TH JUNE, 1886: BY S. PERCY SMITH, ASSISTANT SURVEYOR-GENERAL, AUCKLAND.

Survey Office, Auckland, 19th June, 1886.

In this preliminary report on the eruption that took place at Tarawera and Rotomahana early in the morning of the 10th June, 1886, I do not propose to enter into a full detail as to the occurrence of the phenomena observed at the time, for which purpose, indeed, the necessary data is not yet to hand, but rather to describe the state of the various points of eruption and the alterations that have been made in the surrounding country.

I must preface these remarks by stating that at the present time, so shortly after the deposit of vast amounts of mud and ashes, it is very difficult to get about the country beyond the one or two routes which are now commonly used by visitors to the scene of activity. Covered as the country is by ashes and mud of great depth, the physical exertion of travelling across it prevents extended journeys, and, as no water can be obtained near the ash-fields, camps cannot be fixed in positions suitable for exploration. It is hoped, however, that after the first heavy rains the ashes will have become consolidated and to a large extent have slipped off the ridges into the valleys, and thus allow of more progress being made, and that without the fatigue now experienced.

If a line be drawn very nearly south-west (true) from the top of Ruawahia, it will be found to indicate very closely a line of thermal action extending from the base of that mountain to Orakeikorako, along which from time immemorial have existed hot springs, geysers, and fumaroles in immense numbers. Such a line will also pass along the wall-like western face of the Paeroa Mountain, at the base of which, in several places, hot springs and fumaroles have always existed. A little to the north of Paeroa is the Maungaongaonga Hill, on which no sign of recent action is apparent; but immediately to the east of it is a country with innumerable hot springs, boiling-mud holes, and lakelets, having on the east side the Kakaramea Mountain, where thermal action is very active, the greater part of the mountain having been steamed and boiled and coloured by the subterranean vapours from top to bottom. In many places it is only necessary to make a hole in the surface to see the steam come forth. Further to the north-east the same line strikes through Rotomahana. It is thus obvious that this line indicates an old line of activity and consequent weakness of the crust of the earth; and it is easy to show, by varying its direction very slightly, or by treating it as a band of moderate width, that its production northward would strike White Island, whilst in the opposite direction Tongariro and Ruapehu form the terminal points of activity southwards.

A reference to the four-mile map attached to this report shows that the recent eruptions have followed very closely this same line. Taking Wahanga as the most northerly point of activity and Okaro Lake as the most southerly, it will be found to have extended a distance of nine and a half miles; or, if we take the so-called "Southern Crater" as the southerly point, a distance of eight and a half miles. (The eruption on the south side of Okaro Lake which was reported requires confirmation; as yet no one has visited the ground.) Along this line there may be said to be eight craters or points and groups of eruption (using the term "crater" in a somewhat extended sense, to include eruptions of a dissimilar character).

*Wahanga.*—The most northerly is Wahanga, a mountain about 3,500ft. high, and of very similar appearance and structure to Ruawahia, from which it is separated by a neck some 500ft. lower than the general level of the two mountains, and the northern end of which slopes down to the outlet of the Tarawera Lake, near the Native village of Tapahoro. Whatever may have been the state of activity of Wahanga at the first outbreak, it is now merely sending forth occasional clouds of smoke, with a few minor points from which smoke and steam arise in small quantities. It is impossible at present to say whether a crater has been formed.

*Ruawahia.*—The next point to the south is Ruawahia, which, by many of those who saw the first sign of eruption on the 10th, is believed to have been the earliest to emit fire and smoke and