

With regard to the volcanoes, springs, &c., I have to report having visited the Tarawera Mountains lately, and, from the changes which I noticed, I believe that it is evidently becoming an active volcano. There are now several places about the mountains where a stick can be charred and set ablaze by simply thrusting it for a minute or so into the scoria to be found about the different craters.

*Old Rotomahana Lake.*—The water has risen very fast during the last twelve months. It is now filled to about its original level—namely, 10ft. above the present level of Tarawera Lake. It will require to rise about 150ft. more before it overflows into said lake through the blocked-up valley of the original creek, which seems the lowest spot on the dividing-ridge, but, as the superficial area of Rotomahana Lake will greatly increase as the water rises, it may not overflow for years.

*Echo Lake.*—The water of this lake, which was formerly cold, is now steaming all over, and it may, in reality, be named the real Rotomahana of the district.

*Lakes Tarawera, Rotoehu, and Rotomahana* have all gone down considerably from 10ft. to 15ft. below the original level. The cause of this rather sudden fall in the lakes, as more fully reported in my report of 3rd March, should be worth inquiring into. The erosion of the surface about the ash-fields is still going on, and offers a most interesting lesson in practical geological formations, for it is very seldom that so good an opportunity offers itself to watch the great changes which are made in a few months by the ordinary rainfall, and, to my mind, the study would offer a solution to many of the disputed theories of the formation of our alluvial goldfields.

The thermal springs, &c., have generally been at their usual or normal state of activity during the past year. The experiments I carried out in 1888 to make the Pohutu Geyser play more frequently have quite succeeded. It played regularly twice in twenty-four hours from the time the works were finished—September, 1888, to December, 1889—when it stopped playing altogether. On my return from Europe in February, 1890, being informed that Pohutu had not been in eruption for the last nine weeks, I went over the same day, and, finding that my former works had been tampered with, I had them repaired, and the consequence was that Pohutu played up beautifully throwing water from 40ft. to 80ft. high for two hours, a few hours afterwards, and it has continued to play twice in twenty-four hours ever since. The works about Pohutu had also the effect of starting a new geyser, in the river-bed known as the "Torpedo," from the peculiar noise it makes in its explosion under several feet of river-gravel and water.

The experimental works in connection with the acceleration of the new terrace formation round the Waikite Geyser have also been a success. The rough walls of moss and stones built in September, 1888, are all thoroughly cemented together, and one of them specially is now so completely coated over with stalactites and stalagmites of a siliceous formation that it is difficult to detect anything of the artificial works.

The Oruawhata springs became so quiet about the beginning of last year that at times there was no water discharged, and the Blue Bath could not be kept warm. It occurred to me that perhaps by contracting the orifice of the spring-tube, and extending it upwards, so as to prevent the hot water flowing out of the actual spring from mixing with the cooled water of the pool, I might be able to get it to rise a foot or so, which would enable us to take it direct to the Blue Bath. On experimenting I found that this theory was correct, but instead of a small force I found there was a powerful geyser-action. I thereupon fixed three pipes in the three principal spring-tubes, connected them by a similar number of pipes to three valves, so as to be able to regulate the admission of the cooled water ejected into the different geysers or springs, and I find by these means that I am able to regulate and control the geyser-action at will, causing either one or the other of them to play constantly or intermittently, throwing water as much as 40ft. high, or to reduce it to a mere bubbling hot spring and even silencing them for two or three months at a time. This novelty of having hot-water fountains or geysers which can be controlled at will in a flower-garden is greatly attracting the attention of visitors. I also notice that this geyser-action of the Oruawhata and Rohutu has increased the silicating property of the water. At Pohutu especially the whole area reached by the water is becoming quite white, and the spray has killed the manuka over a large area.

SIR,—

Auckland, 16th April, 1891.

*Re Village Settlements.*—I have the honour to report as follows: In my report of 1890 each settlement was treated so exhaustively that there is very little to add, except that during the year twenty-nine sections in the various settlements have been forfeited, mostly abandoned from eighteen to twenty-four months, but held over to give the original settlers a chance of reoccupying them if they so desired. The reason this has been done is because some of the settlers were so restless and shifting that it was very difficult to know if it was their intention to permanently occupy their holdings. Some would be absent through having obtained work in the district, or at a distance; others would go out on the gumfields, returning occasionally, and eventually remaining altogether. So the greatest care had to be exercised, and, with the approval of the Commissioner of Crown Lands, the widest latitude was given them, so that they would not have the slightest ground for complaint when their sections were forfeited. This leniency has, I am afraid, been abused, sometimes to the detriment of intending settlers, who wished to obtain the land, whilst the section also depreciated in value.

I do not anticipate a repetition of the above, as it is now well understood that it will not be allowed in the future. If a settler wishes to leave his section it is necessary for him to apply for leave of absence, which is only granted by the Commissioner of Crown Lands on condition that the settler arranges for the protection of his improvements,