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Preliminary report on Vulcanological investigation of Lake Lolaru, Bougainville, T.N.G.

by

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Preliminary Report of Vulcanological Investigation of Lake Loloru, Bougainville, T.N.C.

On the advice of the Secretary for Lands (reference signal CA458) I proceeded to Kieta per Catalina on the 19th June, 1951.

At Kieta I was met by the Assistant District Officer, Mr. P.D. Jones, and on the following morning in his company proceeded to the Lake Loloru area. We arrived at his former camp site on the N.E. rim of the crater at about 1430 hours on Friday, 22nd June.

Four days were spent in the area, observations being severely limited, firstly by lack of knowledge, on the part of the observer, of overall topography such as could be obtained from aerial photos or viewing the area from an aircraft and secondly by the dense fog which covered the area for the greater portion of the time spent there.

Captain Fox of Q.E.A. had previously informed me that during the aerial inspection made by Mr. C.A. Taylor, three areas of "burnt" ground had been observed. Mr. Jones during his stay in the area had located two of these and in addition, two more minor areas.

During my stay in the area these fumarolic areas were inspected and in addition, the third area located and inspected. The three major areas shall be referred to as the lower, middle and upper fumarolic areas.

The lower area lies in the floor of the crater near the base of the western wall and it is through this area that the creek draining the lake passes.

The middle and upper areas are situated on the lava dome, which occupies the greater portion of the crater and, in fact, obscures the crater rim on the south-western side.

The middle fumarolic area is at an elevation of approximately 5,500 feet and is situated in a gully which runs from east to west on the N.W. flank of the dome. It was in this area that a maximum temperature of 95°C. was recorded. This temperature would correspond to approximately 101°C. at sea level.

The third or upper fumarolic area lies at an elevation of about 6,000 feet, approximately 4-500 feet below the crest of the dome and occupies the floor of a shallow depression.

Throughout the area sulphuretted hydrogen was the most noticeable of the gases emitted, however, in the middle fumarolic area, certain fumaroles emitted sulphur dioxide in moderate concentration (difficult to breathe when standing near them).

In addition numerous solfataric areas were observed scattered at varying intervals over that portion of the dome visited.

From a perusal of the air photos of the area, which have come to hand since my return from Bougainville, the areas of fumarolic activity do not appear to have altered appreciably in size or distribution since the taking of these photos. Unfortunately the date of exposure is not recorded on them, doubtless this may be obtained from R.A.A.F. records. The only marked visible change in the area is the development of a denuded area connecting the middle fumarolic area to the lower.

This is due to a recent landslide and is considered to be the result of fluvial rather than volcanic action.

Due to the density of live and decaying vegetation, progress was slow and tedious and thus only a portion of the area could be visited in the allotted time.

In addition, due to the presence of thick fog for the greater portion of the time spent in the area, areas which should have been visible from points of eminence attained, were swathed in fog and consequently invisible.

However the correlation obtained between observed fumarolic areas from air and ground would suggest that all major areas in existence were visited.

No sign of recent crater formation was evident.

No seismic activity was felt whilst in the area.

The possible mud flow, observed from the air by Mr. Taylor, is considered, by the writer, to be the creek draining from the northern end of the lake, which in its course passes through a fumarolic area and in so doing, is charged with colloided sulphur and acquires a pale yellow grey colour.

From the size and distribution of vegetation both alive and decaying, it is considered that no eruption has taken place in this area for a considerable period of time.

Danger Areas and Distribution of Villages.

The absence of a crater wall in the southwestern side of the lava dome would, in the event of an eruption, possibly have a directive effect on blast and ejectaments. In addition, the lake at present drains into the headwaters of the Miao River which flows in a southwesterly direction from the crater. In the event of an eruption, sudden draining of the lake is a possibility and this volume of water could cause serious flooding on the lower reaches of the river.

To the north, northeast and northwest the mountain masses of Takuan and Taroka are considered to afford sufficient protection to the native peoples inhabiting that region.

To the east, southeast and south the crater wall affords a certain measure of protection, whilst to the west there appear to be no villages within the danger zone.

Word has been passed to the peoples of certain villages lying to the east and southeast of the crater, that in the event of an eruption, they are to move in a south to southeasterly direction along existing tracks to the area southeast of Bagui and Oumimu.

The villages notified are:

Kokemona,
Kaukaaina,
Taureruna,
Orimai,
Borulai,
Koniai,
Ipicaro, and
Orio.

Koremona to move to vicinity of Kopikavi.

The native peoples of this area have been notified that an eruption is usually preceded by frequent earth tremors of short duration, the period of seismic activity generally being continuous for several days before the eruption.

Mention was also made of other associated phenomena, however, it is felt that this would be of little value as these phenomena are usually only manifested quite close to the active area, and since this area is regarded by natives as an abode of spirits it is very, very rarely visited.

Visible signs such as plumes of dust or smoke are also unreliable as the area is usually capped with cloud.

Conclusion.

In the light of existing conditions it is considered that this volcano is in a dormant state, also that the possibility of an imminent eruption is remote.

However, it must be born in mind that this area is a potential danger point, and if an eruption should occur it is likely to be of the Pelean type.

Thus, whilst the further maintenance of observation patrols by District Services is not considered necessary, nevertheless vigilance must at all times be maintained by all residents of this area in order to avert disaster in the event of an eruption occurring.

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