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AN EXAMINATION OF THERMAL AREAS, VITU (GAROVE) ISLAND AUGUST 26th-27th, 1954

by

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CANBERRA

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1. INTRODUCTION

No details are available of the previous volcanic activity of Vitu Island, but some old natives have stories of unusual phonomena referable to vulcanism which accompanied a change in sea level many years ago. The inference of the stories was that the change was sudden and accompanied by increased emissions of steam from Zones A and B (of this report). It was impossible to assess from natives interrogated how long ago this occurred, but palms estimated to be about 40 years old grow near the shore in the area to which the stories refer. This area embraces the Catholic Mission, Balangori No. 2 village and Mt. Utopi, and, according to legend, most of the coastal portion to an height of about 300 feet was previously submerged. A more detailed survey of the island would be necessary to establish the veracity of the stories, but there is certainly evidence that portion of the area was submerged. Old oyster shells occur to heights of about 30 feet above sea level attached to basalt cliffs below the Catholic Mission.

Since it was necessary for the "Theresa May", on which the writer was travelling, to visit the Vitu Island Group on the return trip from the Langila Crater investigation, the advantage was taken of examining as many thermal areas as possible. Although geysers and fumaroles occur on Narage Island, the northernmost island of the group, it was possible only to examine briefly those areas on Vitu (Garove) Island in the time available. The writer was accompanied on his trips by his assistant Leslie Topue, Corporal Benga and another police boy, Pizalo, and the Tultul, Takalamu, of Balangori Village.

A set of Kodaslides prepared from photographs taken while the "Theresa May" was in the Vitu Island Group are kept at the Observatory, Rabaul, for reference.

11. PHYSIOGRAPHY.

Vitu (Garove) Island is the easternmost of the islands which are regarded collectively as the Vitu Island Group. Although all the islands are the products of vulcanism, the fumarolic areas indicate that activity in this area has reached the decadent stage.

The true nature of Vitu (Garove) Island is revealed by the map prepared for this report. It is the caldera rim of an extinct volcano with a breach in the southern wall, a similar but smaller edition of the Blanche Bay Caldera. Although not examined in detail, old craters are considered to exist on the south east coast opposite Balangori No. 2 village, at Craters More and Lange and on the north-east coast between Potpot village and Meto plantation. These, together with Peterhafen and the bay west of Langu plantation, both old cones whose walls have been breached, are regarded as parasitic cones. The highest points on the island, Tawatu (350 metres) Bogona (325 metres) and Lambi (290 metres), form part of the caldera rim.

The approximate positions of thermal area zones are shown on the map and, apart from Zone B, are aligned in a direction of about 080°. A fissure in the old lava flow on the eastern side of Natamo Bay, through which the path from the Mission to Zone A passes, has a similar orientation.

111. THERMAL AREAS.

Fumaroles occur in four main zones which have been lettered A to D as shown on the map. These, as far as could be ascertained, are the only thermal areas on the island. Gas analyses were not conducted, but it is considered that the gas which caused extinction of a burning taper placed in vents of Zone B was carbon dioxide. There was a faint smell of burning wood in the gases emanating from vents in most zones. It was noted that ground ferns including a bracken-type were the most prolific vegetation in zones C and D. This type of growth is typical of an area through which fire has passed, and the fertility of the soil enriched by dead vegetation.

1. Zone A: This small area exists along the eastern side of Natamo Bay adjacent to the high basalt cliffs which form the eastern margin. The temperature of a vent below the sea level at low tide was 52°C.

2. Zone B: Along the track between Balangori No. 2 and No 1 villages, there is a small zone where vapour is escaping from vents at temperatures of 49°, 48° and 47°C. The zone is about 600 feet above sea level and just east of the summit of Mt. Utopi. The natives refer to this mountain as Garove and to the thermal area as Garene.

3. Zone C: The only access to this zone, situated on the eastern side of Johann Albrecht Harbour about a half-mile south of Benukanekare Island, is by canoe. The thermal area is on the steep-sided inner caldera wall and can be recognised by the light colour of outcrops which have been altered by the fumarolic activity. The cliff face here is almost vertical, but it is possible to reach vents to about 200 feet above sea level by climbing the talus resulting from landslides. Temperatures from south to north along the upper portion of the talus were as follows:- 97°, 77°, 98°, 98°, 89°, 94°, 98°, 98°, 99°, 96°, 91°C. In this area, as at some places in Talasea, a siliceous crust has formed over the surface in places which were later undermined by fumarolic activity. The native assistant, Leslie Topue, burned his foot when the crust in one such place collapsed beneath his weight. The temperatures at points of fas ebullition along the sea front at the base of this zone were all about 40°C.

4. Zone D: There is an area of about 2 acres of hot ground just east of Tawatu which can be reached by paths from villages to the east or by a steep path which commences just south of the small protuberance opposite Benukanakare Island, where there is a native garden. Temperatures taken in the northern portion of the area were 83°, 86°C. In the southern part there is a gully with steep sides along the northern and eastern margins. The surface colouration of the walls is mainly black although there are small areas of white siliceous encrustations and deposits of orange-yellow sublimation products around vents. The steep nature of the walls is considered as due to the strata exposed. At the upper surface is a thin flow of lava which overlies a bed of pumiceous material including some lapilli and bombs. Lower beds were not examined. The following temperatures were recorded from west to east in this area : 46°, 81°, 47°, 80°, 80°C.

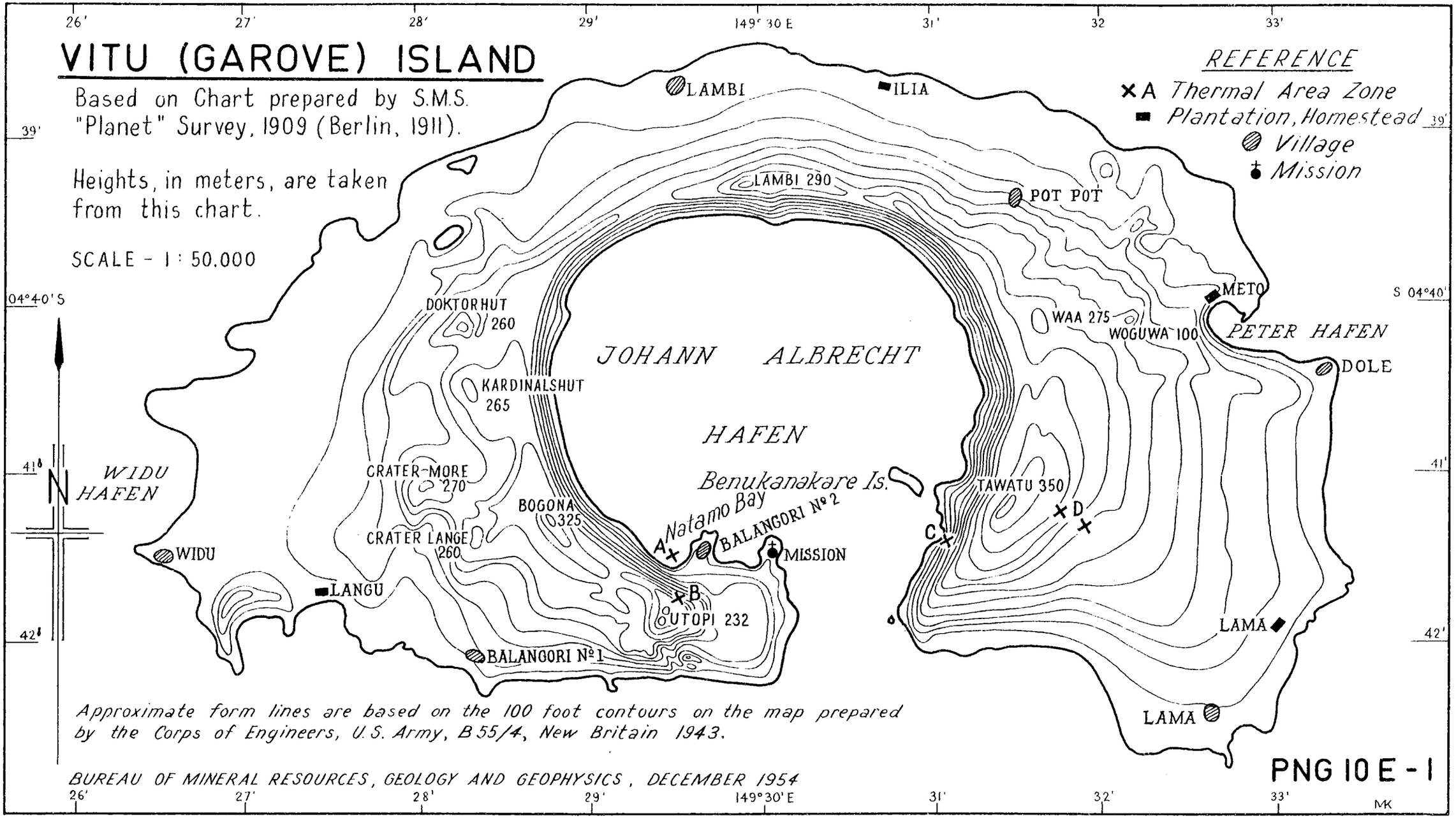
(M. A. Reynolds)
Geologist.

VITU (GAROVE) ISLAND

Based on Chart prepared by S.M.S. "Planet" Survey, 1909 (Berlin, 1911).

Heights, in meters, are taken from this chart.

SCALE - 1 : 50.000



Approximate form lines are based on the 100 foot contours on the map prepared by the Corps of Engineers, U.S. Army, B 55/4, New Britain 1943.

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