Recent changes in the Anak-Krakatau volcano.*

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Abstract

A two day visit to the Anak-Krakatau on March 15-16, 1963, revealed that dramatic changes have taken place recently in the Anak-Krakatau volcano. A new topographic survey for the major changes in the top area was completed; two maps and several sections showing the growth and changes in the Anak-Krakatau are presented. The former moonshaped crater lake (1960) has completely disappeared and instead lava flows cover the crater floor between the inner cone and the outer ring wall. Lava streams flowed over the lowest south western crater rim and spread fan-wise into the sea. This activity with the production of lava flows must have taken place between 1960 and the beginning of 1963.

Introduction

A scientific expedition sponsored by the Indonesian Academy of Science visited the islands of the Krakatau complex on March 15 and 16, 1963, in a comfortable and modern oceanographic ship (Yalanidhi) which provided a very convenient base camp and a comfortable means of transportation. The party was a rather big one, consisting not only of Indonesian volcanologists, geologists and marine biologists but was also participated by geochemists and biologists from the Academy of Science of the U.S.S.R. and several other visiting biologists from France and Denmark. The Indonesian geologists and volcanologists concentrated mainly on the Anak-Krakatau volcano, while the other members of the party cruised the whole island-complex.

Weather condition was favorable and during the two days visit a geologic and a topographic map was completed. The last visit to Anak-Krakatau was paid by a twelve-man scientific expedition on January

12 and 13, 1960. This party recorded a renewed activity. Vulcanian-type of eruptions hurling pyroclastics from fine ash to blocks 2 meters in diameter occurring at intervals of ½ to 10 minutes were observed (Decker and Djajadi 1961) at that time.

Situation of the volcano and morphological changes

During the 2 days visit the volcano did not show any increased activity. The portable seismometer stationed at the southeastern periphery of the island did not register any earthquake shocks or tremors. Only strong solfataric activity was observed and no steam explosions.

However, marked morphological changes were observed. The morphological changes indicate that some time between 1960 and 1963 an eruption must have taken place and that this last eruption must have differed considerably in character from the previous ones.

The morphological changes are as follows:

1. The crater lake still present in 1960 has disappeared.
2. Lava flows cover the entire southern and southeastern crater floor between the inner cone and the outer ringwall.
3. The lava stream flowed over the lowest south-southwestern crater rim and spread fan-wise into the sea, forming a tiny lava island attached to the volcanic island (Fig. 2).
4. The inner cone has increased in height, and has been dissected by fissures from which lava had been produced.
5. The outer south and south-western wall facing the ocean terminates into a steep cliff which rises about 75 meters from sea level at the lowest point where the lava has cascaded into the ocean. At the highest point, the cliff rises to a height of 106.65 meters above sea level.

There is a marked difference between the south-southwestern coastline and the one on the north and the northeast. The only explanation for this is that the strong surf of the Indian Ocean constantly prevents beach formation on the south and south-western side.

On top of the inner cone several eruption centers have opened where strong solfataric activities were observed. The strongest activity