

POSTSCRIPT

Since this lecture was given the final terminus breakdown in Kazumura Lava Tube has been bypassed. The present (1974) surveyed main passage length is 8.1 km with an additional 2 km of main passage and side passages known.

ACKNOWLEDGEMENTS

I thank W. C. Gagné, N. C. Howarth, J. Jacobi, J. & S. Juvik, S. L. Montgomery, W. Ruffin, and F. D. Stone for assistance during field work. I am especially indebted to W. C. Gagné, N. C. Howarth and F. D. Stone for reviewing the manuscript and assisting in its preparation.

LITERATURE CITED

- Halliday, W.R. 1968. An initial survey of the caves of the Hawaiian Islands. Bull. Natl. Speleol. Soc. 20: 58-60.
- Howarth, F.G. 1972. Cavernicoles in lava tubes on the island of Hawaii. Science 175: 325-326.
- _____. 1973. The cavernicolous fauna of Hawaiian lava tubes, 1. Introduction. Pac. Ins. 15(1): 139-151.
- Ku, Teh-Lung, M.A. Kimmel, W.H. Easton, & T.J. O'Neil. 1974. Eustatic sea level 120,000 years ago on Oahu, Hawaii. Science 183: 959-962.
- Leleup, N. 1968. Introduction. Mission zoologique belge aux îles Galapagos et en Ecuador (N. et J. Leleup, 1964-65) Resultats scientifiques. Koninklijk Museum voor Midden-Africa-Musee Royal de L'Afrique Centrale. Premiere Partie: 9-34.
- Macdonald, G.A. and A.T. Abbott. 1970. Volcanoes in the Sea, The Geology of Hawaii. University of Hawaii Press, Honolulu. 441 pp.
- Powers, S. 1920. A lava tube at Kilauea. Hawaiian Volc. Obs. Bull. 8:46-49.
- Ueno, S.I. 1971. The fauna of the lava caves around Mt. Fuji-san. I. Introductory and historical notes. Bull. Natl. Sci. Mus. Tokyo 14: 201-218, pls. 1-4.
- von Seggern, D.H. 1967. Electromagnetic mapping of Hawaiian lava tubes. Master of Science Thesis, Univ. of Hawaii. 41 pp.

FORMATION AND GROWTH OF LAVA TUBES DURING 1970-71 AT KILAUEA VOLCANO, HAWAII

Donald A. Swanson
U.S. Geological Survey
Menlo Park, California

READ IN ABSTRACT

An expansion of this paper with additional content by Donald W. Peterson has been published in Studies in Speleology (Vol. 2, part 6, 1974, for 1973, pp. 209-222), under the title: Observed Formation of Lava Tubes during 1970-71 at Kilauea Volcano, Hawaii.

A complex braided and distributary system of lava tubes developed by roofing of lava rivers and coalescence of pahoehoe toes during 1970-71 at Kilauea. Lava was eventually transported as far as 12 km underground through these tubes, at average rates of 2-3 km/hour. Skylights formed at various times during development of the tube system, allowing observations into the active tubes. Initially the tubes were small--generally only 1-3 m deep--but they enlarged to at least as deep as 15 m, probably by erosion while lava continued to flow through them. The tubes were excellent heat insulators, so that lava cooled very little during its flowage in the system. Underground lava falls, multi-storied tubes, lava stalactites, and many other features common in prehistoric lava tubes were observed in various stages of formation.