

# Microbial Activity on Surtsey\*

By

W. SCHWARTZ and ADELHEID SCHWARTZ

During a stay of a few days on Surtsey in 1969, tephra and volcanic ashes were collected by W. Schwartz for a microbiological examination. Cholodny slides were exposed for 2 to 3 days and different possible biotops have been distinguished:

Fumaroles with vents and high production of  $H_2O$ , steady at least for some time (group F), — fumaroles with low activity but still higher temperatures and humidity in the tephra (groups Lz and partly Te), — volcanic ashes, glas, tephra without visual signs of fumarole activity (group Te), — surface of the lava streams and the rocks of the Surtur craters (group Ld, not yet explored), — tuff walls (group Tw), and the pond and its sediments (group W).

Highest germ numbers, mostly of bacteria, have been found in the surroundings of the fumaroles where temperature and humidity are favourable for the development of microbes.

The numbers of aerobes were between  $10^4$  and  $10^7$ , of anaerobes between  $10^2$  and  $10^4/g$ . Most of the anaerobes were facultative ones. Strains of the genera *Corynebacterium*, *Arthrobacter*, *Bacillus*, *Flavobacterium*, *Pseudomonas*, *Micrococcus* have been identified. *Streptomyces* strains were present only in low numbers. Tests for specific biochemical groups gave negative results for desulphurizers, *Azotobacter*, and *Cl. pasteurianum*. *Thiobac. thiooxidans* and ferrooxidans were present only in 1 sample of the F-group at a time. Denitrifiers and the bacteria of nitrification were more frequent. The results are compared with the exploration of cinder cones on Deception Island, Antarctica by CAMERON and BENOIT (*Ecology* 51, 1970, 802–809) and a program for the further microbiological exploration of Surtsey is outlined.

---

\* A detailed paper is under press in *Zeitschrift für Allgemeine Mikrobiologie*.