

Review

Birth of an island

by Dr George Walker

Surtsey

Evolution of life on a volcanic island

by Sturla Fridriksson

Butterworths, pp 198, £5.00

Towards the end of 1963 a rare and exciting event—the birth of a new island, Surtsey—took place when a great column of steam and volcanic ash rose from the cold Atlantic water off Iceland. By early 1964 Surtsey was a horseshoe-shaped mound rising 300 m above the sea floor and built of loose ash which fell from the eruptive column. For months it was touch and go whether it would survive, for during the winter storms the sea washed away the island faster than new ash was added, and indeed three other islands formed off Surtsey during the same eruption were completely washed away. Eventually however the crater of Surtsey was closed to the sea and quiet effusion of lava took place to produce the armour of tough lava that guaranteed survival of the island.

Scientists were on the scene from the beginning. Volcanologists were there first, and learned much about the characteristics of volcanism of "surtseyan" type in a marine environment. Later, when the eruption quietened down, the main scientific effort passed gradually to the biologists. The Surtsey Research Society was founded, and a new journal (Surtsey Research Progress Reports) was created. The birth of Surtsey was as important an event to biologists as to volcanologists, since it offered a rare opportunity to test ideas on the dispersal of plants and animals and the sequence of colonisation on a new land. Colonisation was extremely rapid in the tropical climate of Krakatoa in 1883, but with the more rigorous climate of Surtsey it took place much more slowly and could therefore be studied in all its details.

That the scientific work has been very competently done is clear from reading Sturla Fridriksson's *Surtsey: Evolution of Life on a Volcanic Island*. He tells a fascinating story of how Surtsey was born and how it was then colonised by organisms of various kinds, plant and animal, terrestrial and marine. Vascular plants were growing on the beach from seeds washed ashore as early as 1965, before volcanic activity had ceased. The sea rocket was the first to flower and bear seeds, and by 1973 more than 1200 individuals of 12 species were growing. Mosses were among the most successful plants. Their spores arrived by air, and 16 species grew on the lava flows in 1967. Now there are 69 species. The hostility of the environment is shown by the low biomass, averaging only 3.4 grammes per square metre in 1973 but increasing

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extremely rapidly.

All modes of dispersal were investigated; for example the beach was examined for washed up seeds, tests were made of the viability of seeds after immersion in sea water, traps were set to catch air-borne insects and micro-organisms, scuba divers studied the advance of marine creatures on the submerged pedestal, and the feet, plumage and internal organs of bird visitors were examined to see what they carried. Among the seeds found in the gizzards of snow buntings were some probably carried from the British Isles, demonstrating that seeds can be transported long distances by birds. Following another line of research, experiments were conducted to test the possibility that life might even be created by volcanic action, and amino acids were produced by plunging hot lava into water.

This 198-page book is well illustrated with maps, diagrams, tables and some 70 photographs (although the offset litho process does not do justice to the latter, and the colour photographs are small). There are plenty of references to the literature. The book is a report of an interdisciplinary study, carried out by many scientists working as individuals but contributing to a common goal, and it reveals the great diversity of tasks undertaken by field workers. One senses however, that the real heroine of the book is the bird, a fulmar, which first nested and successfully bred on Surtsey in 1970 and, so to speak, set nature's seal of approval on Surtsey and emphasised the transient character of the volcanic violence which brought the island into being.

The sciences, the humanities and the technological threat

edited by W. Roy Niblett

University of London Press, pp 168, £3.80

Despite showing breadth, learning and wisdom, this collection of essays is deeply depressing. The authors agree in their loss of the old faith in natural science; but in its place the main positive offering seems to be the even older faith, the humanities. Hence the subjects of the title are very unequally treated.

No one seems to have a good word for traditional academic science education. Its traditional claim to "liberal arts" status is quite discredited, and any curriculum innovation encounters subject-interest and professional barriers. Sir Frederick Dainton speaks as succinctly and pungently as ever on this theme, while David Edge shows in detail how deep would be the changes in structures and attitudes necessary for genuinely "integrated" science schemes.

On the "technological threat" itself, only Leo Marx makes an explicit analysis.