
Introductory Remarks

J. Sutton, P. A. Sabine and R. R. Skelhorn

Phil. Trans. R. Soc. Lond. A 1972 **271**, 103
doi: 10.1098/rsta.1972.0001

Email alerting service

Receive free email alerts when new articles cite this article - sign up in the box at the top right-hand corner of the article or click [here](#)

To subscribe to *Phil. Trans. R. Soc. Lond. A* go to: <http://rsta.royalsocietypublishing.org/subscriptions>

Introductory remarks

BY J. SUTTON, F.R.S., P. A. SABINE AND R. R. SKELHORN

Although volcanoes provide some of nature's most spectacular phenomena, and have been the objects of record since the earliest days of science, the accumulation of data in the past 150 years has until very recently only served to emphasize the extent of their unknown characteristics. In the last decade however there have been notable advances, both in the observation of volcanoes and volcanic rocks, and in the spectacular development of ideas about the mobility of the crust that enable volcanicity to be related to the structure of the Earth. These ideas led the Volcanic Studies Group of the Geological Society of London, and the Volcanological Research Committee of the Royal Society to consider holding a symposium to take stock of the position in the year that the Upper Mantle Project was scheduled to end.

The meeting, arranged principally to consider Tertiary and Recent volcanic rocks, fell into four groups of papers which generally coincided with the half-day sessions: oceanic rocks (Chairman, Professor J. Sutton, F.R.S.); island-arcs and continental margins (Chairman, Professor W. A. Deer, F.R.S.); and continental volcanicity (Chairmen, Professor F. H. Stewart, F.R.S. and Professor K. C. Dunham, F.R.S.). Included in the last session were papers dealing with the evidence from the only direct methods of investigation of the Upper Mantle, plutonic xenoliths and the kimberlites, and some of the papers that quantify the chemistry and kinematics of volcanicity.

Among the great strides that have had their impact on volcanic geology in recent years are the powerful ideas of plate tectonics, in which vast segments of the crust are found to be mobile, the geochemical imbalance that this implies, the concepts of sea-floor spreading and the phenomena of magnetic field reversal, and the acceptance of the hypothesis of continental drift. The contrast between the volcanicity of the truly oceanic island and of the ocean ridges is drawn by several papers which point however to the paucity of data for the oceans. The recent J.O.I.D.E.S. investigations are already beginning to solve the problems of the complex history of the deep oceans and their ridges.

Although it has become a familiar feature in geological discussions for a number of sub-disciplines to provide evidence—in the present instances, geophysics (including geomagnetism and seismology), tectonics, petrology and mineralogy, and geochemistry, it is only now that we can begin to see their coalescence into coherent and significant hypotheses. This is particularly noticeable with the hypothesis of plate tectonics, returned to constantly by successive speakers: in the relationship of volcanism to tectonic setting this is perhaps the most important single concept at present influencing volcanological research.