

One of the approaches suggested by the Symposium authors is the development of deductive and inductive models of thermal maturity to develop predictive models for unexplored basins. The deductive model is developed from observational borehole and other subsurface data, and the inductive model from assuming necessary and sufficient parameters, simulating the subsurface thermal maturity by computers and picking up an inductive model closely approaching the deductive model, the inductive model of the best fit selected as a predictive model. The approach is highly attractive (but has yet to be developed fully).

The study of thermal history of sedimentary basins is definitely a new emerging tool in petroleum exploration. India has a large flourishing petroleum industry. The industry gives a fair trial to this new technique also. The book is recommended for study by all practicing petroleum geologists.

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VOLCANIC HAZARDS: ASSESSMENT AND MONITORING. Edited by J. H. Latter. IAVCEI Proceedings on Volcanology 1, Springer-Verlag, 625 p. Price DM 178.

Volcanic hazards are among the most serious of natural calamities. They constitute an important field where earth sciences directly interface with one of the foremost of societal concerns. Any major volcanic disaster raises a strong public debate on hazard prediction and mitigation. The importance of assessment and monitoring of volcanic hazards cannot, therefore, be overemphasised and this was the focal theme of the International Volcanological Congress held in New Zealand in February 1986. An excellent collection of 35 papers presented at this conference is now included in this volume.

Our predictive capability of a volcanic hazard is still limited to long range, which is mainly due to the inadequacy of our database on periodicity, extent and nature of eruptions. The knowledge of tephrochronology, geology, geomorphology and geochronology, essential for prediction is discussed in some papers. The relevance of volcanic hazard to air navigation and volcanic winter (similar to the dreaded nuclear winter) is also discussed in this volume. The role of computer-generated movies on volcanic hazards in awakening people to the reality of a disaster is also explained. The importance of hazard assessment reports for governmental planning is emphasised in a paper which laments the poor response from planners. A paper on false alarm of volcanic activity provides an interesting digression. While cataloguing active volcanoes is essential, the eruption of an un-catalogued volcano poses a different problem.

The importance of studies on precursors to a major volcanic eruption is stressed in several papers which deal with premonitory earthquakes, increase in fumarolic activity and ground deformation. The need for scientific monitoring using satellite surveillance, thermal infrared surveys, geochemical precursor parameters, network of gravity and seismic stations and remote infrasonic arrays is highlighted in a number of papers. International cooperation and sharing of modern facilities will go a long way in improving our perspective of potential hazards.

This magnificent volume provides a comprehensive coverage of active volcanoes from Italy, Iceland, Japan, USA, West Indies, Mexico and Indonesia. The editor

feels the incompleteness in respect of other volcanoes from Africa, Hawaii, Central and South America, but this has been offset by the total thematic coverage. Valuable illustrations including coloured thermal maps are an important feature of this volume. On the whole, this valuable book is essential for every earth science library.

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MAFIC AND ULTRAMAFIC XENOLITHS FROM VOLCANIC ROCKS OF THE WESTERN UNITED STATES. by H. G. Wilshire, C. E. Meyer, J. K. Nakata, L. C. Calk, J. W. Shervais, J. E. Nielson and E. C. Schwarzman. U. S. Geological Survey, Professional Paper 1443 (1988), 179 pp.

This comprehensive scientific report deals with xenoliths from 68 localities in the Western United States from the Coastal Ranges of California to Western Texas, covering various geological environments from Cretaceous to Quaternary. From the early discovery of xenoliths in 1927, there has been a continuous addition to the list of new finds, which attests to importance of xenolith studies. The host rocks for xenoliths range from dacite to nepheline basanite, limburgite and minette. Xenoliths have been classified into eight types which include the accidental inclusions of crustal origin, gabbroids, metagabbroids, spinel peridotites, pyroxenites, amphibole- and mica-rich glimmerites (all variably enriched in Cr-diopside, Al-augite, bottle-green clinopyroxene), and feldspathic to garnetiferous ultramafics. A comprehensive account of their petrology, mineralogy, geochemistry (including REE) and Sm, Nd and oxygen isotopic data is systematically presented in the paper with profuse illustrations. Fundamental problems addressed through these studies are cognate vs accidental origin of the xenoliths and its implications for stratified mantle, mantle metasomatism and alkaline magma genesis.

The study of mafic-ultramafic xenoliths in India is still in its infancy and is confined to kimberlites of Vajrakarur and alkaline basalts (Deccan Trap) from Kutch. This exhaustive professional paper, it is hoped, will give new impetus to such fundamental studies in India to enable us to catch up with recent advancements.

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EXPLORATION AND RESEARCH FOR ATOMIC MINERALS. Vol. I. Atomic Minerals Division, Government of India (1988). pp.167 Price not indicated.

The Atomic Minerals Division is the oldest unit of the Department of Atomic Energy, having come into existence as far back as the year 1949, with D. N. Wadia, that doyen of Indian geology, at its head. The unit has just completed forty years of useful service and to mark this event in its history, the Department has brought out, for the first time, a volume entitled 'Exploration and Research for Atomic Minerals'. The volume, running to 167 pages of double column printing, contains twelve articles covering different aspects of uranium exploration, geology of few