

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