authors find an episodicity in Cuddapah magmatism between a period from 1850 to 1000 m.y., with a peak at about 1400–1100 m.y. However in another paper Y. J. Bhaskara Rao *et al.* have discussed their Rb–Sr age data on Pulivendla sill of Cuddapah basin. These authors have placed an 1800 m.y. age limit of a single major episode of mantle magmatism and Cuddapah basin formation.

The rest of the papers deal with various aspects of dykes and dyke swarms occurring along the western coast of India and Narmada rift, related with Deccan volcanism. K. B. Powar and S. V. Vadetwar discuss the geological occurrence, mineral chemistry and whole rock chemistry of dykes and plugs occurring in Revas–Murud area of Konkan coastal belt. The compositional variation from basaltic dolerite to gabbro-diorite is considered to be a consequence of fractional crystallization of a common magma. The status of these intrusives as feeders is rejected. S. F. Sethna and M. Mousavi present the major and trace element data on dykes and associated intrusions of Deccan basalts occurring on the western coast. These authors find influence of differentiation and crustal contamination on the chemistry of these rocks. Their derivation is interpreted in terms of batch partial melting of a heterogeneous mantle source. Another paper on the dyke rocks of western coast is by A. G. Desai and A. A. A. A. Viegas. The authors have identified four generations of dyke swarms which are related with tectonic evolution of western Indian continental margin.

A detailed account of field characteristics, structural setting, petrography and geochemistry of alkaline–tholeiite dykes associated with Amba Dongar and Phenai Mata complexes of lower Narmada valley is presented by L. G. Gwalani and others. R. V. Karanth and D. A. Sant have contributed on dyke swarms of southern Saurashtra. They have identified seven generations of dyke swarms which were emplaced along deep seated fractures related to Narmada rift zone.

Although the monograph covers almost all parts of Indian shield where current research is being carried out, there are certain important areas which are not represented. A glaring omission is Proterozoic dyke swarms of eastern Indian shield, i.e. the Newer Dolerites. It would have been better if a paper had been included on these dyke rocks. The editor has done an admirable job by giving a summary in the beginning of the book with specific mention of the importance of dyke swarms in the studies of evolutionary history of crust and mantle, which is a real help to the reader. However, the absence of author and subject indices may be felt by the readers. The printing and get-up are good, size of letters is large enough but in some of the papers the size of diagrams particularly those of maps showing distribution of dykes is small.

Overall, the monograph is a welcome addition to the literature on Indian shield. The book, which contains a wealth of basic scientific data on dyke rocks of Indian shield, is worth possessing by any geoscientist.

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Annual Review of Astronomy and Astrophysics 1994. Vol. 32. Geoffrey Burbidge, ed. Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California, USA. Price: USA $ 60, elsewhere $ 65. 662 pp.

This volume of *Annual Review of Astronomy and Astrophysics* contains fourteen articles covering a wide range of subjects from The Goldilocks problem: climatic evolution and long-term habitability of terrestrial planets to Baryonic dark matter and Recycled pulsars. All the topics are of great current interest and quite a few of them are relatively new areas of research. For example, the article by Brown and Gilliland on 'Asteroseismology' is a first in the Annual Review series, although Deubner and Gough wrote on 'Helioseismology' more than a decade ago. During the last decade asteroseismology has come of age and is providing a new way of looking at the interiors of stars. Brown and Gilliland's review is a very timely account of the progress in the field and of the promise it holds for the future. Similarly, the article 'Anisotropies in the Cosmic Microwave Background' could not have been written much earlier as the observational breakthrough came only in 1992 with the first detection of large angular scale anisotropies of cosmological origin in CMB.

Much of the exciting progress in astronomy in the recent times has come about through advancements in technology, launch of new missions in space, commissioning of large ground-based optical telescopes (of aperture greater than 6 m), etc. Much of what has been reviewed in the volume carries the stamp of these developments. Infrared observations have revealed the existence of large quantities of very hot gas in clusters of galaxies. Refinements in radioastronomical techniques have led to accurate determination of isotopic and elemental abundances in the interstellar medium. Space missions have breathed new life into the studies of cosmic dusty plasmas. All of these subjects have been reviewed by respective experts in these fields. The references at the end of each of these articles with hardly any citations earlier than 1980 reveal how current the work reported on is.

While stellar physics absorbed the attention of the astronomers in the immediate post-war decades of this century, it is galaxies and their evolution which command the maximum interest in the current period. We now have the capability of routinely observing stars in other galaxies and more importantly we can observe them in the ultraviolet, the optical and the infrared. Comprehensive studies of stellar populations in other galaxies are now possible. Global properties of galaxies as a function of their morphological types are better understood. Deeper questions regarding the formation and evolution of stellar populations in galaxies can be addressed. Massive stars provide most of the light of the galaxies and the cooler stars most of the mass. The massive stellar population is best studied in the ultraviolet, the cooler red population in the near infrared. Panchromatic studies are therefore of great importance. The Hubble Space Telescope (HST) is providing spectacular pictures of external galaxies, starburst nuclei, quasars and their environment, distant clusters, etc. For the distant galaxies the light from the massive stars is redshifted and infrared observations (e.g. K band photometry) reveal many of the details that are usually seen in the optical observations of the nearby galaxies.

Reviews by Roberts and Haynes (The Hubble sequence) and Maeder and Conti (Massive star populations in nearby galaxies) touch upon many of these crucial aspects of extragalactic studies.

Bigger than the galaxies and their clusters is the Universe itself and its origin and evolution occupy the attention of a very large number of theorists and observers. Today Physical Cosmology is an observational/experimental science in which definite physical models are used to interpret and predict the results of measurements. Results from the COBE satellite, from the HST key project to determine extragalactic distances to greater accuracy and from high resolution spectroscopy of faint distant galaxies with the Keck telescope have opened up hitherto inaccessible ways of investigating the cosmological problem. Many of the well-established notions of the Standard Big Bang Cosmology are being severely tested, the cosmological questions are being further sharpened. What is the age of the Universe? Is the Universe going to expand forever? How much of the matter in the Universe is in the dark form? How did galaxies form? When did they form? These and many other related questions are exercising the minds of the cosmologist, the astronomer and the particle physicist and a great debate is on. This volume 32 of the Annual Review brings us a flavour of these issues through the articles of Carr, White, Scott and Silk, Dekel and Fabian. There is a lot to ponder over and a lot to marvel at.

I shall be remiss if I do not mention the Prefatory Chapter of this volume. Margaret Burbidge is the author of it and her contribution 'Watcher of the skies' is a delight to read. Burbidge has been one of the distinguished astronomers of our times and the account of her life as a professional astronomer is of great common interest. As she says, the *ARAA* Editorial Board invited her to write an account that would acquaint an observational astronomer today 'with what it was like to use optical telescopes before TV, 2-dimensional photon counting devices and computers'. She has succeeded in her job admirably. We now have in *ARAA* Prefatory Chapters accounts by three of the famous foursome B^2FH.

Astronomy and astrophysics are a rapidly progressing field. Many of the results reviewed in this volume will either be improved upon or superseded by new developments in future. By monitoring this progress annually through superbly written articles, *ARAA* is doing a signal service to the astronomical community.

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MEETINGS/SYMPOSIA/SEMINARS

National Seminar on Biotechnology: New Trends and Prospects

Date: 25–27 November 1996
Place: Hardwar

Themes include: Microbial preparations and plant products; Education and research in biotechnology– Indian priorities; Microbial technology and renewable energy; Biotechnology for agriculture; Biotechnology in health care and food biotechnology.

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National Symposium on Environment III: 1996. Eco-friendly and Biorational Pollution Management in Soil, Water and Air

Date: 10–12 December 1996
Place: Pune

The above seminar will be held in Hindi at National Chemical Laboratory, Pune. Themes: a) Pesticides: Alternatives – plant products, IPM, biopesticides etc. ; b) Industrial effluents; c) Early warning systems: Role of biomonitoring; d) Miscellaneous.

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