BOOK REVIEWS

Lemurs, dead and alive

R.D. Martin

THE prosimians, commonly referred to as "lower primates", can be loosely regarded as representing a primitive grade closer to the ancestral primate condition than the modern monkeys and apes. For this reason, any study of primate evolutionary biology is particularly dependent upon an understanding of the prosimians (lemurs; lorises; tarsiers). Yet, until quite recently, the prosimians were relatively neglected in the primate literature, though several recent publications have done much to fill this gap.

Among the prosimians, the Madagascar lemurs comprise by far the largest assemblage of living species and provide a remarkable example of adaptive radiation on an isolated land-mass. Until now, however, there has been no really comprehensive treatise on the Madagascar lemurs available in the English language; most of the relevant publications are in French. Now, at long last, a highly readable and authoritative English-language reference work on the lemurs has been provided in the form of Ian Tattersall's *The Primates of Madagascar*. This (by today's standards) reasonably priced and attractively presented book is a must for libraries and research workers concerned with primate evolutionary biology.

After providing a neat and illuminating historical survey of the discovery and early description of Madagascar's lemurs, Tattersall goes on to consider the general biogeographical background, giving due reference to continental drift. It now seems to be well established that Africa was the primary source of the original mammal fauna which colonized Madagascar and that this large oceanic island has existed as such for at least the past 65 million years. Adaptive radiation of the lemurs to yield the modern array of a score or so species undoubtedly took place largely or exclusively within Madagascar. These living lemur species are effectively reviewed by Tattersall, who provides standard measurements from his comprehensive survey of major museum collections and body weights wherever possible, as well as providing useful distribution maps incorporating actual locality records in addition to the customary expanses of hopeful shading.

It is a sad fact that until historical times Madagascar's lemur fauna was almost twice as rich in species as it is now, including numerous forms which were markedly bigger than most extant lemurs, such as the ape-sized *Megaladapis* and the monkey-like *Archaeolemur*. These large-bodied lemurs are known only as subfossils and Tattersall has performed a particularly valuable task in providing a chapter with the clearest available general review of the subfossil lemurs. He also gives a balanced discussion of conflicting explanations for the recent extinction of these animals (human intervention versus climatic change).

The Primates of Madagascar. By Ian Tattersall. Pp.382. ISBN 0-231-04704-5. (Columbia University Press: 1982.) $52.

The remaining chapters provide very useful syntheses of information on behaviour and ecology, general morphology and adaptation, and phylogeny and classification. The thoughtful concluding chapter ends, as it should, with a strong statement about increasing threats to the survival of the remaining lemur species.

Tattersall's central research interest has been the phylogenetic relationships of the lemurs, and he provides a fairly comprehensive survey of relevant information and conflicting interpretations. His conclusions, however, are somewhat controversial. In agreement with several other authors, he cites morphological evidence (essentially from the auditory bulla and internal carotid circulation) suggesting that certain lemurs (family Cheirogaleidae) diverged from a common ancestry with the Afro-Asian loris group (family Lorisidae) post-dating the initial radiation of the lemurs. Serological evidence, on the other hand, supports the alternative view that the lemurs of Madagascar constitute a self-contained (monophyletic) group.

Tattersall dismisses the biochemical and chromosomal evidence without proper discussion, and this — along with a general reluctance to emphasize quantification — is one of the few shortcomings of an otherwise well-balanced book. It is, of course, impossible to cover everything in a single text, but the principle must be recognized that any overall assessment of lemur phylogeny must eventually integrate biochemical and chromosomal data. The hypothesis of a later link between the Cheirogaleidae and the Lorisidae automatically requires at least two crossings of the Mozambique Channel by early lemurs. Tattersall goes still further than this in postulating, on craniodental grounds, specific relationships between Eocene fossil adapids and certain extant lemurs (*Notharctus* + *Lepilemur; Adapis* + *Hapalemur*). This would require not only multiple crossings of the Mozambique Channel but also a very early origin for the Madagascar lemur radiation. The dental similarities between the Eocene fossils and modern lemurs are, indeed, striking; but parallel evolution would seem to be a strong possibility. Nonetheless, Tattersall's views on lemur phylogeny are thought-provoking and will doubtless fuel further research in this area.

Overall, *The Primates of Madagascar* performs an excellent service in providing an up-to-date review of a wide range of material on the Madagascar lemurs, together with a comprehensive bibliography. It will undoubtedly become a standard reference work for future studies of these unique primates. □

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Grains of evidence

A.T. Grove

Environmental History of East Africa: A Study of the Quaternary. By A.C. Hamilton. Pp.328. ISBN 0-12-321880-2. (Academic: 1982.) £24, $44.50.

STUDIES of Late Quaternary environmental history in East Africa exploit the opportunities afforded by the sedimentary record and old shorelines in the rift basins, and by glaciation features on the high mountains. Pollen preserved in the sediments of the rift and in cirque basins, and also in peats in the higher and wetter areas, is an indicator of former plant distributions. It is with the last subject that Hamilton is mainly concerned in this book. Extraction, identification and counting of the pollen grains is testing and time-consuming; interpretation requires a good general knowledge of plant geography. It remains, I suspect, an art as well as a science.

Hamilton has reduced some of the uncertainties of interpretation in East Africa by examining surface pollen samples in relation to current vegetation patterns and drawing conclusions as to the production and mobility of different types of pollen. This has enabled him to