Coming out of Africa

David J. Chivers

A Primate Radiation: Evolutionary Biology of the African Guenons. Edited by Annie Gautier-Hion, François Bourlière, Jean-Pierre Gautier and Jonathan Kingdon. *Cambridge University Press: 1988. Pp. 567. £60, $120.*

AFRICA's primates have been the subject of intensive research for the past 20 years, yet books bringing together the results of the various studies have been conspicuous by their absence. Unlike their relatives in the rainforests of south-eastern Asia and the Neotropics, African primates occur in a great variety of habitats. They exhibit a bewildering complexity of taxonomy, distribution, phylogeny, biology and socio-ecology — and none more so than the members of the genus *Cercopithecus*, the guenons.

The situation is much clarified in *A Primate Radiation*. The book contains wide-ranging analyses of the 28 species (seven superspecies) and about 75 subspecies arranged in four subgenera — *Erythrocebus* (the patas monkey), *Miopithecus* (the talapoin monkey), *Allenopithecus* (Allen's swamp monkey, demonstrated to be closer to the ancestral guenons than the 'true' guenons) and *Cercopithecus* (the guenons, the other 25 species).

The editors have done an excellent job, dividing the material into three well-integrated sections: guenons and the African environment, past and present (six chapters); genetic and phenetic characteristics, and their use in phylogenetic reconstruction (eight chapters); and ecology and social behaviour (ten chapters). This last section includes both fresh data and stimulating new analyses. A picture emerges of behavioural flexibility in diverse habitats, of one-male groups (Cords), eating mainly fruit (Gautier-Hion), breeding seasonally (Butynski) with some promiscuity (Cords, Struhsaker), and maintained by more subtle means than the frequent and overt signals of baboons and macaques (Rowell). The occurrence of mixed troops (Gautier-Hion) is of key importance in this context, as they reduce predation and increase efficiency of foraging on diverse plants with complex production patterns. Mixed troops also help to promote hybridization (Struhsaker *et al.*), and this may be of long-term significance in the speciation and subspeciation of guenons.

In the preceding sections, the contributors emphasize the dichotomy between the savannah or more terrestrial forest species and the more derived arboreal forest species, as well as their biological plasticity. A strength of the book and its science is the concordance of results from diverse areas of research. Thus studies of fossils (Meave Leakey), of forest evolution (Hamilton), of habitat and locomotion (Pickford and Senut) and of present-day distribution (Lernould, Oates, Colyn) all support the idea of a recent radiation of forest species (in the past five million years) from Miocene semi-terrestrial frugivores. Guenon systematics and phylogeny are further clarified genetically by the protein electrophoretic studies of Ruvolo and Turner *et al.*, and by the detailed chromosome studies of Dutrillaux *et al.*; and phenetically by the morphological studies of Turner *et al.*, Martin and MacLarnon, and Kingdon, as well as through detailed analyses of calls (Gautier).

François Bourlière has inspired several generations of tropical ecologists, and evidence of his broad and incisive mind is clear throughout the book. The Gautiers have pioneered and persisted in the study of elusive west African forest primates, while their French colleagues have developed new laboratory approaches. The art work and biological vision of Jonathan Kingdon is an added bonus. The four editors, 26 other contributors and the publisher have completed an impressive task, producing a well-coordinated and attractive volume. *A Primate Radiation* will long stand as the key source on African primates and as a model for further multi-disciplinary research on any continent. □

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Andromeda and beyond

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Extragalactic Astronomy. By B. A. Vorontsov–Vel'yaminov. Translated by Richard B. Rodman. *Harwood: 1988. Pp. 724. $285, £187. Book club price $85, £56.*

"OF all the objects located beyond our Galaxy, only one, the great spiral nebula in Andromeda, can be glimpsed by the unaided eye in the northern celestial hemisphere." Thus begins *Extragalactic Astronomy* by Professor Vorontsov-Vel'yaminov of the Sternberg Astronomical Institute, Moscow University, one of the Soviet Union's foremost observational astronomers. Although the existence of the Andromeda Nebula had been known for more than 1,000 years, it was not until the 1920s that its true nature became clear with the realization that, just as the Sun is merely one star out of the many millions in our own Galaxy, the Milky Way itself is just one of many millions of galaxies. With this realization of the immensity of the Universe, a new branch of astronomy was born: extragalactic astronomy.

Vorontsov-Vel'yaminov is probably best known for his *Atlas of Peculiar Galaxies*, published in 1959. In that work he drew attention to the observation that the shapes of many galaxies do not fit very well with the well-known categories of spiral and elliptical proposed by Edwin Hubble, showing that the Hubble classification is an unrealistic oversimplification. Most galaxies are perturbed or deformed, and many appear to be interacting with their neighbours. The effect of interactions in galaxy formation and evolution remains an important area of research.

Vorontsov-Vel'yaminov's publications in professional journals span half a century, and in this book he has provided us with a fine systematic survey of extragalactic astronomy. The English version of the book is a translation of the second Russian edition. Although that was completed in 1978, the translation is supplemented with an appendix by Vorontsov-Vel'yaminov himself, covering the period up to 1982, while the period since then is dealt with by Debra Meloy Elmegreen. So although there has been a considerable delay between the original Russian publication and the appearance of the English translation, the contents of the book are completely up to date. A particularly valuable ingredient is the final bibliography, which contains nearly two thousand references which all readers will find an invaluable source for further exploration of the immense amount of published material on observational extragalactic astronomy. Moreover, as one would hope, the work of Soviet astronomers is cited more than it would be in a comparable account of the subject published in the West.

The book emphasizes observation rather than theory, which means that the contents will not date so much as would those of a theoretical treatise. This does not mean that theory is neglected, but that the treatment of the observations is based more on qualitative physical arguments than on a detailed comparison with the theory of the day. As a result, however, the text is rather long-winded in places.

This book is more than just a translation. Using the basic Russian text, the production team has produced an up-to-date review of observational extragalactic astronomy.

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