

labelled without tedious abbreviations. Most are plain line drawings and these are almost uniformly good. But the author has made extensive use of mechanical stipple. As may be seen by a glance at the advertisements in any newspaper, this medium is used with great skill in commercial studios. But it is a treacherous medium in the hands of the amateur. It has been used successfully to reproduce in this book the well known figure from Schwabe, of the ear of *Decticus* in longitudinal section. But there are many other illustrations where the tones are too dark or too lacking in contrast and the result would have been better in plain line.

But these are minor matters. The author is to be congratulated on the production of what will surely prove to be a really useful book.

V. B. WIGGLESWORTH

## BIZARRE GRAZERS

### Kangaroos

By H. J. Frith and J. H. Calaby. Pp. xiii+209+27 plates. (Hurst: London; Humanities Press: New York, September 1969.) 126s.

ANYBODY with a smattering of zoology could cite the kangaroos as an example of parallel evolution, adapted in their uniquely marsupial way to the part elsewhere performed by the large placental ungulates. But few zoologists outside Australia could elaborate on the ecological role of the kangaroos to provide a valid comparison with the numerous placental counterparts throughout the world whose ecology is being studied with increasing intensity. The structure, behaviour and reproduction of kangaroos are so bizarre and fascinating to those brought up on placental ungulates that it is difficult to make objective comparisons with the placental grazers elsewhere. Two generally overlooked aspects of such a comparison are the paucity of species and limited diversity among the kangaroos; and, significant in considering the history of their exploitation, the absence of any conveniently preservable and measurable part of their anatomy that might have attracted the attentions of the trophy hunter.

Compared with the large herbivores on other continents,

the kangaroos have survived well. But the human population, although still sparse in the "inland", is having an accelerating impact. Some of this impact has favoured the kangaroos, especially by the conversion of areas of dense boree and saltbush scrub to open grassland, equally suitable for sheep and red kangaroos. Other factors have gone against them, in particular their elimination as "vermin" on the more intensively used grazing land and the more recent development of commercial shooting on a large scale for skins and meat, the latter mostly for export as pet food.

It is therefore very timely that an intensive programme of ecological study of kangaroos is being undertaken by the Division of Wildlife Research of CSIRO. The authors of this book are both members of this team who have played a leading part in this work, and the result is an invaluable synopsis of kangaroo biology. Introductory chapters deal with the discovery of kangaroos and a general review of the family including the many smaller species, but the greater part of the book concentrates on the large kangaroos with special emphasis on the red kangaroo, *Megaleia rufa*, the dominant species in the great plains of central Australia and consequently the species that most often conflicts with the interests of the ranchers. These chapters are concise but well documented with references to the original literature. Studies of population density have shown much smaller densities than have often been supposed, although local concentrations may occur in times of drought. A high density of red kangaroos is eight per square mile on ground carrying two hundred sheep, while one per square mile is normal on ground carrying thirty sheep per square mile.

It is a pity that the pricing of this volume for the British market seems to have been based on the assumption that it is an esoteric work of interest only to expatriate Australians or the rare student of kangaroos. At a more reasonable price it could have been widely recommended to all interested in any aspect of the conservation and management of wildlife, and to provide, for the curious, a need felt since a public notice announcing the first kangaroo to be exhibited in London in the 1790s proclaimed: "to enumerate its extraordinary Qualities would far exceed the common Limits of a Public Notice".

G. B. CORBET

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