

No mention of Hermans' work would be complete without a reference to his admirable experimental techniques, which are described in considerable detail in a series of appendixes. Altogether we must congratulate Hermans on his stimulating account of these researches carried out under conditions which at best could not have been very encouraging.

H. J. WOODS

## MAMMALIAN REPRODUCTION

### Patterns of Mammalian Reproduction

By Prof. S. A. Asdell. Pp. xiii + 437 + 12 plates. (Ithaca, N.Y.: Comstock Publishing Co., Inc.; London: Constable and Co., Ltd., 1946.) 5 dollars; 27s. 6d. net.

**R**EPRODUCTION is a branch of biology in which the methods of the naturalist and the anatomist have contributed considerably to an understanding of basic physiological processes. The comparative study of breeding seasons has given valuable clues to environmental and other factors which condition their variation. Differences in the characteristics of the oestrous cycle, and in the manner of ovulation, have directed attention to mechanisms that underlie the overt anatomical and behavioural changes in the reproductive rhythm. In its turn, anatomical and embryological study has provided useful indications for the experimental elucidation of such problems as the differential sensitivity of tissues to hormone stimulation. To-day, however, the broad zoological basis of the subject sometimes tends to become obscured by the more rapidly growing biochemical and physiological literature, and there is a danger lest a declining interest in systematic zoological study robs endocrinology of some potential points of advance.

The value of the comparative approach to the study of reproduction is admirably brought out in Prof. Asdell's "Patterns of Mammalian Reproduction". In it he has assembled, from the literature of natural history, zoology and physiology, such information as is worth recording about the sexual physiology of mammals. About two hundred species are dealt with in the text, while information relating to some seven hundred more is pulled together in the form of tables. The domestic mammals, and those most commonly used in laboratory work, are treated in detail. In the case of the rat, for example, Prof. Asdell has in effect produced a review of practically all that is known about the reproductive physiology of the species—including a detailed statement about the histology of the reproductive organs; it runs to some twenty pages and has a separate bibliography of 150 titles. In the case of such lesser-studied mammals as the African buffalo or the flying squirrel a paragraph or two summarizes what is known about the normal mating and breeding seasons, and about any special characteristics of the reproductive system. The tabulated material gives such information as exists about breeding season, number of young and duration of gestation in the species about which least is known. All this material is preceded by an introductory chapter which provides a general summary of such matters as sex-determination and differentiation; the hormones concerned in reproduction; the underlying pattern of, and changes in, the oestrous cycle of the reproductive organs; and pregnancy.

Prof. Asdell does not tell the reader which scheme of zoological nomenclature he has followed in his path through the Mammalia, and he provides few alternative systematic names. Little difficulty should, however, be experienced on this score by English readers with access to a modern systematic list of the kind issued by the Zoological Society of London.

In selecting his sources Prof. Asdell has wisely concentrated on the most important studies of each species, and particularly on those which emphasize the quantitative aspects of the subject. It is not improbable, as he suggests, that here and there specialists may find omissions in his record. Whether or not they do, no student of reproduction can afford to do without his new book. This will undoubtedly be the reward for what must have been a great labour of compilation, and one which, happily, helps to bring up to date the opening chapters of Dr. F. H. A. Marshall's classical study of the "Physiology of Reproduction", the last edition of which appeared in 1922.

S. ZUCKERMAN

## NATURE CONSERVATION IN THE BELGIAN CONGO

### Animaux protégés au Congo Belge et dans le territoire sous mandat du Ruanda-Urundi

Par S. Frechkop, en collaboration avec G. F. de Witte, J.-P. Harroy et E. Hubert. Pp. xxi + 469. (Bruxelles: Institut des Parcs nationaux du Congo Belge, 1941.)

**T**HIS work is the second edition of what is in effect a guide to the protected mammals and birds of Africa, as well as a handbook of Nature preservation in the Belgian Congo. More than two hundred pages of it are taken up, often with considerable waste of space, by the proclamations, laws and local by-laws which govern field sports, Nature conservation and national parks in Belgian territory. The remaining three hundred pages constitute a guide to the protected species of mammals and birds (and one fish), designed to provide the traveller and sportsman with a means of identification; together with brief notes on distribution, habitat and habits. Much detailed and more technical information, such as particulars of sub-species and local forms, is appended in a valuable series of footnotes. The book displays a curious formality and inelasticity of treatment. Thus, dichotomous keys are provided throughout. Since practically all the species of large herbivores are protected, the keys concerned with these groups are distinctly useful. But, when we come to the birds, only a very small, seemingly haphazardly chosen, proportion of the total avifauna is preserved, so that the keys to this group are of relatively little value.

Each species is illustrated by pen drawings, often based on photographs or taken from published pictures or papers. Apart from some notable exceptions among the mammals, they tend to be wooden and harsh, and give the book an antiquated and rather stuffy air. Some good photographs and some attempts at an ecological approach, with pictures of types of habitat, would have considerably increased the usefulness, educational value and attractiveness of the volume. Whatever the subject, the scale of each illustration is given as a fraction of the natural size—leading to some quaint results. Thus, it is