

since Pasteur started to investigate the secrets of the simplest forms of life, which have turned out to be so complex". They are to be warmly congratulated on having produced such a readable history of this fascinating subject. I recommend the book to all microbiologists and other scientists of catholic tastes.

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## ALL THE MAMMALS

### The Mammals

*A Guide to the Living Species.* By Desmond Morris. Pp. 448 (300 photographs). (London: Hodder and Stoughton, Ltd., 1965. Published in association with The Zoological Society of London and Granada TV Network.) 63s. net.

*THE Mammals: A Guide to the Living Species* deals with the orders of mammals in turn. We are given a classified list of the living species of each order, followed by photographs and brief descriptions of a selection of the species. The lists will presumably be used mainly by zoologists and it is rather surprising to find them in a book which is otherwise designed for a much wider public.

The lists have been compiled mainly from a dozen fauna lists which between them cover the world. They give the systematic position, scientific name and English name (if any) of each species, with an indication of distribution and a reference to a taxonomic work where fuller details may be found. The authors of species, and synonyms, are omitted. The lists of bats and rodents have been kept reasonably short by giving the number of species, and not their names, whenever a genus includes several species. Twice as much space would have been required to list the mammals if this had not been done. The lists of the other orders include all the specific names. Dr. Morris estimates that a complete list of the species of living mammals, with synonyms and authorities, would occupy at least 2,000 pages. We may regret that he has not been able to give us such a list, but he has provided a very useful list in the 80 or so pages that he (or his publisher) has felt able to spare for the purpose. There does not appear to be any other modern list of the mammals of the world.

There are, it appears, 4,237 known species of mammals. 300 of them have been selected for illustration and brief description. These include a much higher proportion of the primates, carnivores and ungulates than of the insectivores, bats and rodents. This is inevitable, because the latter group of orders is so large and because the former one is so well represented in zoos. Dr. Morris is curator of mammals to the Zoological Society of London, and most of his readers must depend largely on zoos for their experience of non-domestic mammals. Nevertheless, I would gladly have given up a few of the duller monkeys in return for some more zalambdodont insectivores.

The descriptions deal with the more remarkable features of the habits and anatomy of each species. The selection of material for them has been excellent, though it was, perhaps, a mistake to give every species the same amount of space. In some cases, when other very similar species have been described, the requisite 250 or so words seem to have been hard to find. In other cases, they are not nearly enough. In the account of the European rabbit, for example, burrows and refection are discussed, but there is too little space to cover the equally interesting topics of myxomatosis and the reabsorption of embryos. A few opportunities have been missed; there is, for example, no mention of the difference in echo-location mechanism between rhinolophid and vespertilionid bats, which could be illustrated very well by photographs. No authorities are cited for the information given in the descriptions.

Most of the photographs are of captive animals. A red deer does not look its best against a background of bars, wire netting and a perambulator. A few of the

photographs are poor, but most illustrate their subjects adequately.

The introduction includes a very worthwhile attempt to explain the success of the mammals in popular terms. Fuller explanations of some points would have been welcome, and it seems unfair to write about the mammals "eliminating the inefficient mixing of venous and arterial blood" since recent experiments indicate that very little mixing occurs in reptile hearts<sup>1,2</sup>.

This is a useful book, and an attractive one.

R. McN. ALEXANDER

<sup>1</sup> White, F. N., *Anat. Rec.*, **135**, 129 (1960).

<sup>2</sup> Khalil, F., and Zaki, K., *Z. vergl. Physiol.*, **48**, 663 (1964).

## PLANT ANATOMY

### Plant Anatomy

By Prof. Katherine Esau. Second edition. Pp. xx + 767 (96 plates). (New York and London: John Wiley and Sons, Inc., 1965.) 105s.

ALTHOUGH plant anatomy can no longer claim so great a share of a well-balanced botany course as in former years, it is equally certain that no botanist should be without a sound knowledge of plant form and structure. The corresponding need for a good modern text-book of plant anatomy has now been met by this second edition of Prof. Esau's *Plant Anatomy*.

The previous edition of this book, published in 1953, received much praise from many users, and all the good things said about the first edition apply equally to the present one. The clearly written text is illustrated by many text-figures and by a large number of photographs, which have been increased to 96 plates in this edition, as compared with 85 in the first edition. There have been few changes in the general plan of the book, and with one exception, Chapter 13, with the new title "Secretory Structures", as opposed to the previously more restricted topic of "Laticifers", the chapter heads remain the same. A great deal of new information has been incorporated in the text, but appropriate condensations and omissions have enabled this integration to be made without an undue increase in length, now 767 pages instead of 735.

The principal changes have naturally been in the sections where recent research has been active, notably in the chapters dealing with "The Protoplast" and "The Cell Wall", which now include condensed, but informative, accounts of modern ultra-structural research. The chapters on "Meristems and Differentiation" and "Apical Meristems" have been extended to cover new developments, such as the culture of isolated cells and experimental studies by various workers on plant morphogenesis.

But this new edition, like the previous one, is primarily concerned with the broad treatment of fundamental aspects of plant anatomy. As a consequence of this approach it is inevitable that individual readers may be disappointed with the curtailed accounts of certain special topics. Thus, there is little consideration of the interesting differences in the detailed structure of secondary xylem which permit the identification of commercially valuable timbers. There is also only brief mention of the varied anatomical modifications characteristic of plants with different ecological requirements. On the credit side, the omission of details of this kind has permitted the inclusion of chapters dealing with "The Flower", "The Fruit" and "The Seed".

In sum, this book is of value both as a reference work for any student of botany, and even for general reading by those interested in acquiring a good grounding in plant anatomy. It is above all a scholarly treatment in which the author has carefully selected the more significant items from the great mass of detailed information available. The book is well produced and the two drawings of transverse sections of collenchyma make an attractive and appropriate dust-cover.

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