The monograph is also concerned with the measurement of electrical conductivity in brain tissue. The theoretical considerations which relate conductivity to the ionic environment of the cells are discussed and measurements of the conductivity of the cortex in a variety of physiological states are reported. These, too, are considered in relation to the actions of the postulated metabolic control systems. This work is concerned with phenomena the time course of which is very different from any of those investigated in the works reviewed here. Although the author, in her attempt to include all electrophysiological observations in one global theory of nervous action, relates slow electrical changes to neuronal function, the connexion is not a clear one and a conclusive demonstration of the regulating function of these potential fluctuations has not been given. The book has suffered little in translation and the style is easy to read and comprehensible, in spite of a few anomalies in spelling and terminology.

It is difficult to assess the general usefulness of these volumes because of their variability. Each book is expensive and specialized. Single volumes will be helpful to those engaged in related research; but there will be few who would consider possession of the whole series as a collection of reference works.

ROBERT PORTER

MYIASIS

Myiasis in Man and Animals in the Old World

A Textbook for Physicians, Veterinarians and Zoologists. By F. Zumpt. Pp. xv + 267. (London: Butterworth and Co. (Publishers), Ltd., 1965.) 130s.

AFTER a brief history of the term 'myiasis' Dr. F. Zumpt defines myiasis for the purposes of this book as "the infestation of live human and vertebrate animals with dipterous larvae, which, at least for a certain period, feed on the host's living tissue, liquid body-substances, or ingested food". Different kinds of myiasis are distinguished as: (a) sanguinivorous myiasis, which is a new term introduced to include larvae which live as ectoparasitic bloodsuckers on mammals and birds; (b) dermal and subdermal myiasis; (c) nasopharyngeal myiasis; (d) intestinal myiasis; and (e) urogenital myiasis. A list of definitions of the terms used is then given, followed by a short discussion on evolutionary trends in myiasis-producing flies. Then the myiasis-producing Diptera recorded from the Old World are listed with symbols to indicate the type of myiasis with which they are associated. About 187 species are given in this list.

In considering the systematic position of these flies the classification of Hennig is followed, the two sub-orders Nematocera and Brachycera being recognized. The Nematocera are of little importance in relation to myiasis. The Brachycera are divided into the Tabanomorpha and the Muscomorpha, but only the latter contains forms producing myiasis. There are two sub-sections of the Muscomorpha, the Empidiformia, not of importance as regards myiasis, and the Musciformia (formerly called Cyclorrhapha) in which myiasis-producing species occur in the families Neottiophilidae, Chloropidae, Muscidae and Calliphoridae and in the two families Gasterophilidae and Oestridae in which all the species are obligatory parasites in their larval stages. An account of the main external morphological characters of the musciform Diptera is then given and is illustrated with very clear line and stipple drawings. Next follow keys to the larvae of myiasis-producing Diptera in the Old World, comprising: key to ectoparasitic blood-sucking larvae; key to larvae found in dermal layers; key to larvae found in head-cavities; key to larvae found in the alimentary tract or excreted with faeces; and key to larvae found in the urogenital organs.

The main part of the book is an account of the morphology, biology and pathogenesis of myiasis-producing

flies in systematic order. Finally there are a host-parasite list, arranged under wild animals, and domestic animals and man; a short chapter on technique; a chapter on control measures; a full list of references; and indexes of parasites and of hosts.

Throughout, Dr. Zumpt emphasizes that the work is meant to be a practical manual to help in the identification of material collected in the field or sent to the laboratory for identification, and that the keys to larvae and adults are to be used only for specimens obtained from cases of myiasis or bred from larvae derived from such cases. Thus the keys would not be valid for larvae or adult flies which did not derive from cases of myiasis.

Dr. Zumpt displays an extensive knowledge of the subject and has obviously great practical experience. This is displayed in the balanced treatment of adult and larval stages and in the critical summaries of what is known of the individual species and their relation to myiasis. The work is copiously illustrated with original drawings or with figures copied from other publications. The illustrations are of adequate size and are mostly in line and stipple. These drawings show how much more satisfactory figures reproduced from line blocks are than the more elaborate drawings or photographs which are so often used in modern publications.

The very diffuse field is very well covered, and an immense amount of knowledge, which has hitherto been widely scattered and often inaccessible, has been assembled and set out clearly and concisely. I was not able to note any important omissions from the list of references. The names of the species dealt with are brought into line with the current *International Rules of Zoological Nomenclature* and the main synonyms are given with indications as to where fuller information is to be found. This information is most helpful to those not expert in taxonomy. It will no doubt take time for some of us to become accustomed to such changes as *Calliphora vicina* for *Calliphora erythrocephala*, but at least Dr. Zumpt gives reasons for the changes. He also very wisely warns users of the book of the difficulty of identifying many species of Diptera in the imaginal stage and advises them to seek the aid of experts in such cases. If this were done more often the literature would be less burdened with synonyms.

Only those who have had practical experience in trying to identify material collected in the field, or sent for identification, can appreciate what a boon it is to have the essential information summarized so conveniently in one book in this manner. I found it interesting, not only for the amount of knowledge it contains, but, perhaps more so, for the manner in which it shows where knowledge is still lacking and where gaps are waiting to be filled. No one interested in Diptera can fail to find this a stimulating work and to feel that Dr. Zumpt has admirably carried out his declared aim "to enable the physician, veterinarian and zoologist to identify the larvae found involved in myiasis in the Old World, to supply the most important items of information on their morphology, taxonomy, biology, medical and veterinary importance and control and to provide an introduction to the main literature, the study of which will allow him to trace obsolete publications and those of minor importance".

Myiasis in Man and Animals in the Old World is well produced and printed; the large format allows drawings to be reproduced of adequate size and for the relevant ones to be grouped close together so that comparison is easy. Cross-references are well provided and printing errors are remarkably few; where at first I thought names were misspelt I found that the discrepancy was due to the correction of erroneous spellings of previous authors which had become accepted in the literature. It has been a pleasure to review this book and there is no doubt that it will be generally welcomed as an important contribution to the literature on Diptera and that it will be the standard work on myiasis in the Old World for many years to come.

P. TATE