

summarizes the comparative segmentation in the four major classes of arthropods and gives a detailed footnote on the pectines of scorpions. The second chapter, on immature insects, describes insect development without any attempt to explain the underlying physiological changes. The line illustrations here and elsewhere in the book lack any indication of scale and seem chosen to illustrate the exceptions rather than the normal. Beginners might often fail to identify the head end in some diagrams. Should the budding naturalist remain undaunted by the next fifty pages in which the thirty insect orders are described with the aid of rather inadequate line illustrations, he will reach quite interesting chapters on many diverse features of insect life.

Bound in the middle of the book are fifty half-tone plates on twenty-four pages. Some are beautiful, but three have been turned on their sides putting the insects into unlikely attitudes. The good picture of a lace-wing larva (Fig. 23) is misidentified as that of a ladybird. If this were the only error it could be forgiven; however, errors of fact, outdated theories and misspelt terms and names of insects and of plants are too numerous for me to be able to recommend this book.

G. C. VARLEY

ASCARIDS AND DISEASE

Ascaridata of Animals and Man and the Diseases caused by Them

By A. A. Mozgovoi. Part I. (Essentials of Nematology, Vol. 2.) Translated from the Russian by M. Ravch. Pp. x+390. (Israel Program for Scientific Translations: Jerusalem, 1968. Distributed by H. A. Humphrey, London.) 145s.

THIS book is about roundworms called ascarids, ubiquitous endoparasites of vertebrate animals of all classes and some invertebrates. Adult worms infect man and many animals of commercial value, and as ascarid parasites are pathogenic, at least in larval and juvenile stages, they give rise to many problems of public health and affect national economy. There is no shortage of information on nematode systematics, but textbooks are rare, and this one should not be criticized too much on taxonomic grounds. The book was published originally in Russian 15 years ago, however, and this recent translation cannot inform us about some systematic modifications subsequently made, which should be mentioned.

Mosgovoi's scheme was, in fact, propounded in 1950, and it represents a suborder (Ascaridata) divided into two superfamilies, Ascaroidea and Anisakoidea. The former contains two families, Ascaridae (nine genera), and Ascaridiidae (one genus); the latter four families, Anisakidae (twenty-five genera), Angusticaecidae (three genera), Goeziidae (one genus) and Heterocheilidae (four genera). The entire group thus comprises (in the Russian scheme) six families and forty-three genera. This book is the first part of a pair of volumes, and only ten genera of Ascaroidea are considered in it.

A later, rival scheme, devised by Yamaguti in 1961, mentions the nematological researches of Skrjabin, Schultz, Schikhobalova, Sobolev, Boel and Ryzhikov, as well as Mosgovoi, and presents this group of roundworms as a single new order. Ascarididea with four families, Ascaridiidae (five subfamilies, fifteen genera), Heterocheilidae (three subfamilies, thirty-two genera), Oxyascariidae (three subfamilies, four genera) and Quimperidae (six genera). Yamaguti placed all but two or three of the twenty-five genera of Anisakidae (Russian scheme) in a new subfamily (Filocapsulariinae) of Heterocheilidae, regarding *Anisakis* as a synonym of *Filocapsularia*. The Russian book is therefore not concerned with more than the first two subfamilies of the family Ascaridiidae Blanchard, 1849, but we can regard it as an elabor-

ated treatise of an important section of the Ascaridata (or Ascaridea, if that name is preferred) which contains important genera such as *Ascaris*, *Parascaris*, *Toxascaris* and *Ascaridia*, respectively parasites of man and pigs, horses, dogs, and chickens.

The book is divided into a short general part dealing with biology and morphology, a long specialized part in which genera and species are considered in succession, a host list, an index of genera and species, a list of Russian references, and a list of papers published in other languages. Unfortunately, as the work is incomplete, there is no general index, although the table of contents names genera and species and thus assists the student perusing the book. The specialized section of the book is rich in detail, mentioning for each species the hosts, locations, geographical distribution and brief descriptions of male and female worms separately. Where it is known, an account of the life cycle follows, and for medically or economically important species such as *Ascaris lumbricoides* there is information on epidemiology, pathogenic effects, abnormal locations, pathogenesis of migrating forms in various organ systems, clinical features of disease, classification of ascaridoses, diagnosis, therapy and prophylaxis. Some of the pieces of description are verbose, some expressions astonishing, "oviducts turn insensibly into the ovaries" (page 25), and figures are often heavily printed, unfortunately so when pathological findings are under consideration (Figs. 162-169). Some more academic information will interest zoologists, because the hosts include snakes and lizards, and many birds and mammals.

BEN DAWES

ECHINODERMS AND CHORDATES

Treatise on Invertebrate Paleontology

Directed and edited by Raymond C. Moore. Part 5: Echinodermata 1. Vol. 1: Pp. xxix+1-296. Vol. 2: Pp. 297-650. (Geological Society of America: Boulder; University of Kansas: Lawrence, 1967.) \$20.

THESE two volumes maintain the high standard of editing and illustration characteristic of the "Treatise". In addition, their writing has involved intensive study of the groups described, and many new observations are published. Some contributions, however, are highly disputable. The two volumes will be enormously useful, but nobody should hold them sacred.

The first volume begins with an editorial introduction, followed by a general account of the echinoderms by Ubaghs, and a discussion of their classification into the subphyla of Crinozoa, Asterozoa, Echinozoa and Homalozoa. To me, the last seems a sack-group. Larval forms and the concept of growth gradients are reviewed by Fell. His view that larvae are not useful for working out interclass relationships can be taken as proven, as also can the close relationship between asteroids and ophiuroids. Fell's view that asterozoans arose from a crinoid is, if taken strictly, much more dubious, as Ubaghs shows (page 57). Fell also rejects the view that echinoderms are closely related to hemichordates; but his reasons are unconvincing. The Cystoidea are comprehensively treated by Kesling. There was a great need for this, because the last comparable reviews are now seventy years old. It is still uncertain how far the Cystoidea are a natural group. The Paracrinoidea are also described by Kesling, and the Edrioblastoidea and Parablastoidea by Fay.

The Blastoidea begin the second volume. These pretty animals have attracted many workers, and are accordingly dealt with by several authors. Beaver explains the general morphology with great clarity. His statement, however, that the hydrospires are part of the water-vascular system (page 341) is highly surprising. Also, he describes the circum-oesophageal rings simply as nervous; this may