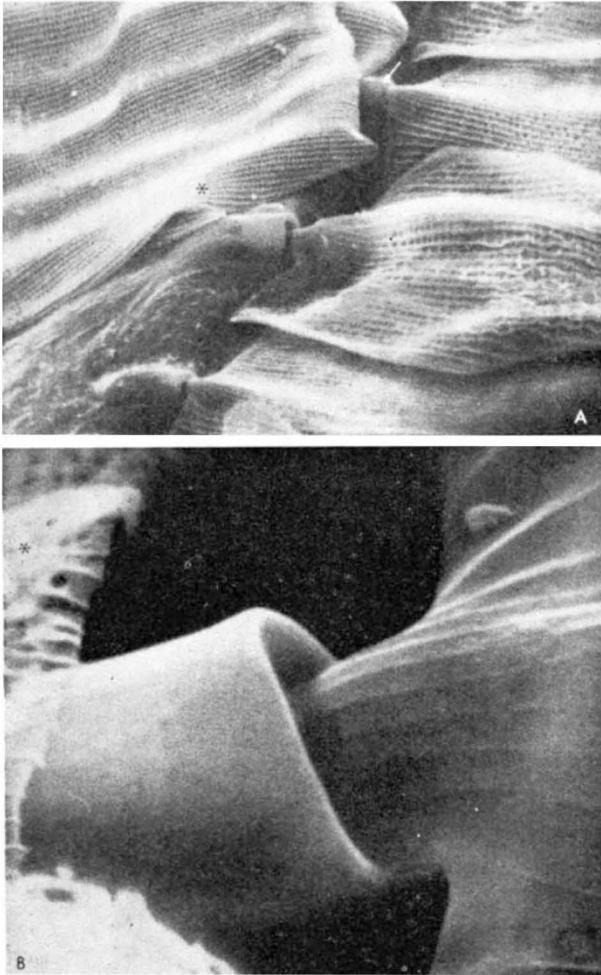


INSECT CELLS



Two scanning electron micrographs of wing scales of the tropical moth, *Urania ripheus*. A ($\times 1,300$) shows parts of several overlapping scales at low magnification. A row of cuticular sockets arising from the wing membrane is visible (arrow); into each of the sockets is inserted the narrow neck of a scale, which broadens into a flattened sac. B ($\times 11,000$) is a higher magnification of the same material. Both these micrographs are taken from *Insect Cells: Their Structure and Function*, by D. S. Smith (Oliver and Boyd: Edinburgh, 1965). There are altogether 117 plates of electron micrographs of insect cells, illustrating the fine structure of the integument, the musculature, the nervous system, the gut, the excretory system, and so on. Each group of micrographs is accompanied by text and a bibliography.

WHOLE CELLS

Functional Dynamics of the Cell

By Edward Bresnick and Arnold Schwartz. Pp. xii + 482. (Academic Press: New York and London, May 1968.) 98s.

LIVING tissue is the raw material of the biochemist. From it, he extracted first small molecules and later macromolecules. He established the nature of metabolic cycles essential to life and characterized "pure" enzymes, but until recently he was less concerned with the whole cell. It is a measure of change during the past ten years that the authors of this book are more concerned with the whole cell than with its component molecules. In making this transition, they have set themselves a formidable task. It is obviously impossible to produce a textbook

which covers effectively histochemistry, cytology, membrane structure, active transport, function of subcellular organelles, genetics and cellular specialization, without running into one of two difficulties: either the book must become a "handbuch" extending to many thousands of pages or it must become telegraphic and at times superficial. Bresnick and Schwartz have limited themselves to less than 500 pages, and I at least was left with doubts about the value of some of these pages. A considerable effort has obviously been made to incorporate the most recent results, but recent results are necessarily incomplete and often unreliable. Many statements are made without giving the source of the evidence, but for the student it is surely more important that he should learn to assess evidence than that he should have a superficial knowledge of a multitude of "facts".

Despite these criticisms, the idea behind this book is admirable. The major objective of the text is, in the words of the authors, "to emphasize the importance of viewing, in a correlative way, the structural and biochemical features of cellular components". From this point of view, the text is partially successful. If the authors can be persuaded to produce a second edition, they might consider a more selective approach to their objective. The standard of discussion of mitochondrial function and of active transport obviously presupposes a considerable background training in biochemistry and cell biology, yet the chapters on the technology of research, on genetics and on cytology are at the level of an introductory course. There is undoubtedly need for textbooks along the lines pioneered by these authors, but the very nature of these poses problems of selection which have not been entirely solved in the present volume. Perhaps this book will be of more value to the teacher than to the student in that it will stimulate him to rethink some of his courses. Even though no reference is given to many of the statements made in the text, each chapter carries a generous list of references to specialized reviews and articles.

T. S. WORK

ACADEMIC APPROACH

Elements of Entomology

By Harold Oldroyd. Pp. viii + 312 + 50 plates. (Weidenfeld and Nicolson: London, September 1968.) 45s.

THE extreme diversity of form in the insects has convinced the academic entomologists that they fit best into about thirty different orders, some of which have been erected to hold one or two obscure insects which few entomologists will ever encounter. Others, like beetles, bugs, flies and moths, contain thousands of species many of which are familiar to every observant person. If an elementary book begins with these familiar forms it should be possible to give the reader a deeper understanding of what insects are and perhaps lead him to practical study and to more advanced books.

Elements of Entomology is not a book of this type. In spite of claims that the book is written to interest those embarking on the study of natural history, to bridge the gap between school and university and that it is intended for background reading, the whole approach is too academic. The author seems to have based his book more on other British and American textbooks than on personal experience with living insects.

In the first chapter, on "Insects and Other Animals", the author discusses the relationships between the insects and the rest of the arthropods. Beginners may find Fig. 1, stated to be a diagram of "the component parts of an arthropod segment", very puzzling. It is in fact a diagrammatic section through one of the winged segments of an insect in which (for some obscure reason) only cuticle is indicated; components like muscles, the gut, heart and nervous system are omitted! The first table