

CELLULAR BIOLOGY FOR THE LAYMAN

The Life of the Cell

Its Nature, Origin and Development. By Prof. J. A. V. Butler. Pp. 167+16 plates. (London: George Allen and Unwin, Ltd., 1964.) 30s. net.

AT the present time there is a strong movement towards unity in biology, stimulated by the dramatic advances of the past decade, which have led to the establishment of new unifying concepts, the most fundamental being the evidence for the universality of the genetic code. Several books have appeared recently in which attempts have been made to compile this recent information systematically. To the layman (for whom this volume is mainly intended) the cell probably provides the most tangible starting point and Prof. Butler has chosen this approach. The present book might be considered a second edition of his earlier one entitled *Inside the Living Cell*, except that so much has happened in the past five years that it has had to be very extensively re-written.

The range covered is enormous, extending from elementary chemistry to the working of the brain. The author first considers the structure of biological macromolecules (proteins and nucleic acids) and manages to do so without introducing many chemical formulae. For those who are interested in these he provides an appendix. He goes on to discuss in some detail the replication of DNA and the synthesis of proteins. There is then a logical development towards a discussion of the genetic code, mutagenesis and the genetics of micro-organisms. At this point the difficulties of developing a logical exposition of this subject become apparent. A chapter on photosynthesis becomes interposed between a chapter on the genetics of micro-organisms and one on the origin of life; this is followed by one on differentiation and another on antibiotics. Later chapters deal mainly with questions concerning multicellular organisms (especially mammals) rather than problems of the cell. They include a consideration of immunity, a discussion of cancer and chapters on the brain and sense organs, nerves and muscle. There is a final chapter dealing with the possibility of life being distributed widely throughout the universe. The book therefore covers a much wider range than its title suggests. Facts are generally reported with impeccable accuracy; the only statement to which I could take serious exception is the definition of leukaemia on p. 63.

Non-essentials have been trimmed away and the essentials of even rather abstruse concepts described in a manner which should certainly be comprehensible to anybody who has studied any aspect of science and even, I believe, to the intelligent and intellectually curious student of the humanities. Hence, besides being a good general introduction to present-day problems in biology, this is just the kind of book which might help to bridge the gulf between the two cultures. One hopes that some journals commonly read by students of the "other culture" will also undertake to review it.

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LABORATORY PROCEDURES IN BOTANY

Laboratory Techniques in Botany

By M. J. Purvis, D. C. Collier and D. Walls. Pp. viii + 371. (London: Butterworth and Co. (Publishers), Ltd., 1964.) 57s. 6d.

THE great importance of the work of technicians in running a modern botanical laboratory is perhaps not always fully appreciated. It is so often taken for granted that technicians are always there and that they somehow or another seem to know how to deal with every

practical problem that arises in the research and teaching laboratory as well as on the demonstration bench. Nevertheless, in spite of the great knowledge that many botanical technicians possess, it is unusual to find them writing books that give practical directions for laboratory procedures. We are therefore greatly indebted to the three authors of the book under review, all of whom are laboratory technicians, for giving us in writing the benefit of their first-hand experiences of a very wide range of laboratory methods. The topics that are covered range from cleaning glassware to histological and cytological procedures including those in use for electron microscopy. Tests for the chemical nature of cell walls and cell contents are also given. But the book is by no means restricted to microscopical techniques for there are chapters dealing respectively with the preparation of material for museums and herbaria; the care of plants in aquaria; the raising of organisms and the growth of tissues in pure culture. There are also directions for setting up demonstration experiments dealing with growth, photosynthesis, and respiration, while topics such as manometry, chromatography, and distillation techniques are also covered and directions given for the analysis of soils, water and plant material. The book also includes a selection of questions from the Advanced Level Examination for the General Certificate of Education, and others from the City and Guilds examinations for laboratory technicians. The volume ends with an index.

Naturally it has not been possible to treat all these as well as other topics exhaustively in a book of 371 pages, but references are given to literature for further study. It is likewise almost inevitable, with a book of this kind, that specialists will feel that one or more of their own pet methods have been omitted or are inadequately treated. Others again may feel that they would have preferred slightly different methods. To me, for example, it seems that in the excellent treatment of histological procedures insufficient attention has been directed to the many purposes for which the sledge microtome can be used. This very versatile instrument can in fact be used not only to cut sections of timber and other hard material as the authors rightly suggest, but it is also equally satisfactory for herbaceous specimens, including leaves, held in the clamp between pieces of pith or cork. All this can be done without having to resort to lengthy embedding techniques. Another very useful addition would be a few paragraphs on the histological examination of dried material such as herbarium and archaeological specimens. Then again, in my own experience, very few technicians seem to have discovered that compressed material that has been preserved in wet anaerobic conditions can be examined more successfully by cutting sections and then 'reviving' them rather than by 'reviving' the material before the sections are cut.

In spite of inevitable minor omissions such as the examples just given, the book is a most valuable contribution to botanical literature and it will no doubt be widely welcomed, especially on account of its broad content.

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INSECT PHYSIOLOGY

The Physiology of Insecta

Vol. 1. Edited by Morris Rockstein. Pp. xiv + 640. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1964.) 157s.

THE publication of Wigglesworth's *Principles of Insect Physiology* twenty-five years ago has resulted in a flood of valuable works in this field of investigation. Volume 1 of *The Physiology of Insecta* is the first of three large books in which it is planned to cover the field again. The editor, Morris Rockstein of the University of Miami, has selected a team of authors more than half of whom