The index to the four volumes runs to 126 pages (a double column of references on each page). On test, I found a minimum of trouble in turning up any particular reference. This is a valuable feature, for at the price of 345*s*. the book may be in use as a reference in libraries as often as it is taken down from private book-shelves for reading and for study. It is a text-book as well as a reference book, written in good style and easy to read.

It is not possible to cater for the specialist farmer or grower, even in a work of this size. For example, only one chapter is set aside for fruit and vegetable growing, but readers will find a number of references to other publications in which fuller information may be obtained and useful notes as to how to use the book.

There are 1,350 illustrations in all. The plates in particular are excellent in quality. The many diagrams are clear and helpful, but a number of the smaller reproduced photographs are less well chosen, are indistinct and might have been omitted. J. A. McMillan

DAIRY BACTERIOLOGY

Bacteriology for Dairy Students

By Dr. Alan Seaman. Pp. vii+202. (London: Cleaver-Hume Press, Ltd., 1963.) 25*s*.

COMPARED with their counterparts in North America, students of agriculture and dairying in Britain are poorly served with suitable text-books in the important subject of microbiology. The publication of Dr. Seaman's small text-book is, therefore, a welcome addition. Dr. Seaman is a younger recruit to the ranks of lecturers in microbiology, and it would be easy, and discouraging, to be over-critical of this first edition. The subject which he has attempted to cover in 194 pages is large and obviously many aspects could receive only brief mention. There is, however, a lack of balance in the treatment given in different chapters.

In the opening chapters the author discusses the morphology, isolation and nutrition of micro-organisms. It is unfortunate that the writer has chosen to illustrate various aspects of microbial morphology by somewhat crude drawings. There are available to-day numerous excellent electron photomicrographs (for which, presumably, permission to reproduce could have been obtained), illustrating such features as the bacterial cell-wall, cytoplasmic membrane, spores, flagella, etc. Use of such photomicrographs would have considerably enhanced this section.

In the chapter on bacterial nutrition the author has made a commendable attempt to simplify a complex subject, but he has been unable to avoid using a terminology which may be beyond the grasp of the reader for whom the book is designed.

Before proceeding to a discussion of the microbiology of milk and milk products, Dr. Seaman has included four chapters on bacterial destruction, immunology, identification and variation, systematics and a chapter on historical development. The chapters on bacterial destruction and systematic bacteriology are good, but immunology should have received rather fuller treatment than six paragraphs, in view of its importance in disease control in the dairy herd and in bacterial classification. While the chapter on historical development reflects Dr. Seaman's wide reading on his subject, it is doubtful if, in a short elementary text-book of this type, so much space should have been devoted to this aspect.

It is regrettable that the development of the advisory services in England and Wales since the Second World War has divorced the teaching departments of colleges and universities from intimate contact with problems of the agricultural and dairy industries. As a result the chapters on the microbiology of milk and milk products give an unfortunate impression of a theoretical or academic approach to the subject and little attempt has been made to emphasize the more important aspects. The work concludes with a short chapter on the microbiology of water and sewage.

The book is written in a simple direct style, but occasionally the language is somewhat ambiguous. Each chapter concludes with references for further reading, but in a number of instances more useful references might have been chosen. Possibly a fuller bibliographical appendix would have served the purpose better. There are a number of errors which will no doubt be eliminated in later editions. The book is described on the cover as a useful student revision text for examination purposes. I myself hope that in future more detailed treatment can be given to the section on milk and milk products whereby the book could become a standard text-book for students of dairying.

Despite these criticisms, the book has the great merit of providing in compact form a serviceable text in bacteriology for students of dairying and for workers in other food industries and can be recommended to such students. It is hoped that the demand will be such as to encourage Dr. Seaman to plan a more comprehensive second edition.

D. A. McKenzie

MEDICINAL CHEMISTRY

Pharmaceutical Chemistry

Plenary Lectures presented at the International Symposium on Pharmaceutical Chemistry held in Florence, 17–19 September 1962. (International Union of Pure and Applied Chemistry in conjunction with the Italian Society of Pharmaceutical Sciences.) Pp. v+207–492. (London: Butterworth and Co. (Publishers), Ltd., 1963.) 60*s*.

RESEARCH workers in the field of medicinal chemistry should not be deterred by the title, which might reasonably be understood to relate to the art of tablet preparation. In fact it contains sixteen up-to-date (mid-1962) reviews, most of which will be found of value to those interested in the mode of action and discovery of drugs. Dr. Ing has made a most thoughtful contribution with his paper on the interaction of drugs and receptors. He stresses the need to avoid acceptance of facile single explanations of drug action. This cannot be over-emphasized. Dr. Ing nevertheless almost falls into the trap himself when he concludes that he is forced to think in terms of an exact fit between the drug and the receptor.

Near miracles in the synthesis of medium-sized polypeptides are becoming almost a commonplace when a sufficient number of analogues of a polypeptide hormone can be synthesized to allow a study of structure-activity relationships to point approximately to the active centre. Dr. Schwyzer's review of polypeptide hormones, for example, ACTH, oxytocin, angiotensin and kallidin, is masterly; but he, too, sounds a note of caution. He appears to reject any suggestion that secondary or tertiary conformations, stable in the solid-state or in solution, are relevant to the biological activity of a polypeptide. Dr. Hofmann deals in greater detail with two of these hormones, ACTH and the melanocyte-expanding hormone, α-MSH. He has established, from the studies of synthetic fragments and their analogues, that full activity resides in the first 20 of the 39 residues of the ACTH molecule and that the Lys.Lys.Arg.Arg. unit at positions 15–18, the free terminal α-amino group and all or some of the ε-amino groups of the lysine residues are important.

The *cyclo*peptides of the phalloidin group obtained from poisonous mushrooms are substances from the unreal world of D-amino-acids, γ-hydroxy-α-amino-acids and *allo*-hydroxyproline and in which alanine alone is respectably normal. Prof. Wieland writes a fascinating account of