

formation of the general reader, that it should be studied in connection with the recent works of Tallqvist and Zimmern on the *Maklū* and *Shurpu* series of tablets in the British Museum. A word of praise is justly due to Mr. King for his honest work, and although the introduction might have been fuller with advantage to the reader, the translations, and transliterations, and vocabulary will help to make the texts at the end of the book understood by every careful reader.

MICRO-ORGANISMS AND DISEASE.

Micro-organisms and Disease; an Introduction to the Study of Specific Micro-organisms. By Dr. E. Klein, F.R.S. New edition. Pp. xii + 595. (London: Macmillan & Co., Ltd., 1896.)

THE rapid strides which have been made in bacteriological science during the last few years render the frequent revision of the text-books on the subject a necessity. It is a noteworthy fact that although bacteriology is one of the newest of the sciences, it is rapidly becoming so large a subject that specialisation in one branch or other of it is almost essential.

Dr. Klein's book treats mainly of that particular branch of bacteriology which deals with "pathogenic" micro-organisms, including only a very small number out of the total known species. Other branches of bacteriology have also their specialised handbooks—*e.g.* the micro-organisms in water are sufficiently numerous and well-known to require a text-book to themselves, whilst it would be easy to mention other branches of the subject which will soon require similar treatment. In this new (third) edition of Dr. Klein's work we find the subject brought practically up to date. The present edition is enlarged to 595 pages, as against 267 pages in the previous one. There are 80 additional illustrations, as compared with the last edition, making 201 in all. Amongst them are inserted, for the first time, a number of well-reproduced photographs of cultures and of excellent stained preparations of bacteria, taken by the well-known photomicrographers Messrs. Pringle and Bousfield. These are almost uniformly good, but photographs, such as Fig. 63A, mar an otherwise fine series.

The introductory chapters deal with bacteriological technique, such as the preparation of culture media, stained microscopic preparations, methods of inoculation and cultivation, bacteriological examination of water, air and soil. Then follows a full discussion of the general characters of bacteria—more especially of the pathogenic organisms—in which their mode of growth, spore formation, means of motility, &c., are discussed.

The chapter on "The Chemistry of Bacteria," confined as it is to a dozen pages, merely serves to show how meagre is the bacteriologist's knowledge of this part of the subject. It is a chapter, however, which might easily be amplified with advantage. For example, in writing on the liquefaction of gelatine, no mention is made of the fact that such liquefaction is due to an enzyme, and that it can be brought about by the agency of sterile filtered cultures of liquefying bacteria, apart from the bacteria themselves. Similarly, no reference is made to other enzymes, such, for instance, as those which bring about the hydrolysis of starch, &c.

A brief glance at the succeeding chapters will show how extensive is the list of diseases which are associated with specific micro-organisms. To mention only a few of the best known, we find considered in this book—often very exhaustively—typhoid, cholera, tuberculosis, tetanus, diphtheria, influenza, erysipelas, pneumonia, gonorrhœa, anthrax, glanders, relapsing fever, fowl cholera, grouse disease, Oriental plague, &c.

In the concluding chapters we find an epitome of the latest results of the labours of many workers in the field of serum therapeutics, a subject which is just now attracting so much attention from medical men and bacteriologists, and the experimental results of which are of the most far-reaching importance. The newest methods of research are clearly set forth, and the results obtained by recent workers are fully discussed.

Dr. Klein's views on the proper interpretation of the results of researches in various branches of his subject are frequently at variance with those of other authorities, yet it is refreshing to find—in these days of the premature publication of incomplete work—an author who is ready to stand out for a logical proof of the correctness of conclusions which are often drawn from meagre and incomplete evidence. There is no one in this country whose views on various controversial matters, coming within the scope of the book, are more entitled to careful consideration than are those of Dr. Klein.

The latest methods of protective inoculation by anti-toxic blood serum, more particularly in diphtheria and tetanus, are noticed and discussed. In this connection one regrets that more space is not devoted to the closely related subject of snake-poison and its antidote. The methods pursued are so similar, and the results already achieved are so important, that the subject might easily be brought within the scope of the book, especially as such diseases as cancer are included, although a disease which is most probably not associated with micro-organisms.

Under the heading of "Protozoa causing disease" is found a valuable discussion of the vexed question of the parasitic or non-parasitic nature of cancer. Dr. Klein shows very clearly the kind of fallacy into which the "parasitologists" and discoverers of "cancer organisms" have easily fallen.

Bacteriology has, during the last few years, become more and more complex. Where a single organism was previously recognised, it is now becoming certain that there are very many modifications and sub-varieties of each, which can only be differentiated and distinguished from each other by difficult methods. Nowhere is this more obvious than in reading the chapters containing descriptions of *Bacillus coli communis* and of the typhoid and cholera organisms.

The book is beautifully printed, and, with a few exceptions, the illustrations merit great praise.

There seem to be very few misprints. On p. 89, however, a reference is made to the work of Downes and Lunt; this should, of course, be Downes and Blunt. Also, on pp. 588 and 595, Vehring is inserted for Behring.

The author is to be congratulated on the completion of this revised and much enlarged edition of his valuable book, which ought to be in the hands of every medical man.

JOSEPH LUNT.